VU VRIJE UNIVERSITEIT AMSTERDAM

VU Research Portal

Expecting the unexpected

Schonewille, Noralie Nicoline

2024

DOI (link to publisher)
10.5463/thesis.807

document version
Publisher's PDF, also known as Version of record

Link to publication in VU Research Portal

citation for published version (APA)
Schonewille, N. N. (2024). *Expecting the unexpected: Unintended pregnancies and desire for children amongst persons with psychiatric vulnerability*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam]. https://doi.org/10.5463/thesis.807

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:
vuresearchportal.ub@vu.nl

Download date: 16. Oct. 2026

EXPECTING THE UNEXPECTED:

Unintended pregnancies and desire for children amongst persons with psychiatric vulnerability

Noralie Nicoline Schonewille

EXPECTING THE UNEXPECTED:

Unintended pregnancies and desire for children amongst persons with psychiatric vulnerability

by

Noralie Nicoline Schonewille

Colofon

EXPECTING THE UNEXPECTED: Unintended pregnancies and desire for children amongst persons with psychiatric vulnerability
PhD thesis, Vrije Universiteit, Amsterdam, The Netherlands

This research was undertaken in close collaboration with MIND Platform.

The research in this thesis was funded by ZonMw, grant number 554002007, and financially supported by Nu Niet Zwanger (funded by the Dutch Ministry of Health, Welfare and Sport). The printing of this thesis was kindly sponsored by Stichting Wetenschappelijk Onderzoek, OLVG Amsterdam.

Author: Noralie Schonewille
Cover: van Kira I www.vanKira.nl/phd
Layout: Tiny Wouters
Printing: Ridderprint I www.ridderprint.nl

Copyright © 2024 Noralie Schonewille, Amsterdam, The Netherlands

DOI: http://doi.org/10.5463/thesis.807
ISBN 978-94-6506-386-7

All rights reserved. No part of this thesis may be reproduced, stored or transmitted in any way or by any means without the prior permission of the author, or when applicable, of the publishers of the scientific papers.

VRIJE UNIVERSITEIT

EXPECTING THE UNEXPECTED:

Unintended pregnancies and desire for children amongst persons with psychiatric vulnerability

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor of Philosophy aan
de Vrije Universiteit Amsterdam,
op gezag van de rector magnificus
prof.dr. J.J.G. Geurts,
in het openbaar te verdedigen
ten overstaan van de promotiecommissie
van de Faculteit der Geneeskunde
op vrijdag 29 november 2024 om 13.45 uur
in een bijeenkomst van de universiteit,
De Boelelaan 1105

door

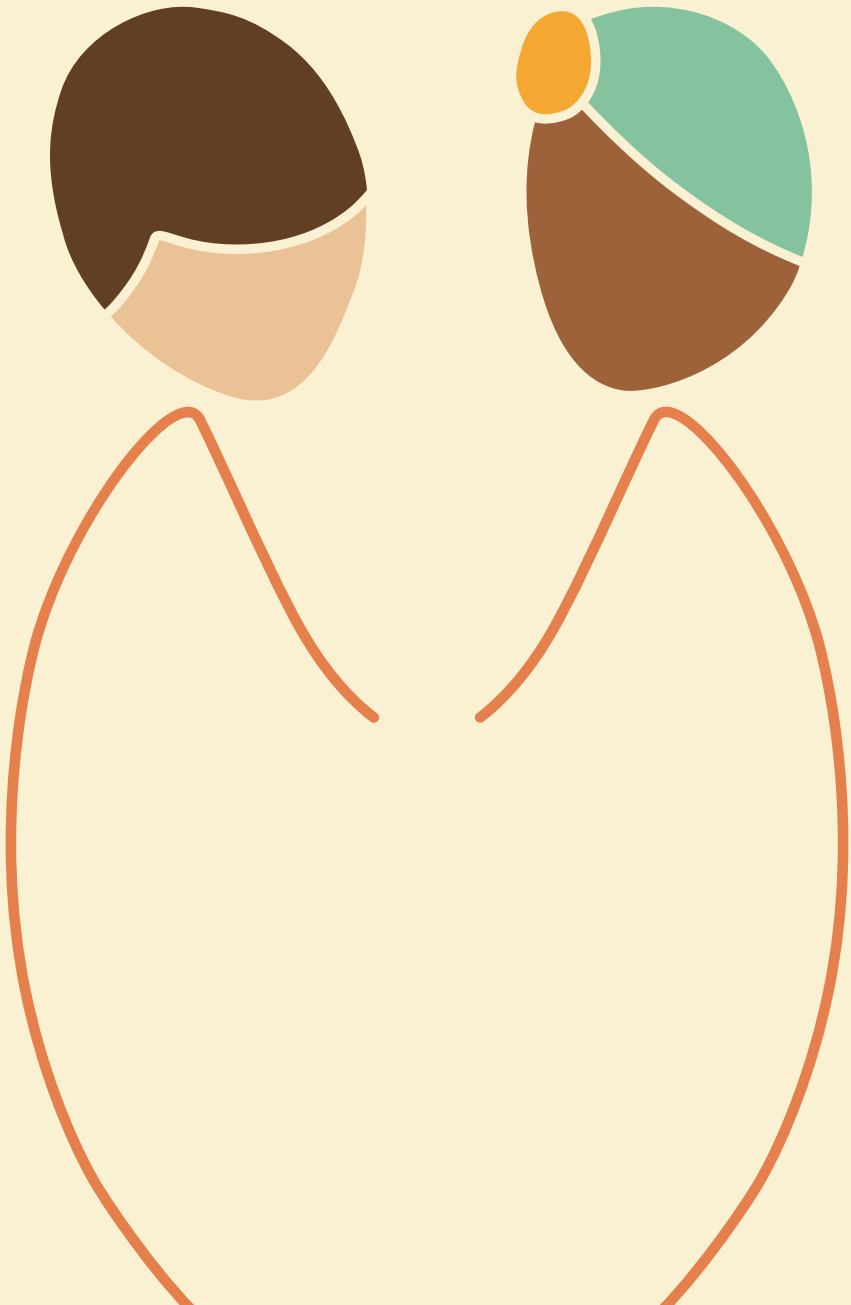
Noralie Nicoline Schonewille

geboren te Geleen

promotoren:	prof.dr. B.F.P. Broekman prof.dr. O.A. van den Heuvel
promotiecommissie:	prof.dr. A. Popma prof.dr. P.W. Jansen prof.dr. C.L.H. Bockting dr. J.Th.C.M. de Kruif dr. J.M. van Ditzhuijzen prof.dr. C.J.M. de Groot

Content of this thesis

Chapter 1	General introduction	7
PART I	**Psychiatric vulnerability, unintended pregnancies and desire for children**	**23**
Chapter 2	Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis	25
Chapter 3	Experiences with family planning amongst persons with mental health problems: a nationwide patient survey	51
PART II	**Psychiatric vulnerability and birth outcomes**	**77**
Chapter 4	Pregnancy intention in relation to maternal and neonatal outcomes in women with versus without psychiatric diagnoses	79
Chapter 5	Neonatal admission after lithium use in pregnant women with bipolar disorders: a retrospective cohort study	103
PART III	**Psychiatric vulnerability and lived experiences with family planning**	**119**
Chapter 6	Family planning decision-making in relation to psychiatric disorders in women: a qualitative focus group study	121
Chapter 7	Exploring narratives on unintended pregnancies amongst women with psychiatric disorders using interpretative phenomenological analysis	151
Chapter 8	The conversation about family planning and desire for children in mental healthcare: patients' perspective versus professionals' perspective in a mixed methods study	191
Chapter 9	General discussion	233
Appendix	English summary	263
	Nederlandstalige samenvatting	265
	Publications	267
	Author contribution statements	269
	PhD Portfolio	273
	Dankwoord	275
	Curriculum vitae	283



CHAPTER 1

General introduction and outline of this thesis

Background information

This thesis aims to unravel the way in which psychiatric vulnerability interferes with family planning, desire for children and birth outcomes. In this chapter, we will briefly introduce the relevant topics, provide the aim, methodology and outline of this thesis.

Unintended pregnancies: a global reproductive health problem

Unintended pregnancies (UPs) are pregnancies that are mistimed, unplanned or unwanted at the time of conception, as defined by the U.S. Department of Health & Human Services. Hereby, UPs combine two facets of pregnancy intention: the timing and desire. UPs can be either unplanned (which means the timing was not according to plan, but the pregnancy may be greeted with happiness) or unwanted (the pregnancy was not according to plan and not greeted with happiness). UPs pose a significant and widespread global health issue. Annually, approximately 120 million UPs, accounting for 48% of all pregnancies, occur worldwide[1]. Rates vary among different geographic regions, typically with higher rates in developing countries[1]. UPs often result in abortions, and sadly, many of these procedures occur under unsafe conditions, contributing to 7.9% of global maternal deaths[1,2]. As a result, the Sustainable Development Goals require countries to achieve by 2030 the objective of ensuring 'universal access to sexual and reproductive healthcare services, including family planning, information and education, and the integration of reproductive health into national strategies and programmes'[3].

In the Netherlands, the average age at which women give birth to their first child is 30.3 years old, compared to 24.3 years old in 1970[4]. The trend of an increasing maternal age at first child is visible in other high-income countries and is most likely explained by the ability to plan and postpone pregnancies[5]. Hereby, women can achieve personal goals such as studying, navigating their career and finding a partner to have a family with[6]. From a feminist perspective, this is a positive development that reflects optimal reproductive agency. However, there are obstetric risks related to birthing at increased age. Maternal age >35 years is linked to stillbirth, perinatal mortality and maternal morbidity and mortality[7,8]. In addition to an increasing age at first child, the absolute birth rate in the Netherlands decreases every year from 207.000 children born in the year 2000 to 168.000 born in the year 2022[4]. The decrease of absolute birth rates could negatively impact society, as offspring aids in supporting national welfare in an aging population. Despite decreasing absolute birth rate numbers, and an increasing age at first child, the proportion of pregnancies that is unintended, remains high[9]. In European countries, including the Netherlands, pregnancies are unintended in approximately 25-30%[10]. In the Netherlands, little

data has been published on this topic. One study from 2012 showed that one in five Dutch women experienced a UP during her lifetime, including both ongoing pregnancies, abortions and miscarriages[9]. Although not all UPs are unwanted pregnancies, the Dutch government put the issue of UPs on the national agenda since 2017, with the goal to 'aid in preventing unintended and unwanted pregnancies'. This acknowledgment of UPs as a national problem has fueled research on the topic of family planning, especially in groups of persons with one or more vulnerabilities in their life, such as intellectual disabilities, poverty, young age and psychiatric vulnerability. As UP rates in Dutch women with psychiatric vulnerability are currently lacking, the development of tailored preventative programs to the needs of women who face UPs, is also challenged. This thesis aims to fill the knowledge gap on the prevalence of UPs amongst persons with psychiatric vulnerability.

Unintended pregnancies and psychiatric disorders

Past research indicates that UPs are associated with reduced sexual independence, compromised coping skills (specifically related to intimacy, asserting boundaries, or requesting contraception), engagement in abusive relationships, insufficient awareness about pregnancy planning, or challenges in accessing or using contraceptives[11,12]. Additionally, factors like diminished autonomy, lack of information, perceived stigma, and concerns about contraceptive safety complicate the process of pregnancy planning[12]. The convergence between psychiatric vulnerability and social as well as psychological predictors of ineffective contraceptive use may clarify the risk for UPs amongst women with psychiatric vulnerability[13]. Factors such as intimate partner violence, lack of social support and low self-esteem are interconnected with both reproductive decision-making and psychiatric vulnerability[14-16]. Women seeking termination of pregnancies often reported to have experienced traumatic events like sexual violence, alongside symptoms of depression and anxiety[17]. Psychiatric symptoms or symptoms related to psychiatric vulnerability might affect psychological processes crucial for the utilization of contraceptive methods. Loss of planning capacity, reduced oversight and difficulties with impulse control challenge reproductive decision-making[18]. Compliance with contraceptive methods might be diminished in situations where severe psychiatric vulnerability such as (a history of) mood disorders, schizophrenia, or related psychotic disorders impact cognitive or emotional functioning[19-22]. (Hypo)manic symptoms in women with bipolar disorder could lead to impulsive and hypersexual behavior, resulting in risky sexual conduct[23]. In women with eating disorders, oligomenorrhea might be misconstrued as reduced pregnancy risk and fuel beliefs about infertility, potentially leading to UPs. Moreover, oral contraceptives might not effectively prevent UPs in situations involving frequent purging[24,25]. Some studies conducted separate analyses on women exhibiting

symptoms in the year preceding their pregnancy and found they were more susceptible to UPs compared to women without psychiatric vulnerability[25,26]. Heightened stress levels and depressive symptoms in young women with mental health symptoms and prolonged illness duration in severe mental illness patients are predictive of UPs, pointing towards an association between symptomatology and difficulties with achieving pregnancy planning[21,27]. Understanding if and how women with psychiatric vulnerability have an increased risk of UPs is important. Not only to identify target groups for preventative measures, but also because some women with psychiatric vulnerability use psychoactive medication, which may be harmful for the development of the fetus. In addition, women with psychiatric vulnerability may experience worsening of their symptoms during pregnancy, which can have a negative effect on pregnancy outcomes. In conclusion, there is a lack of understanding in the relation between UPs and psychiatric vulnerability. In this thesis we aim to also contribute to this call for qualitative inquiries. Moreover, we aim to research the possible (adverse) outcomes after UPs with quantitative methods.

Impact of unintended pregnancies on mothers and offspring

The existing literature predominantly links UPs to adverse maternal outcomes, such as an increased risk in ante- and perinatal depression, stress and interpersonal violence[28-30]. Women with UPs had longer hospital stays after delivery[10]. Mental health problems during pregnancy, including stress, may negatively impact birth outcomes. Delayed enrolment in antenatal care, smoking or other intoxications during pregnancy and less use of folic acid may also contribute to adverse birth outcomes[10]. Premature birth and low birth weight were both linked to UPs in studies on high-, middle- and low-income populations[28,31-33]. The evidence on an increased risk of miscarriage, stillbirth and neonatal death after UPs is still inconclusive[31]. In women with UPs, the postpartum period may be marked by decreased rates of breastfeeding, reduced quality of parent-child interactions and higher occurrence of externalizing problems in offspring during adolescence[34-36]. Challenges in parenting may also arise from these circumstances[37,38]. Data in the Dutch setting is required to interpret the clinical significance of possible adverse outcomes after UPs in the Netherlands. Moreover, novel studies could shed light on the possible positive outcomes of (unintended) births. As the birth rate is declining, welcomed UPs could be of societal significance in increasing the national birth rate. But also on a personal level, it is questionable if UPs bring about disadvantages only. In general, pregnancy and childbirth have been linked to positive outcomes such as motivation for lifestyle change and improved maternal mental health[39,40]. A qualitative study illustrated how pregnancy intendedness could influence the partner relationship, as improved relationship functioning was measured in couples with unplanned pregnancies, in

contrast to lower levels of functioning in couples with planned pregnancies[41]. Qualitative and quantitative studies on (possible) positive aspects to unintended childbearing and parenting have hardly been conducted. This thesis will thus further explore the presence of both adverse and positive outcomes after UPs with qualitative and quantitative methods.

Impact of psychiatric vulnerability on mothers and offspring

The perinatal period (defined as the time from conception until one year after birth[42]) pregnancy and the postpartum period) can pose significant challenges for women with psychiatric vulnerability and their newborns. Psychiatric or mental disorders are 'clinically significant disturbance in an individual's cognition, emotional regulation, or behavior', according to the World Health Organization. In literature, the terms 'psychiatric disorders', 'mental (health) disorders', 'psychiatric vulnerability' and 'mental health issues' are used interchangeably. In this thesis, the term 'psychiatric vulnerability' captures any history of psychiatric disorders and represents both persons in remission but at risk for relapse or persons with current (ongoing) psychiatric disorders who experience symptoms. Although studies on the relapse risk of psychiatric disorders during pregnancy are inconclusive, it is known that pregnancy and especially the postpartum can exacerbate psychiatric symptoms in women with psychiatric vulnerabilities to develop psychosis, manic or depressive episodes after birth compared to their risk during other life stages[43-48].

Research shows that the presence of psychiatric vulnerability during pregnancy can result in serious complications for both mothers with psychiatric vulnerability and their newborns, including higher rates of intensive care admissions, unplanned cesarean sections, gestational diabetes, and lower rates of breastfeeding[49-51]. Offspring born to mothers with psychiatric vulnerability tend to have lower birth weights, higher chances of being born prematurely, and more frequent low 5-minute Apgar scores[49,50,52]. Mother infant attachment may be challenged in dyads with mothers who have psychiatric vulnerability during pregnancy or thereafter[53]. Most likely there is an overlap between psychosocial risk factors for adverse pregnancy and maternal outcomes between women with UPs and women with psychiatric vulnerability, such as maternal stress, unemployment and unhealthy prenatal behaviors such as smoking. Adverse pregnancy and maternal outcomes are particularly linked to unwanted pregnancies, as opposed to unplanned but wanted pregnancies, indicating that pregnancy acceptance can alter birth outcomes in addition to the planning status of the pregnancy[54]. No previous research has been performed to understand the interaction between the presence of psychiatric vulnerability and UPs on birth and maternal outcomes. Especially mood disorders are studied in relation to birth

outcomes. This is important, as mood disorders are the most prevalent psychiatric disorders during pregnancy and the postpartum[55,56]. A subgroup of patients at risk for perinatal depressive disorder, are women with bipolar vulnerability. Without treatment, there is a relapse risk of 60-80% for postpartum psychosis in women with bipolar disorder[45,48]. Treatment with preferably lithium, a mood stabilizer, protects from perinatal relapse. Aside from the psychiatric risk during pregnancy, birth outcomes in women with bipolar vulnerability appear to be adverse compared to outcomes of neonates born to women without bipolar vulnerability[57,58]. What is less clear, is the role of lithium and/or other psychopharmacological medication on birth outcomes, indicating another research gap.

Family planning, desire for children and childlessness in relation to psychiatric vulnerability

The working definition of family planning is 'the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births', used by the WHO Department of Reproductive Health and Research [2008]. Because family planning aims to fulfil reproductive goals (not just prevent unwanted pregnancies), involuntary childlessness among individuals with psychiatric vulnerability should be included in family planning research as well. Various factors linked to psychiatric vulnerability could hinder achieving desired pregnancies. Problems with sexual functioning, worries about passing on inheritable psychiatric disorders, and concerns about parental adequacy could cause hardship for persons with psychiatric vulnerability in regard to achieving their desired family size[59-61]. Past studies have demonstrated that persons with psychiatric vulnerability like schizophrenia, autism, eating disorders, substance abuse, and/or depression tend to have lower fertility rates compared to their unaffected siblings[62,63]. These large-scale studies strongly indicate that individuals dealing with psychiatric vulnerability may encounter challenges in fulfilling their reproductive intentions. Qualitative research on perspectives on family planning, desire for children and childlessness in relation to mental health amongst persons with lived experience with psychiatric vulnerability are needed.

Reproductive health in psychiatric healthcare

Information regarding reproductive health holds relevance for individuals with psychiatric disorders, given the intricate connection between mental and reproductive health. There is a scarcity of studies addressing family planning needs within mental healthcare. In 2009, Becker and Krumm already identified several gaps in this area, with studies often lacking the patient's perspective and insights into the attitudes of

mental health professionals (MHPs)[64]. Even today, there remains a limited number of studies addressing these issues, particularly in countries other than the United States. Qualitative literature involving women with bipolar disorders has demonstrated that family planning is a significant topic of discussion during treatment, with a particular focus on the health of offspring in relation to the use of psychotropic medications and the heritability of bipolar disorder[60]. Women with borderline personality disorders who recently had a child expressed a desire to prevent intergenerational transmission of attachment problems and borderline personality symptomatology[65]. In addition, a lack of tailored parenting programs was disclosed. Given that transgenerational transmission of psychiatric symptomatology, parenting in relation to mental health and attachment are topics which generally fall within the expertise of MHPs, we hypothesize that MHPs should play a significant role in facilitating discussions about family planning. Previous studies in the field of reproductive health discussions in psychiatry have revealed that MHPs (and resident MHPs) reported obstacles, including moral concerns regarding patient autonomy and a lack of expertise when addressing family planning[66,67]. Possibly, patients and their close ones also encounter their own set of challenges in this context. Personal experiences with (the need for) discussing reproductive matters in psychiatry are lacking, both from a MHP and patient perspective.

Aims of this thesis

My dissertation seeks to provide insight in the impact of unintended pregnancies for individuals with psychiatric vulnerability from various perspectives. We aim to estimate the prevalence of UPs in national and international samples of women with psychiatric vulnerability, collect lived experiences of parents who experienced unintended pregnancies, capture professional experiences of mental health professionals with discussing family planning decision making and gather lived experiences of (former) patients (men and women) and close ones with discussing desire for children in psychiatric healthcare.

To reach these goals, this thesis adheres to a mixed methods approach by building upon data from quantitative (parts I and II) and qualitative (part III) research designs.

Methodology

Table 1.1 presents the applied methods per chapter including data used.

Table 1.1 - Applied methods per chapter including data used.

Chapter	Study aim	Methodology	Data used
2	To explore whether psychiatric vulnerability is a risk factor for UPs, by quantifying the presence of UPs amongst adult women with psychiatric vulnerability, in addition to comparing UPs in women with and without psychiatric vulnerability by means of a systematic literature search and meta-analysis.	Systematic review and meta-analysis	PubMed, Embase/Ovid, PsycINFO, Cochrane and Web of Science/Clarivate Analytics
3	To elucidate the perspective on family-planning from patients with mental health problems and their close ones.	Semi-quantitative patient survey	Survey MIND (Box 1.1)
4	To elaborate on previous literature by primarily investigating the incidence of UPs amongst women with various current/past psychiatric diagnoses versus women without psychiatric diagnoses. To compare maternal and neonatal outcomes between women with UPs versus non-UPs who delivered in the hospital and to assess the modifying role of current/past psychiatric diagnoses in the association between pregnancy intention and maternal/neonatal outcomes.	Retrospective cohort study	MoMentUM study dataset (Box 1.2) https://doi.org/10.17026/dans-xrt-du5k
5	To validate previous findings on neonatal outcomes after lithium exposure by comparing (re)admission rates in neonates born to women with BD with versus without lithium exposure. To elucidate the reasons for admissions in neonates born to women with BD.	Quantitative retrospective cohort study	Lithium dataset
6	To unravel childbearing intentions in relation to psychiatric vulnerability in persons with lived experience.	Thematic analysis with framework method	Focus groups MIND (Box 1.1)
7	To understand how women with psychiatric vulnerability give meaning to the experience of unintended pregnancies using interpretative phenomenological analysis.	Narrative analysis	Prospective in-depth-Interviews with persons with psychiatric vulnerability during pregnancy and postpartum, included at the OLVG POP clinic in Amsterdam between March 2022 and February 2023
8	To investigate the need and experiences of patients, close ones and MHPs regarding discussing family-planning in mental healthcare during the reproductive phase of life. To inquire what, when and how MHPs should discuss family planning with patients.	Mixed methods approach: semi-quantitative patient surveys and focus groups	Survey MIND, focus groups MIND

UPs; unintended pregnancies, BD; bipolar disorders, MHPs; mental health professionals

Box 1.1 - The MIND-panel

MIND is a Dutch association for former or current patients with mental health problems and close ones of (former) patients with mental health problems. MIND represents the whole spectrum of mental health (www.wijzijnmind.nl (accessed on 1 December 2022)). Members of the MIND panel are recruited among the public with a request for participation ''Do you have experience with mental health problems yourself or as a close one?". There are no other selection criteria. The panel consists of 4200 (former) patients and close ones. The members of the panel are invited to complete surveys through an email invitation approximately 10 times a year.

Box 1.2 - The Maternal Mental Health and Unintended Motherhood-dataset

The MoMentUM study is a retrospective cohort, compiled of women who gave birth in a large hospital in Amsterdam, the Netherlands. Included women are ≥18 years old with singleton pregnancies and birth registrations in the electronic patient file during January 1, 2015, to March 1, 2020. Patient characteristics (including pregnancy intention and psychiatric history), maternal (gestational diabetes, mode of delivery) and neonatal outcomes (e.g., gestational age, birthweight and Apgar scores) were registered by health care providers in hospital charts. We included 1219 women with and 1093 women without current/past psychiatric diagnoses.

Outline

Figure 1.1 displays the outline of this thesis, which navigates from a quantitative, to a semi-qualitative, and finally to an in-depth qualitative methodology.

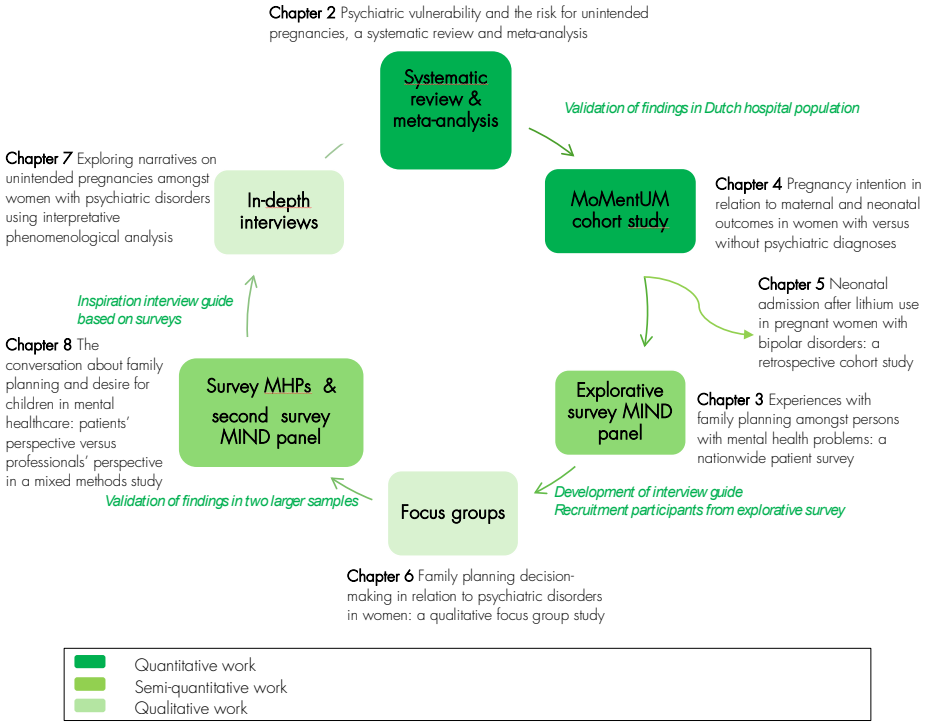


Figure 1.1 - How the studies built upon previous work: navigating between quantitative, semi-qualitative, and qualitative methodologies

To portray an understanding of the international prevalence of UPs amongst women with psychiatric vulnerabilities, we started **Part I** of this thesis with a systematic review and meta-analysis (**Chapter 2**). Experiences with family planning and unintended pregnancies were collected in an explorative, nationwide patient questionnaire in **Chapter 3**.

To fill the research gaps defined by the systematic review and meta-analysis, we investigated retrospective cohort data from a large, multiethnic, obstetric cohort with

pregnant women and their offspring in Part II, Box 1.1 explains the MoMentUM study. We evaluated the UP rates and neonatal outcomes after unintended pregnancies in Chapter 4. A subgroup of the MoMentUM dataset was further analyzed in Chapter 5, as we evaluated maternal and neonatal outcomes after exposure to lithium during pregnancy. In this chapter, we present data on a selected group of women with bipolar disorders.

In Part III we explored how persons with lived experience with psychiatric vulnerability view desire for children in relation to mental health, in a qualitative focus group study (Chapter 6). As we continued building on qualitative data from persons with lived experience, Chapter 7 describes narratives of women who have unintended pregnancies during their pregnancies and in the postpartum period using interpretative phenomenological analysis. This chapter specifically focuses on the personal impact of UPs on persons with psychiatric vulnerability. Chapter 8 displays the findings of a mixed methods study where quantitative data from two additional nationwide questionnaires (one questionnaire from the MIND panel (Box 1.1) and one questionnaire with mental health professionals) were combined with qualitative findings from focus groups with persons with lived experience in psychiatric healthcare. Here, we explored the perspective of mental health professionals on conversations about desire for children in psychiatric healthcare. This chapter presents integrated personal perspectives from focus groups and shared perspectives based on questionnaire data.

Finally, Chapter 9 provides summaries and interpretations of all key findings in addition to directions for future research and clinical implications.

References

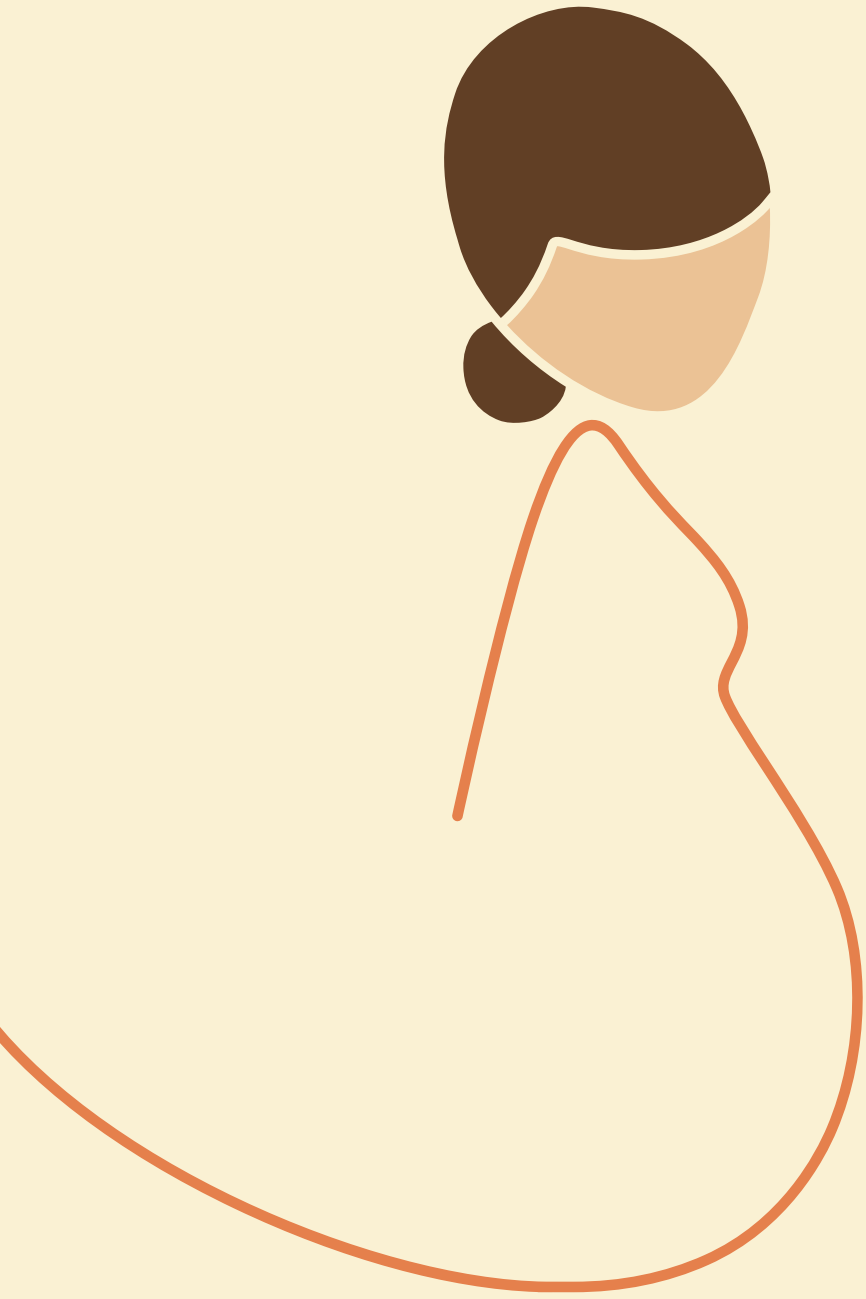
1. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.
2. Say, L., et al., Global causes of maternal death: a WHO systematic analysis. Lancet Glob Health, 2014. 2(6): p. e323-333.
3. Population Division, D.o.E.a.S.A., United Nations,, Family Planning and the 2030 Agenda for Sustainable Development: Data Booklet. . 2019.
4. Statistiek, C.B., Geboorte; kerncijfers, 1950-2022. 2023, CBS.
5. Mathews, T.J. and B.E. Hamilton Mean Age of Mothers is on the Rise: United States, 2000–2014. NCHS Data Brief, 2016.
6. K, H. and C. VE, Reasons for delaying childbearing–a survey of women aged over 35 years seeking assisted reproductive technology. Austin Family Physician, 2005.
7. Laopaiboon, M., et al., Advanced maternal age and pregnancy outcomes: a multicountry assessment. BJOG, 2014. 121 Suppl 1: p. 49-56.
8. Walker, K.F., et al., Causes of antepartum stillbirth in women of advanced maternal age. Eur J Obstet Gynecol Reprod Biol, 2016. 197: p. 86-90.
9. Picavet, C., Zwangerschap en anticonceptie in Nederland. Tijdschrift voor Seksuologie, 2012. 36-2: p. 121-128.
10. Carlander, A., et al., Unplanned pregnancy and the association with maternal health and pregnancy outcomes: A Swedish cohort study. PLoS One, 2023. 18(5): p. e0286052.
11. Ajayi, A.I. and H.C. Ezegbe, Association between sexual violence and unintended pregnancy among adolescent girls and young women in South Africa. BMC Public Health, 2020. 20(1): p. 1370.
12. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
13. Enthoven, C.A., et al., Clustering of characteristics associated with unplanned pregnancies: the generation R study. BMC Public Health, 2022. 22(1): p. 1957.
14. Miller, E. and J.G. Silverman, Reproductive coercion and partner violence: implications for clinical assessment of unintended pregnancy. Expert Rev Obstet Gynecol, 2010. 5(5): p. 511-515.
15. Goossens, J., et al., The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. Hum Reprod, 2016. 31(12): p. 2821-2833.
16. Moyano, N., et al., Self-Esteem, Attitudes toward Love, and Sexual Assertiveness among Pregnant Adolescents. Int J Environ Res Public Health, 2021. 18(3): p. 1270..
17. Tinglöf, S., et al., Exposure to violence among women with unwanted pregnancies and the association with post-traumatic stress disorder, symptoms of anxiety and depression. Sex Reprod Healthc, 2015. 6(2): p. 50-53.
18. Posada Correa, A.M., et al., Sexual and Reproductive Health in Patients with Schizophrenia and Bipolar Disorder. Rev Colomb Psiquiatr, 2020. 49(1): p. 15-22.
19. Yuen, K.S. and T.M. Lee, Could mood state affect risk-taking decisions? J Affect Disord, 2003. 75(1): p. 11-18.
20. Seeman, M.V. and R. Ross, Prescribing contraceptives for women with schizophrenia. J Psychiatr Pract, 2011. 17(4): p. 258-269.
21. Hall, K.S., et al., The risk of unintended pregnancy among young women with mental health symptoms. Soc Sci Med, 2014. 100: p. 62-71.
22. Steinberg, J.R. and L.R. Rubin, Psychological Aspects of Contraception, Unintended Pregnancy, and Abortion. Policy Insights Behav Brain Sci, 2014. 1(1): p. 239-247.
23. Obo, C.S., et al., Risky sexual behavior and associated factors among patients with bipolar disorders in Ethiopia. BMC Psychiatry, 2019. 19(1): p. 313.
24. Bulik, C.M., et al., Unplanned pregnancy in women with anorexia nervosa. Obstet Gynecol, 2010. 116(5): p. 1136-1140.
25. Micali, N., et al., Fertility treatment, twin births, and unplanned pregnancies in women with eating disorders: findings from a population-based birth cohort. BJOG, 2014. 121(4): p. 408-416.

26. Catalao, R., et al., The impact of depression at preconception on pregnancy planning and unmet need for contraception in the first postpartum year: a cohort study from rural Malawi. Reprod Health, 2023. 20(1): p. 36.
27. Tozoglu Ozcan, E., et al., Unintended and Unwanted Pregnancies in Women with Major Psychiatric Disorders: A Cross-Sectional Comparative Study. Psychiatry and Clinical Psychopharmacology, 2020.
28. Nelson, H.D., et al., Associations of Unintended Pregnancy With Maternal and Infant Health Outcomes: A Systematic Review and Meta-analysis. JAMA, 2022. 328(17): p. 1714-1729.
29. Beumer, W.Y., et al., Carrying an unintended pregnancy to term and long-term maternal psychological distress: Findings from the Dutch prospective Amsterdam Born Children and their Development study. Womens Health (Lond), 2023. 19: p. 17455057231213737.
30. Muskens, L., et al., The association of unplanned pregnancy with perinatal depression: a longitudinal cohort study. Arch Womens Ment Health, 2022. 25(3): p. 611-620.
31. Hall, J.A., et al., Pregnancy Intention and Pregnancy Outcome: Systematic Review and Meta-Analysis. Matern Child Health J, 2017. 21(3): p. 670-704.
32. Ticona, D.M., D. Huanco, and M.B. Ticona-Rendón, Impact of unplanned pregnancy on neonatal outcomes: findings of new high-risk newborns in Peru. Int Health, 2024. 16(1): p. 52.
33. Mohllajee, A.P., et al., Pregnancy intention and its relationship to birth and maternal outcomes. Obstet Gynecol, 2007. 109(3): p. 678-686.
34. Hayatbakhsh, M.R., et al., A longitudinal study of child mental health and problem behaviours at 14 years of age following unplanned pregnancy. Psychiatry Res, 2011. 185(1-2): p. 200-4.
35. Cheng, D., et al., Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors. Contraception, 2009. 79(3): p. 194-198.
36. Nelson, J.A. and M. O'Brien, Does an Unplanned Pregnancy have Long-Term Implications for Mother-Child Relationships? J Fam Issues, 2012. 33(4): p. 506-526.
37. Baydar, N., Consequences for children of their birth planning status. Fam Plann Perspect, 1995. 27(6): p. 228-34, 245.
38. McCrory, C. and S. McNally, The effect of pregnancy intention on maternal prenatal behaviours and parent and child health: results of an irish cohort study. Paediatr Perinat Epidemiol, 2013. 27(2): p. 208-215.
39. Bagherzadeh, R., et al., Pregnancy; an opportunity to return to a healthy lifestyle: a qualitative study. BMC Pregnancy Childbirth, 2021. 21(1): p. 751.
40. Asselmann, E., et al., Physical and mental health changes in the five years before and five years after childbirth: A population-based panel study in first-time mothers and fathers from Germany. J Affect Disord, 2022. 301: p. 138-144.
41. Bouchard, G., J. Boudreau, and R. Hébert, Transition to Parenthood and Conjugal Life Comparisons Between Planned and Unplanned Pregnancies. Journal of Family Issues, 2006. 27(11).
42. Sambrook Smith, M., et al., Validated tools to identify common mental disorders in the perinatal period: A systematic review of systematic reviews. Journal of Affective Disorders, 2022: p. 634-643.
43. Conejo-Galindo, J., et al., Postpartum Relapse in Patients with Bipolar Disorder. J Clin Med, 2022. 11(14).
44. Taylor, C.L., R.J. Stewart, and L.M. Howard, Relapse in the first three months postpartum in women with history of serious mental illness. Schizophr Res, 2019. 204: p. 46-54.
45. Wesseloo, R., et al., Risk of Postpartum Relapse in Bipolar Disorder and Postpartum Psychosis: A Systematic Review and Meta-Analysis. Am J Psychiatry, 2016. 173(2): p. 117-127.
46. Puyané, M., et al., Personality traits as a risk factor for postpartum depression: A systematic review and meta-analysis. J Affect Disord, 2022. 298(Pt A): p. 577-589.
47. Yang, K., J. Wu, and X. Chen, Risk factors of perinatal depression in women: a systematic review and meta-analysis. BMC Psychiatry, 2022. 22(1): p. 63.
48. Gilden, J., et al., Bipolar episodes after reproductive events in women with bipolar I disorder, A study of 919 pregnancies. J Affect Disord, 2021. 295: p. 72-79.
49. Edvardsson, K., et al., Severe mental illness and pregnancy outcomes in Australia. A population-based study of 595 792 singleton births 2009-2016. PLoS One, 2022. 17(2): p. e0264512.
50. Heun-Johnson, H., et al., Association between maternal serious mental illness and adverse birth outcomes. J Perinatol, 2019. 39(5): p. 737-745.

51. Etchecopar-Etchart, D., et al., Schizophrenia pregnancies should be given greater health priority in the global health agenda: results from a large-scale meta-analysis of 43,611 deliveries of women with schizophrenia and 40,948,272 controls. Mol Psychiatry, 2022. 27(8): p. 3294-3305.
52. Sūdžiūtė, K., et al., Pre-existingmental health disorders affect pregnancy and neonatal outcomes: a retrospectivecohort study. BMC Pregnancy Childbirth, 2020. 20(1): p. 419.
53. Galbally, M., et al., Major depression as a predictor of the intergenerational transmission of attachment security: Findings from a pregnancy cohort study. Aust N Z J Psychiatry, 2022. 56(8): p. 1006-1016.
54. Shreffler, K.M., et al., Pregnancy intendedness, maternal-fetal bonding, and postnatal maternal-infant bonding. Infant Ment Health J, 2021. 42(3): p. 362-373.
55. Arias-de la Torre, J., et al., Prevalence and variability of current depressive disorder in 27 European countries: a population-based study. Lancet Public Health, 2021. 6(10): p. e729-e738.
56. Ten Have, M., et al., Prevalence and trends of common mental disorders from 2007-2009 to 2019-2022: results from the Netherlands Mental Health Survey and Incidence Studies (NEMESIS), including comparison of prevalence rates before vs. during the COVID-19 pandemic. World Psychiatry, 2023. 22(2): p. 275-285.
57. Scrandis, D.A., Bipolar Disorder in Pregnancy: A Review of Pregnancy Outcomes. J Midwifery Womens Health, 2017. 62(6): p. 673-683.
58. Bodén, R., et al., Risks of adverse pregnancy and birth outcomes in women treated or not treated with mood stabilisers for bipolar disorder: population based cohort study. BMJ, 2012. 345: p. e7085.
59. Moore, D., S. Ayers, and N. Drey, A Thematic Analysis of Stigma and Disclosure for Perinatal Depression on an Online Forum. JMIR Ment Health, 2016. 3(2): p. e18.
60. Stevens, A.W.M.M., et al., Thoughts and Considerations of Women With Bipolar Disorder About Family Planning and Pregnancy: A Qualitative Study. J Am Psychiatr Nurses Assoc, 2018. 24(2): p. 118-126.
61. Basson, R. and T. Gilks, Women's sexual dysfunction associated with psychiatric disorders and their treatment. Womens Health (Lond), 2018. 14: p. 1745506518762664.
62. Power, R.A., et al., Fecundity of patients with schizophrenia, autism, bipolar disorder, depression, anorexia nervosa, or substance abuse vs their unaffected siblings. JAMA Psychiatry, 2013. 70(1): p. 22-30.
63. Liu, A., et al., The relationship of major diseases with childlessness: a sibling matched case-control and population register study in Finland and Sweden. Preprint, 2022.
64. Becker, P.T. and S. Krumm, Research on family planning issues in women with mental disorders. Journal of Mental Health, 2009.
65. Geerling, I., R.M. Roberts, and A. Sved Williams, Impact of infant crying on mothers with a diagnosis of borderline personality disorder: A qualitative study. Infant Ment Health J, 2019. 40(3): p. 405-421.
66. Macaluso, M., et al., Residents Perceive Limited Education on Family Planning and Contraception for Patients with Severe and Persistent Mental Illness. Acad Psychiatry, 2018. 42(2): p. 189-196.
67. Krumm, S., et al., The attitudes of mental health professionals towards patients' desire for children. BMC Med Ethics, 2014. 15: p. 18.

PART 1

Psychiatric vulnerability, unintended pregnancies and desire for children



CHAPTER 2

Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis

N.N. Schonewille, N. Rijkers, A. Berenschot, J.G. Lijmer, O.A. van den Heuvel and B.F.P. Broekman

Published in
BMC Pregnancy and Childbirth, 2022
DOI 10.1186/s12884-022-04452-1

Abstract

Background

Unintended pregnancies (UPs) are a global health problem as they contribute to adverse maternal and offspring outcomes, which underscores the need for prevention. As psychiatric vulnerability has previously been linked to sexual risk behavior, planning capacities and compliance with contraception methods, we aim to explore whether it is a risk factor for UPs.

Methods

Electronic databases were searched in November 2020. All articles in English language with data on women with age ≥ 18 with a psychiatric diagnosis at time of conception and reported pregnancy intention were included, irrespective of obstetric outcome (fetal loss, livebirth, or abortion). Studies on women with intellectual disabilities were excluded. We used the National Institutes of Health tool for assessment of bias in individual studies and the Grading of Recommendations Assessment, Development and Evaluation method for assessment of quality of the primary outcome.

Findings

Eleven studies reporting on psychiatric vulnerability and UPs were included. The participants of these studies were diagnosed with mood, anxiety, psychotic, substance use, conduct and eating disorders. The studies that have been conducted show that women with a psychiatric vulnerability (n = 2650) have an overall higher risk of UPs compared to women without a psychiatric vulnerability (n = 16,031) (OR 1.34, CI 1.08–1.67) and an overall weighed prevalence of UPs of 65% (CI 0.43–0.82) (n = 3881).

Interpretation

Studies conducted on psychiatric vulnerability and UPs are sparse and many (common) psychiatric vulnerabilities have not yet been studied in relation to UPs. The quality of the included studies was rated fair to poor due to difficulties with measuring the outcome pregnancy intention (use of various methods of assessment and use of retrospective study designs with risk of bias) and absence of a control group in most of the studies. The findings suggest an increased risk of UPs in women with psychiatric vulnerability. As UPs have important consequences for mother and child, discussing family planning in women with psychiatric vulnerabilities is of utmost importance.

Background

Unintended pregnancies (UPs) are a global health problem of large scale. Every year, 120 million UPs (accounting for 48% of all pregnancies) occur worldwide, although UPs rates differ amongst geographic regions with generally higher rates of UPs in developing countries[1]. UPs could either be mistimed (wanted but not planned at this specific moment in life) or unwanted (not intended at this point nor in the future). UPs are known to have serious consequences as they contribute to adverse maternal and offspring outcomes[2], such as antenatal and chronic depression in mothers[3-7], adverse birth outcomes[2,8], lower rates of breastfeeding[9,10], lower quality of mother- and father child interaction[11], and higher prevalence of externalizing problems in puberty in offspring[12]. In addition to adverse effects of unintended births, UPs can also lead to abortions, which are often performed unsafely and account for 7.9% of all maternal deaths worldwide[1,13]. To prevent UPs, studies investigating risk factors are of utmost importance. Although several risk factors have been identified, such as young maternal age, low educational level (of both parents), and being unmarried[14-18], other potential risk factors, such as mental health, are less explored. Studies already demonstrated that in teenage women with psychiatric conditions (depression, psychosis, and personality disorders) UPs are common[19], but if this also applies for adult women is yet unclear. A previous review on (awareness of) reproductive health problems in women with serious mental illness (that included studies up to 2008) described that the risk of sexually transmitted diseases, pregnancy loss and having more lifetime sex partners is high amongst women with psychiatric conditions[20]. However, unwanted pregnancies and abortions in women who previously reported a psychiatric vulnerability were not the focus of this review. It has been suggested that psychiatric vulnerability (a history of psychiatric disorders according to Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV or 5 and International Statistical Classification of Diseases and Related Health Problems (ICD)-10/11 and/or current psychiatric disorder according to DSM-IV or 5 and ICD-10/11) could influence important factors related to UPs, such as sexual behavior, including victimization of sexual violence[21] or disruption of menstrual cycles due to stress, use of antipsychotic drugs or weight loss in eating disorders[22,23]. Also, advanced planning capacities, which are required for adequate use of contraceptive methods and family planning,[23,24] has shown to be diminished in women with psychiatric vulnerability. Thus, we aimed to explore whether psychiatric vulnerability is a risk factor for UPs, by quantifying the presence of UPs amongst adult women with psychiatric vulnerability, in addition to comparing UPs in women with and without psychiatric vulnerability by means of a systematic literature search and meta-analysis.

Methods

A review protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement[25] and was registered with Prospero (review number CRD42020221072).

Information sources and search strategy

The electronic databases PubMed, Embase/Ovid, PsycINFO, Cochrane and Web of Science/Clarivate Analytics were searched on November 6, 2020 (see Additional file 1 for search strategy) to identify studies reporting the proportions of UPs in adult women with (and without) psychiatric vulnerability via self-report, structured clinical interviews, or diagnosis performed by a professional. There were no restrictions in publication date applied to the search. Only articles in English language were included. Unpublished studies and abstracts were excluded from the review.

Eligibility criteria

Presence of psychiatric vulnerability at the time of conception was a prerequisite for inclusion. Also, the main outcome, namely UPs that can result in both ongoing pregnancies and elective (induced) abortions, had to be reported. Studies that evaluated pregnancy planning (planned and unplanned pregnancies) instead of pregnancy intention were also included. Studies with or without 'control groups' (women without a psychiatric vulnerability) were included.

Study selection

Studies were eligible for inclusion if the following criteria were met:

- study participants were women who had become pregnant.
- participants were adults: 1) age ≥ 18 years, 2) 95% of the participants was ≥18 years old (mean age – 2 standard deviations ≥18), or 3) a subgroup analysis in women ≥18 years was performed.
- participants had a psychiatric vulnerability (a history of psychiatric disorders according to DSM-IV or 5 and ICD-10/11 and/or current psychiatric disorder according to DSM-IV or 5 and ICD-10/11) via self-report, structured clinical interviews, or diagnosis performed by a professional.
- studies evaluated proportions of unintended, mistimed, unwanted or unplanned pregnancies resulting in ongoing pregnancies or induced abortions.

When articles reported unclear in- and exclusion criteria, the authors were contacted to provide this information. In addition, we contacted authors of studies from 01 to

01-2000 and more recent and invited them to share data in case this was not available for the meta-analysis in published papers.

Data extraction

Two independent reviewers (NS and NR) screened the identified articles separately based on title and abstract using Rayyan QCRI software[26]. Subsequently, full text screening was performed independently by NS and NR to see whether the articles fulfilled all inclusion and exclusion criteria. If no agreement was reached, a third reviewer (BB) resolved conflicts. Data synthesis was performed by use of a custom-made form that entailed all information necessary to compare studies. Variables analyzed in this review were authors and year of publication, presence and type of psychiatric disorder, presence and type of comparison group (if available), study design, sample size, age of participants, timing and tool used to measure UPs and prevalence of UPs in the study population. NS conducted the full data extraction and NR verified this.

Assessment of risk of bias

The Grading of Recommendations Assessment, Development and Evaluation (GRADE)[27] method was used to assess quality of the outcome UP. The National Institute of Health (NIH) tools for quality assessment[28] were used to assess the risk of bias in individual studies according to study type. Studies were qualified as 'good', 'fair' or 'poor' considering the risk of bias in that study for our specific outcome 'UPs'. Hence, studies were assessed solely on the ability to report data on the outcome of interest in this review. Inconsistency was evaluated according to the following levels of heterogeneity by use of I2 tests: 25% was considered low, 50% moderate and 75% substantial heterogeneity[29]. A cut-off p-value of <0.05 was used to determine statistical significance of the test. Indirectness was based on the ability of the data to relate to UP rates and imprecision was based on the confidence intervals of the presented results. Publication bias was assessed by evaluating a funnel plot for possible asymmetry. Also, we considered the absence of (un) published articles (with negative findings) in this field. The quality assessments were performed by two individual reviewers (NS and NR), and a third reviewer was involved to resolve conflicts (BB).

Procedure for data synthesis

Odds ratios (ORs), relative risks (RRs) and risk differences (RDs) were reported if present. In case of observational studies without comparative designs, percentages

and means were reported. A meta-analysis of prevalence of UPs amongst women with psychiatric vulnerability was conducted by use of random effects models with the software programmes OpenMetaAnalyst[30] and Rstudio[31]. An I2 test was performed to investigate heterogeneity of the studies in addition to sensitivity analyses to control for robustness of the findings[29]. A p-value of <0.05 was considered statistically significant. Separate meta-analyses (forest plots) of specific psychiatric disorder groups were performed in case of ≥ 4 studies per disorder.

Results

Study selection

The inclusion process is displayed in Figure 2.1. After electronic searches were performed 5429 articles were extracted and consequently transferred to Rayyan QCRI software[26]. After duplicate removal, screening of title and abstract of 3334 articles was conducted. This resulted in full text reading of 58 articles to assess whether inclusion and/or exclusion criteria were met. Based on the eligibility criteria, eleven articles could be included in the qualitative synthesis. Of the eleven articles, eight articles could be included in the meta-analysis on the prevalence of UPs amongst women with psychiatric vulnerability (Figure 2.3) and four studies in the meta-analysis of OR on UPs between women with and without psychiatric vulnerability (Figure 2.4).

Study characteristics

The characteristics and results of individual studies are presented in Table 2.1. An overall sample of 18,681 women with (n = 2650) and without (n = 16,031) psychiatric vulnerability were included. Seven categories of psychiatric disorders are represented in this review: eating disorders[32,33], mood disorders (depression or bipolar disorder)[34-38], anxiety disorders[36-38], trauma-related disorders[36,37], psychosis and related disorders[35,39], substance use disorders[37,40], and conduct disorders[41]. Two studies reported on abortion as an outcome of UPs[39,41] and the other nine studies on (live) births. All studies were conducted in high income countries. Some of the included studies inquired for pregnancy intention during pregnancy, however these studies varied in timing of assessment[32,36,38,42]. Other studies did not report in which trimester women were asked about pregnancy intention[33,35,37,40]. One prospective cohort study assessed pregnancy intention prior to conception and evaluated the number of positive pregnancy tests over the course of one year[34]. In case a woman (without pregnancy aspirations at baseline) became pregnant within twelve months, the pregnancy was defined unintended. In addition, some studies made use of (validated)

tools to assess pregnancy intention, while others only reported the questions that were asked to inquire for pregnancy intention.

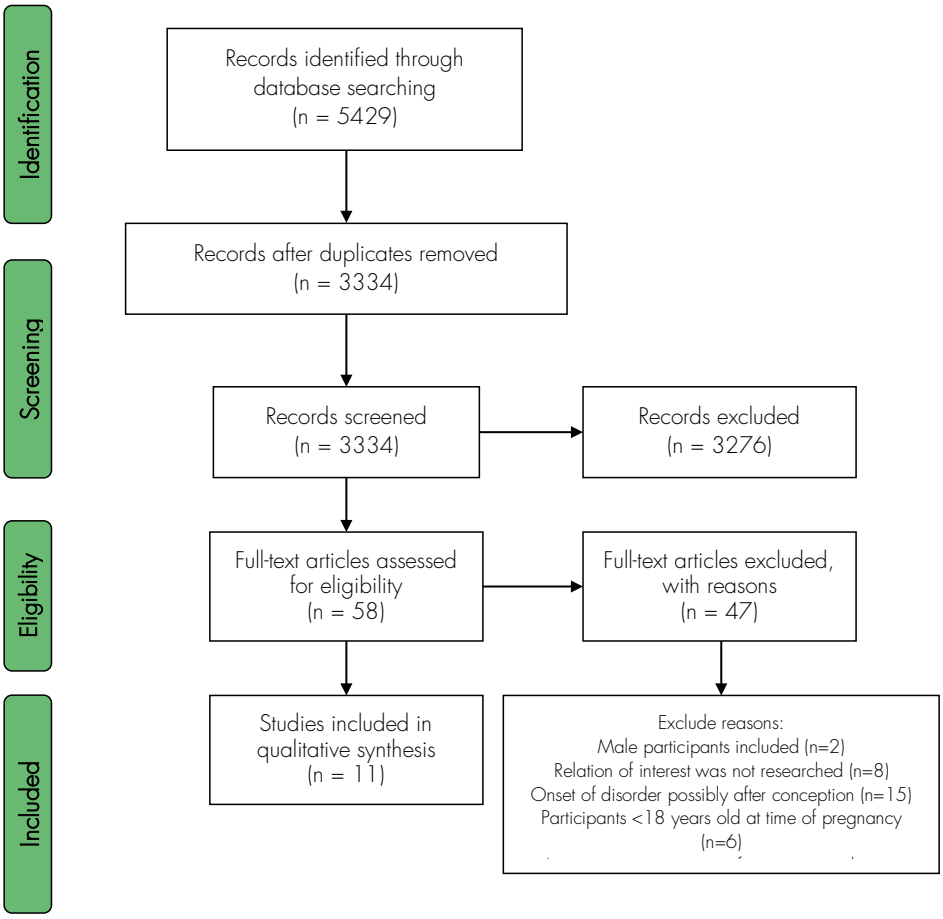


Figure 2.1 - Flowchart of Inclusion process.

The interpretation of participants' responses varied: some studies discriminated between unwanted pregnancies and UPs, other studies solely asked for pregnancy planning or pregnancy intendedness. Most studies investigated UPs in women from all ages (within the reproductive phase of life), although one study included only young women (18–20 years) in particular[34].

Results per subgroup of psychiatric disorder

The results of all individual studies are presented in Table 2.1.

UPs in women with a psychiatric disorder versus no psychiatric disorder

Three studies compared women with a psychiatric disorder (not specified) to a control group[33,37,38]. Tenkku et al. found no difference in OR of UPs between women with and without any psychiatric disorder[37], while both Micali et al. and Takahashi et al. reported higher ORs in women with a psychiatric condition compared to controls[33,38].

Mood disorders

We found five studies that included women with mood disorders[34-38]. Hall et al. found similar rates of UPs in young women with and without depressive symptoms in a prospective setting even as Tenkku et al. in cross-sectional analyses[34,37]. In contrast, Takahashi et al. found a higher OR of UPs in women with mood disorders compared to women without mood disorders[38]. Two studies without control groups reported prevalences of UPs (85% in Green et al. and 46–48.4% in Roca et al.)[35,36].

Anxiety disorders

Women with various anxiety disorders were included in three studies[36-38]. Tenkku et al. showed no difference between women with and without anxiety disorder according to DSM-IV (of which most women had a trauma-related disorder) in UPs[37]. However, Takahashi et al. presented an increased OR of UPs in women with anxiety disorders compared to women without anxiety disorders[38]. In the study sample of Roca et al., 40 women with panic disorder, 16 with generalized anxiety disorder, 10 with obsessive-compulsive disorder, three with post-traumatic stress disorder and two with anxiety disorder not otherwise specified were included, of which 33 had UPs (46% of women with any type of anxiety disorder)[36].

Psychosis and related disorders

Women with psychosis and related disorders were investigated in two papers[35,39]. Green et al. described 85% UPs in 39 women with a risk for postpartum psychotic episode (history of psychotic episode, history of postpartum depression or bipolar disorder) who were in care at a perinatal mental health service during their pregnancy[35]. Gupta et al. compared the incidence of abortions between women with and without schizophrenia in the first year after a previous pregnancy (these pregnancies are referred to as 'rapid repeat pregnancies')[39] and found similar rates of induced abortions in both groups.

Table 2.1 - Characteristics of the included studies.

First author, year of publication	Country	Included participants (age range or mean)	Study design	Measurement of psychiatric disorder	Unintended pregnancy assessment	Results
Easter et al., 2011 [32]	UK	171 women with anorexia nervosa (AN), 199 women with bulimia nervosa (BN), 82 women with both AN and BN in addition to 10636 women without psychiatric disorders. Mean age varied per group (minimum 28.2 years, SD 4.8 and maximum 29.2 years, SD 4.6)	Prospective cohort study, cross-sectional analysis of predictor and outcome of interest	At 12 weeks of gestation, women were asked if they had any history of recent or past psychiatric problems including AN or BN.	At 18 weeks' gestation, women were asked if their current pregnancy was intentional	UPs in AN group versus general group without psychiatric disorders: OR=2.0 (95% CI 1.4-2.5, p<0.001)
Green et al., 2008[35]	UK	39 pregnant women or up to 6 weeks postpartum, with a history of psychotic illness or who were at risk for postpartum psychosis, aged 19-40 years (mean 29.8)	Prospective cohort study with cross-sectional analysis of data on outcome of interest, audit forms were assessed.	Screening for psychiatric disorders by a flowchart at the midwifery pregnancy intake[58]. After referral to a specialist clinic, the presence of a psychiatric condition was reported according to the International Classification of Diseases, ICD-10 by a clinician	Assessment of pregnancy planning was not reported. Intention was assessed during pregnancy up to 6 weeks postpartum	85% UPs in total study population (n=39)
Gupta et al., 2019[39]	Canada	1565 women, aged 18-49, with schizophrenia or schizoaffective disorder or psychotic disorder not otherwise specified were compared to 36.065 controls	Retrospective cohort study	Validated algorithm requiring one hospitalization or at least two outpatient visits with a diagnosis (based on DSM-IV criteria and ICD-10 codes) of schizophrenia, schizoaffective disorder or psychotic disorder not otherwise specified in the two-year period prior to the index birth[59]	Induced abortions were assessed in patient files, captured by in the ICES datasets[60]	Relative risk of abortion in schizophrenia group versus no schizophrenia group: RR 1.07, 95% CI 0.81-1.42)

Table 2.1 – (Continued)

First author, year of publication	Country	Included participants (age range or mean)	Study design	Measurement of psychiatric disorder	Unintended pregnancy assessment	Results
Hall et al., 2014[34]	US	940 women, aged 18-20 year with a strong wish to avoid pregnancy, filled in questionnaires for one year weekly to assess subsequent pregnancies for one year.	Prospective cohort study	Moderate/severe depressive symptoms were assessed at baseline, by use of the CESD-5 scale with a cut-off of ≥4[61]	Any self-reported pregnancy, after initial wish to avoid pregnancy was defined as UP, assessment was performed weekly	UPs in depressive symptoms group versus control group: OR 12 months =1.2 (CI 0.7-1.9)
Heil et al., 2011[42]	US	946 pregnant opioid using women aged 18-41	Randomized controlled trial, cross-sectional analysis of data on pregnancy intention	Participants had opioid-abusing disorder according to 1) the Structured Clinical Interview for DSM-IV (First, 1996) or 2) a history of opioid dependence and be at risk for relapse based on their participation in a drug use programs and opioid-positive urine sample before inclusion	Pregnancy intention was assessed by a single question at 6-30 weeks of pregnancy, based on The Pregnancy Risk Assessment Monitoring System (PRAMS)[62]	A total of 817 women out of 946 (86%) report UPs; namely the pregnancy was unwanted (n=252, 27%), mistimed (n=323, 34%) or ambivalent (n=242, 26%).
Micali et al., 2014[33]	Netherlands	170 pregnant women with lifetime AN, 265 with lifetime BN and 130 with lifetime AN+BN were included, in addition to 1396 pregnant women with other psychiatric disorders and 4367 pregnant women without any psychiatric disorder. Mean age was 29.8-30.2 years, corresponding SD 5.4-5.3)	Prospective cohort study, cross-sectional analysis of data on pregnancy intention	Diagnosis of any psychiatric disorder was assessed by self-report through a questionnaire at 20 weeks' gestational age	Upon enrolment (during pregnancy) participants were asked about pregnancy intention by a single question	UPs in AN versus control group: OR 1.8 (CI 1.2-2.6, P≤0.01) UPs in BN versus control group: 1.2 (0.9-1.7, P-value not reported). UPs in AN+BN versus control group: OR 1.5 (CI 1.0-2.4 P≤0.01) UPs in other psychiatric disorders versus control group: OR 1.4 (CI 1.2-1.7, P≤0.001)

Table 2.1 – (Continued)

First author, year of publication	Country	Included participants (age range or mean)	Study design	Measurement of psychiatric disorder	Unintended pregnancy assessment	Results
Pedersen et al., 2011[41]	Norway	769 girls with mean age 15 years with and without ≥7 conduct disorder symptoms were followed until 20-28 years to assess abortion rate	Prospective cohort study with follow-up period from 1992-2005	Number of conduct disorder symptoms was measured by DSM-II-R criteria. A cut off of ≥7 symptoms was used to define 'severe' conduct disorder symptoms	Participants were asked about history and number of abortions	Of the women with ≥7 CD symptoms (n=42, psychiatric disorder group), 28.6% had an abortion at age 20-28. Of the women with low CD symptoms (<7) (n=445, control group), 6.5% had an abortion at age 20-28.
Roca et al., 2013[36]	Spain	132 women aged 18-46 with selective serotonin reuptake inhibitor (SSRI) use were included (61 with anxiety disorders and 71 with mood disorders)	Prospective cohort study, cross-sectional analysis of data on pregnancy intention	Depression and anxiety disorders were measured with the Structural Clinical Interview for DSM-IV[63]	Pregnancy planning was assessed before 20 weeks of pregnancy by a single question	48.4% of women with depression had UPs, 46% of women with anxiety disorders had UPs.
Tabi et al., 2020[40]	US	25 opioid addicted pregnant women, aged 20-36, were included	Retrospective cohort study	DSM-V diagnosis at intake in pregnancy addiction program	Assessment not mentioned	100% of women had UPs, 100% had wanted pregnancies

Table 2.1 – (Continued)

First author, year of publication	Country	Included participants (age range or mean)	Study design	Measurement of psychiatric disorder	Unintended pregnancy assessment	Results
Takahashi et al., 2012[38]	Japan	Pregnant women, aged 17-44 years, mean age at inclusion 30.5 years and two mothers were <18 years old	Cross-sectional analysis of pregnancy intention in prospective cohort data	Past and current history of psychiatric disorders were evaluated at study inclusion and confirmed by trained physicians by use of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First, 1996)	National Survey of Family Growth[64] was used to collect information on pregnancy intention, assessed between 14 and 26 weeks of gestation	UPs in mood disorders group versus no mood disorders group: OR 2.05 (CI 1.26-3.33). UPs in anxiety disorders group versus no anxiety disorders group: OR 5.02 (2.19-11.50). UPs in any psychiatric condition group versus no psychiatric condition group: OR 2.10 (1.26-3.26)
Tenkku et al., 2009[37]	US	484 pregnant women aged 20-39 years were included and assessed for psychiatric disorders. A total of 56 women with anxiety disorders, 67 women with mood disorders and 54 women with substance use disorders were included (some participants reported more than one disorder) and 344 women without psychiatric disorders	Case-control study	Anxiety disorder, mood disorder, substance use disorder and any (other) psychiatric disorders were assessed by use of the Diagnostic Interview Schedule, Version IV[65]	UP was assessed during pregnancy by a multiple choice question, from the 1999 version of the PRAMS[62]	UPs anxiety disorders group versus no anxiety disorders group: OR=0.60 (CI 0.34-1.08). UPs mood disorders group versus no mood disorders group: OR= 0.65 (CI 0.38-1.12). UPs substance use versus no substance use group: OR= 1.12 (CI 0.59-2.14). UPs any psychiatric condition versus control group: OR 0.83 (CI 0.54-1.28)

Substance use disorders

Pregnancy intention was assessed in 1455 women who used substances. UPs were often reported in this group of women (74–100%)[37,40,42]. Multi-drug use was reported in one study (Tabi et al.) as aside from opioid use, participants reported the (ab)use of cannabis, cocaine, benzodiazepines, methamphetamine, and alcohol[40]. Tenkku et al. assessed nicotine dependence, alcohol and drug abuse in 484 women[37], of which 74% had UPs. Heil et al. found 86% UPs in 946 pregnant opioid addicted women[42].

Conduct disorders

One study showed higher rates of (lifetime) abortions in women with a history of high CD symptoms at age 15, (≥7 problems based on DSM-III-R) compared to women with low CD symptoms at age 15. After adjusting for multiple social and psychological confounders, the associations between CD symptoms and abortions remained significant[41].

Eating disorders

Assessment of pregnancy intention was performed amongst 927 women with eating disorders in two European studies[32,33]. In women with anorexia nervosa (AN), OR for UPs were higher than in women without anorexia nervosa, however in women with and without bulimia nervosa (BN), OR for UPs did not differ.

Risk of bias of included studies

Quality of the included studies is displayed in Table 2.2. The outcome UPs graded with the NIH tool[28] resulted in a fair quality for nine out of eleven studies and poor quality in two out of eleven studies. Degree of author agreement was 84% between two reviewers (NS and NR), consensus was reached with a third reviewer (BB). Additional file 2 displays the grading per item in the NIH tool. Risk of bias was high due to cross-sectional analyses of cohort data. Solely one study assessed pregnancy intention in a prospective manner[34], one other study assessed abortion in a prospective manner[41]. In most studies, time from exposure (psychiatric vulnerability) to outcome (UPs) was not measured and/or reported. In addition, UPs were not measured using validated tools. We found that 8 studies primarily focused on UPs or abortions, while three studies included pregnancy intention as secondary outcome or demographic feature[35,39,40]. Most studies considered relevant confounders, although small sample sizes limited ability to perform multiple regression analyses in some studies[36,40]. Most studies had a sample size of less than 600 women, while two studies had a larger sample size: Micali et al. included 1961 women and Heil et al. included 946 women[33,42]. A funnel plot (Figure 2.2) demonstrates the variety in sample sizes and effect sizes per study.

Table 2.2 - Quality assessment of included studies.

Outcome	Risk of bias assessment NIH tool	Inconsistency	Indirectness	Imprecision	Publication bias	Overall assessment
Unintended pregnancy	Studies had poor to fair quality assessment	I2 tests showed significant heterogeneity between studies in the random effects model	Although the outcome abortion is used as a proxy for UPs in two of the included studies, the outcome of interest (UPs) is investigated directly in all the other studies	As displayed in the random effects model (Figure 2.3), the absolute prevalence of UPs amongst women with psychiatric vulnerability is higher than national averages even at the lower border of the 95% CI	Most studies were sponsored by national health programs, solely one study was sponsored by industry[38], namely Pfizer Health Research fund	⊗⊗○○ Observational studies start at low certainty, with all 5 domains this does not change (downgrade for inconsistency, upgrade for large effect)

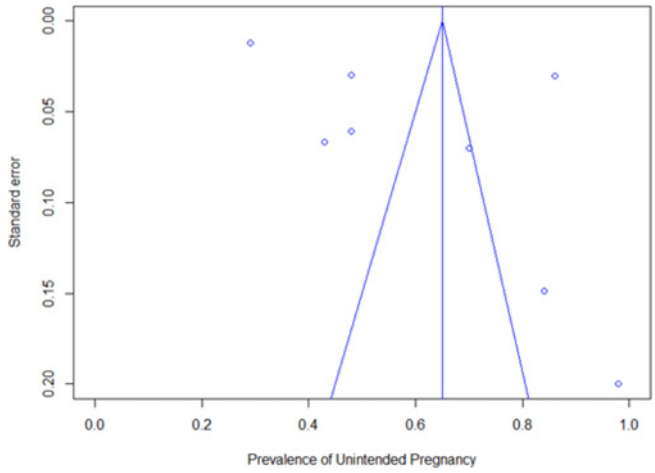


Figure 2.2 - Funnel plot for studies reporting prevalences of unintended pregnancies in women with psychiatric vulnerability.

Data synthesis

A meta-analysis was performed with a random effects model of the eight studies that provided prevalences of UPs amongst 3881 pregnant women (in case studies presented unwanted and unplanned pregnancies instead of UPs, we calculated number of UPs for this meta-analysis) (Figure 2.3). We performed a logit transformation of the results, to consider the maximum prevalence of UPs in studies of 100%. Overall, the rate of UPs was 65% (CI 0.43–0.82). Sensitivity analyses were performed and showed that the effect size remained within 95% CI if any of the studies was left out. Moderate heterogeneity was found within the studies as the I2 of 67% displays (p = 0.03) (see Figure 2..3). In addition, separate analyses were performed on the four studies that reported OR of UPs comparing a psychiatric vulnerable group to a control group (Fig. 4). One study on women with eating disorders[32] and three studies on women with a variety of psychiatric vulnerabilities (mood disorders, anxiety disorders, eating disorders, substance use disorders and/or psychosis)[33,37,38]. The overall odds of UPs were higher in women with psychiatric vulnerability compared to women without psychiatric vulnerability (OR 1.34, CI 1.08–1.67), n = 18,681.

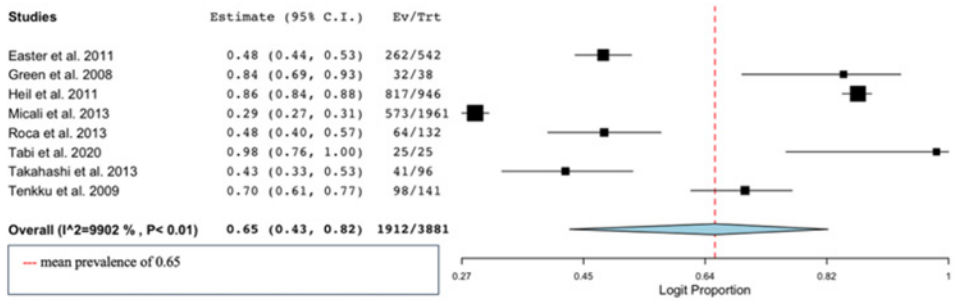


Figure 2.3 - Meta-analyses of prevalence of unintended pregnancies in women with psychiatric vulnerability.

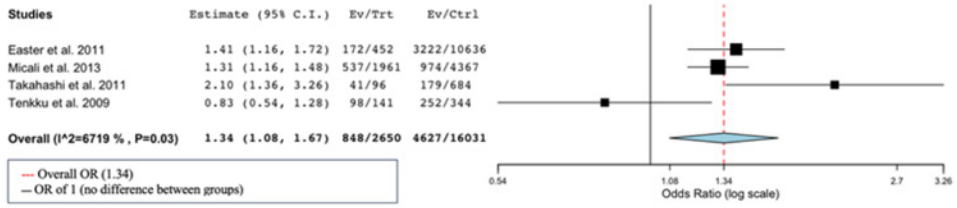


Figure 2.4 - Meta-analysis of OR of unintended pregnancy between women with and without psychiatric vulnerability.

Conclusions

Principal findings

This systematic review shows that studies on UPs in women with psychiatric vulnerability are sparse, and for many relevant psychiatric disorders (such as personality disorders, autism spectrum disorder and trauma related disorders) the risk for UPs remains unknown. However, the studies that have been conducted suggest that psychiatric vulnerability is a risk factor for UPs: women with a psychiatric vulnerability have an overall higher risk of UPs compared to women without a psychiatric vulnerability (OR 1.34, CI 1.08–1.67) and an overall weighed prevalence of UPs of 65% (CI 0.43–0.82). As most studies have explored UPs leading to (live) births and did not include or explore UPs leading to abortions, it is likely that this overall prevalence of UPs is even underestimated.

Comparison with existing literature

Several mechanisms have been proposed to explain the relation between psychiatric vulnerability and UPs. Planning capacities, perception of risks related to unprotected intercourse and subsequent ability to prevent UPs by use of contraception, even as compliance with contraception methods could be impaired by decreased cognitive or emotional functioning during active (severe) mental disorders like mood disorders, schizophrenia or related psychotic conditions[23,34,51,52]. Manic symptoms in women with bipolar disorder could lead to impulsivity and hypersexuality, resulting in risky sexual behavior[53]. In eating disorders there are a few other mechanisms that should also be considered: oligomenorrhea is common and can be misinterpreted as a lower risk of pregnancy or even beliefs about infertility, which could subsequently lead to unintended pregnancies in case of unexpected ovulation. Also, oral contraceptives will not provide prevention of UPs in case of (frequent) purging[22,33]. Moreover, previous data suggest that in women who requested a termination of pregnancy, traumatic experiences such as sexual violence were prevalent, even as depression and anxiety symptoms[54]. Unfortunately, the extent to which women in the studies included in this review were facing active and/or severe psychiatric symptoms at time of conception was not always clearly described. Some authors, like Micali et al., separately analyzed women with symptoms in the year prior to their pregnancy and found they were more prone to UPs than women with a history of psychiatric disorders[33]. Based on available data in our review, we were not able to conclude whether this finding applies to all psychiatric diagnostic categories.

Gaps in literature

Although we included studies covering a variety of psychiatric disorders, we conclude that studies on common psychiatric disorders like personality disorders, attention deficit hyperactivity disorder and autism spectrum disorder are lacking. Further studies are needed to investigate UPs in women with these disorders. Although several studies included women with mood and anxiety disorders, absolute numbers of participants were small. As mood and anxiety disorders are known to be the most prevalent mental disorders, that are almost twice as common in women than in men, it is especially important to understand the role of these disorders in relation to UPs, hence further studies in this field should also be encouraged[55-57]. As none of the studies included in this review were conducted in low-income countries our findings may not apply for low-income countries. Several studies have described that UP rates are similarly high or even higher in low-income countries compared to high-income countries[1,58,59], and that the adverse effects of UPs in low-income countries are severe[60].

Strengths and limitations

Our review has several strengths. First, the extensive search in electronic databases that included all psychiatric disorders, allowed us to gain insight in various specific psychiatric disorders in relation to UPs in addition to an overview of the overall presence of psychiatric vulnerability in relation to UPs. Moreover, we accepted both ongoing pregnancies and induced abortions as outcomes of UPs as previous studies underscored the importance of identifying abortions in women with psychiatric conditions as elective abortions can be a result of UPs[20,61]. However, our review also has several limitations. We only included studies that were written in English language which may reduce generalizability, however, peer-reviewed studies in other languages were relatively rare. Also, the studies included in the review had fair to poor quality ratings for the primary outcome, used varying psychiatric disorders as control group within studies, used various methods to assess the outcome pregnancy intention (by live births or abortions), differed in timing of measurement of pregnancy intention (which is key in preventing recall bias[62]), and showed divergent results. Pregnancy intention was only measured with validated tools in a few studies[37,38,42], while most studies used a single question which may lack nuance[32-34,36], or the way of measuring was not reported at all[35,40]. Abortion was in one study self-reported and in another based on a large obstetric dataset which included surgical abortion registrations[39,41]. In addition, important confounders such as age, educational level and environmental influences were considered in varying degrees[18]. In particular partner violence and poor partner relationship were posed as risk factor for UPs previously[63] and in women with psychiatric vulnerability, reproductive coercion appears to be common [64,65]. Lastly, our meta-analysis was limited to only four studies with comparison groups and the overall low quality of this body of evidence limited our capacity to draw definitive conclusions.

Research recommendations

Ideally, assessment of pregnancy intention is performed 1) by means of a validated tool, and 2) as early in pregnancy as possible. At the same time, prospective settings are time-consuming and might overestimate UP rates since pregnancy intention can change over time[62]. However, prospective designs ensure that psychiatric vulnerability was present before the onset of the UPs, which could give insight in the causality between psychiatric vulnerability and UPS and limit recall bias. Regarding psychiatric vulnerability, we conclude that the onset, duration, and severity of psychiatric vulnerability are important to include, to understand the relation between psychiatric vulnerability and UPs. Last, we recommend that relevant confounders like race,

household income, marital status, age, partner relationship, partner violence and reproductive coercion are also taken into account when investigating UPs.

Implications

In conclusion, we have found a high prevalence of UPs in women with psychiatric vulnerability, and an increased risk of UPs in psychiatric vulnerable pregnant women compared to pregnant women without psychiatric vulnerability. Given the known adverse outcomes of UPs for maternal and offspring health, we underline the importance of discussing family planning with all women at reproductive age with psychiatric vulnerability routinely to avoid any harm due to UPs.

References

1. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.
2. Hall, J.A., et al., Pregnancy Intention and Pregnancy Outcome: Systematic Review and Meta-Analysis. Matern Child Health J, 2017. 21(3): p. 670-704.
3. Abajobir, A.A., et al., A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. J Affect Disord, 2016. 192: p. 56-63.
4. Bunevicius, R., et al., Psychosocial risk factors for depression during pregnancy. Acta Obstet Gynecol Scand, 2009. 88(5): p. 599-605.
5. Fellenzer, J.L. and D.A. Cibula, Intendedness of pregnancy and other predictive factors for symptoms of prenatal depression in a population-based study. Matern Child Health J, 2014. 18(10): p. 2426-2436.
6. Martini, J., et al., Risk factors and course patterns of anxiety and depressive disorders during pregnancy and after delivery: a prospective-longitudinal study. J Affect Disord, 2015. 175: p. 385-395.
7. Biaggi, A., et al., Identifying the women at risk of antenatal anxiety and depression: A systematic review. J Affect Disord, 2016. 191: p. 62-77.
8. Shah, P.S., et al., Intention to become pregnant and low birth weight and preterm birth: a systematic review. Matern Child Health J, 2011. 15(2): p. 205-216.
9. Cheng, D., et al., Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors. Contraception, 2009. 79(3): p. 194-198.
10. Lindberg, L., et al., Pregnancy intentions and maternal and child health: an analysis of longitudinal data in Oklahoma. Matern Child Health J, 2015. 19(5): p. 1087-1096.
11. Nelson, J.A. and M. O'Brien, Does an Unplanned Pregnancy have Long-Term Implications for Mother-Child Relationships? J Fam Issues, 2012. 33(4): p. 506-526.
12. Hayatbakhsh, M.R., et al., A longitudinal study of child mental health and problem behaviours at 14 years of age following unplanned pregnancy. Psychiatry Res, 2011. 185(1-2): p. 200-4.
13. Say, L., et al., Global causes of maternal death: a WHO systematic analysis. Lancet Glob Health, 2014. 2(6): p. e323-333.
14. Pulley, L., et al., The extent of pregnancy mistiming and its association with maternal characteristics and behaviors and pregnancy outcomes. Perspect Sex Reprod Health, 2002. 34(4): p. 206-211.
15. Beck, L.F., et al., Prevalence of selected maternal behaviors and experiences, Pregnancy Risk Assessment Monitoring System (PRAMS), 1999. MMWR Surveill Summ, 2002. 51(2): p. 1-27.
16. Besculides, M. and F. Laraque, Unintended pregnancy among the urban poor. J Urban Health, 2004. 81(3): p. 340-348.
17. de La Rochebrochard, E. and H. Joshi, Children born after unplanned pregnancies and cognitive development at 3 years: social differentials in the United Kingdom Millennium Cohort. Am J Epidemiol, 2013. 178(6): p. 910-920.
18. Abma, J.C., et al., Teenagers in the United States: sexual activity, contraceptive use, and childbearing, 2002. Vital Health Stat 23, 2004(24): p. 1-48.
19. Maravilla, J.C., et al., Factors influencing repeated teenage pregnancy: a review and meta-analysis. Am J Obstet Gynecol, 2017. 217(5): p. 527-545.e31.
20. Matevosyan, N.R., Reproductive Health in Women with Serious Mental Illnesses: A Review. 2009, Sexuality and Disability: Sargent College of Health and Rehabilitation Sciences, Boston University, Boston, MA, USA. p. 109-118.
21. Taylor, C.L., et al., The characteristics and health needs of pregnant women with schizophrenia compared with bipolar disorder and affective psychoses. BMC Psychiatry, 2015. 15: p. 88.
22. Bulik, C.M., et al., Unplanned pregnancy in women with anorexia nervosa. Obstet Gynecol, 2010. 116(5): p. 1136-1140.
23. Seeman, M.V. and R. Ross, Prescribing contraceptives for women with schizophrenia. J Psychiatr Pract, 2011. 17(4): p. 258-269.

24. Callegari, L.S., et al., Contraceptive adherence among women Veterans with mental illness and substance use disorder. Contraception, 2015. 91(5): p. 386-392.
25. Moher, D., et al., Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ, 2009. 339: p. b2535.
26. Ouzzani, M., et al., Rayyan-a web and mobile app for systematic reviews. Syst Rev, 2016. 5(1): p. 210.
27. Schünemann, H., et al., GRADE handbook for Grading quality of evidence and strength of recommendations 2013: The GRADE Working Group.
28. National Institutes of Health, Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. 2014.
29. Higgins, J.P., et al., Measuring inconsistency in meta-analyses. BMJ, 2003. 327(7414): p. 557-60.
30. Wallace, B.C., et al., Closing the Gap between Methodologists and End-Users: R as a Computational Back-End. 2012, Journal of Statistical Software
31. Team, R. Rstudio: Integrated Development for R. 2020; Available from: http://www.rstudio.com/ .
32. Easter, A., J. Treasure, and N. Micali, Fertility and prenatal attitudes towards pregnancy in women with eating disorders: results from the Avon Longitudinal Study of Parents and Children. BJOG, 2011. 118(12): p. 1491-1498.
33. Micali, N., et al., Fertility treatment, twin births, and unplanned pregnancies in women with eating disorders: findings from a population-based birth cohort. BJOG, 2014. 121(4): p. 408-416.
34. Hall, K.S., et al., The risk of unintended pregnancy among young women with mental health symptoms. Soc Sci Med, 2014. 100: p. 62-71.
35. Green, L., et al., An audit of pregnant women with severe mental illness referred during the first 2 years of a new perinatal mental health service. Arch Womens Ment Health, 2008. 11(2): p. 149-158.
36. Roca, A., et al., Unplanned pregnancy and discontinuation of SSRIs in pregnant women with previously treated affective disorder. J Affect Disord, 2013. 150(3): p. 807-813.
37. Tenkku, L.E., et al., Psychiatric disorders among low-income women and unintended pregnancies. Womens Health Issues, 2009. 19(5): p. 313-324.
38. Takahashi, S., et al., Psychosocial determinants of mistimed and unwanted pregnancy: the Hamamatsu Birth Cohort (HBC) study. Matern Child Health J, 2012. 16(5): p. 947-955.
39. Gupta, R., et al., Rapid repeat pregnancy in women with schizophrenia. Schizophr Res, 2019. 212: p. 86-91.
40. Tabi, S., et al., Opioid Addiction/Pregnancy and Neonatal Abstinence Syndrome (NAS): A Preliminary Open-Label Study of Buprenorphine Maintenance and Drug Use Targeted Psychotherapy (DUST) on Cessation of Addictive Drug Use. Front Psychiatry, 2020. 11: p. 563409.
41. Pedersen, W. and A. Mastekaasa, Conduct disorder symptoms and subsequent pregnancy, child-birth and abortion: a population-based longitudinal study of adolescents. J Adolesc, 2011. 34(5): p. 1025-1033.
42. Heil, S.H., et al., Unintended pregnancy in opioid-abusing women. J Subst Abuse Treat, 2011. 40(2): p. 199-202.
43. Elliott, S., et al., Detection and initial assessment of mental disorder. 2007.
44. Kurdyak, P., et al., Validation of a Population-Based Algorithm to Detect Chronic Psychotic Illness. Can J Psychiatry, 2015. 60(8): p. 362-368.
45. Information, C.I.f.H., Important notes regarding coverage. 2014: Ottowa, ON.
46. Radloff, L.S., The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. Applied Psychological Measurement, 1977.
47. Adams, M.M., et al., The Pregnancy Risk Assessment Monitoring System: design, questionnaire, data collection and response rates. PRAMS Working Group. Paediatr Perinat Epidemiol, 1991. 5(3): p. 333-346.
48. First, M.B., et al., Structured clinical interview for DSM-IV-TR axis I disorders, research version, patient edition. . 2002.
49. Abma, J.C., et al., Fertility, family planning, and women's health: new data from the 1995 National Survey of Family Growth. Vital Health Stat 23, 1997(19): p. 1-114.
50. Robins, L.N., et al., Diagnostic interview schedule for the DSM-IV (DIS-IV). 2003: https://eprovide.mapi-trust.org/instruments/diagnostic-interview-schedule-iv.

51. Yuen, K.S. and T.M. Lee, Could mood state affect risk-taking decisions? J Affect Disord, 2003. 75(1): p. 11-18.
52. Steinberg, J.R. and L.R. Rubin, Psychological Aspects of Contraception, Unintended Pregnancy, and Abortion. Policy Insights Behav Brain Sci, 2014. 1(1): p. 239-247.
53. Obo, C.S., et al., Risky sexual behavior and associated factors among patients with bipolar disorders in Ethiopia. BMC Psychiatry, 2019. 19(1): p. 313.
54. Tinglöf, S., et al., Exposure to violence among women with unwanted pregnancies and the association with post-traumatic stress disorder, symptoms of anxiety and depression. Sex Reprod Healthc, 2015. 6(2): p. 50-53.
55. Gelaye, B., et al., Epidemiology of maternal depression, risk factors, and child outcomes in low-income and middle-income countries. Lancet Psychiatry, 2016. 3(10): p. 973-982.
56. Dennis, C.L., K. Falah-Hassani, and R. Shiri, Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. Br J Psychiatry, 2017. 210(5): p. 315-323.
57. Grigoriadis, S., et al., Maternal Anxiety During Pregnancy and the Association With Adverse Perinatal Outcomes: Systematic Review and Meta-Analysis. J Clin Psychiatry, 2018. 79(5): p. 17r12011.
58. Darroch, J.E., et al., Adding It Up: Costs and Benefits of Meeting Contraceptive Needs of Adolescents. . 2016, Guttmacher Institute: New York.
59. du Toit, E., et al., Risk factors for unplanned pregnancy in women with mental illness living in a developing country. Arch Womens Ment Health, 2018. 21(3): p. 323-331.
60. Singh, A., et al., The consequences of unintended births for maternal and child health in India. Popul Stud (Camb), 2012. 66(3): p. 223-239.
61. Health, T.N.C.C.f.M., Induced abortion and mental health. A systematic review of the mental health outcomes of induced abortion, including their prevalence and associated factors. . 2011, UK Academy of Medical Royal Colleges: London.
62. Gariepy, A.M., et al., Are pregnancy planning and pregnancy timing associated with maternal psychiatric illness, psychological distress and support during pregnancy? J Affect Disord, 2016. 205: p. 87-94.
63. Miller, E. and J.G. Silverman, Reproductive coercion and partner violence: implications for clinical assessment of unintended pregnancy. Expert Rev Obstet Gynecol, 2010. 5(5): p. 511-515.
64. Karmaliani, R., et al., Prevalence of anxiety, depression and associated factors among pregnant women of Hyderabad, Pakistan. Int J Soc Psychiatry, 2009. 55(5): p. 414-424.
65. Miller, L.J. and M. Finnerty, Sexuality, pregnancy, and childrearing among women with schizophrenia-spectrum disorders. Psychiatr Serv, 1996. 47(5): p. 502-6.

Additional Materials

Additional file 2.1 Search strategy electronic database

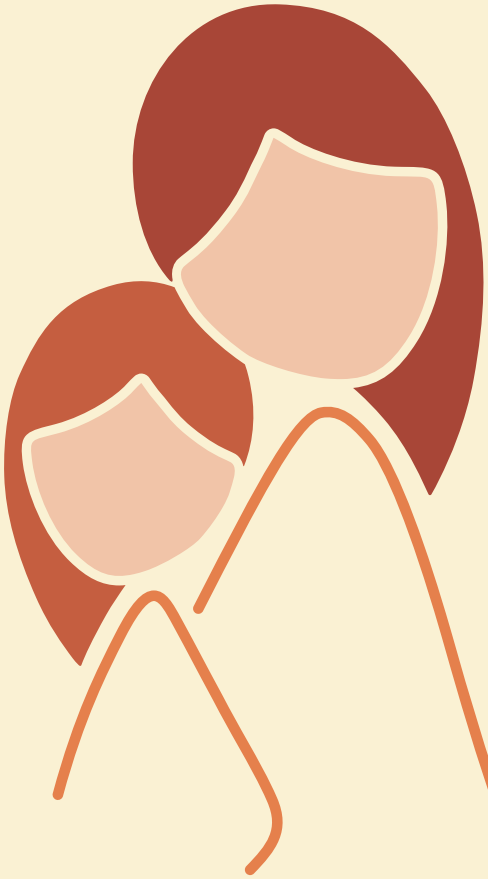
Additional file 2.1 displays the search strategy in electronic database PubMed.

The electronic search as it was performed in PubMed:
(Pregnancy, Unplanned[Mesh] OR ((unwanted[tiab] OR unmindful[tiab] OR subconscious[tiab] OR undeliberate[tiab] OR deliberate[tiab] OR inadvertent[tiab] OR advertent[tiab] OR planned[tiab] OR unplanned[tiab] OR unintended[tiab] OR intended[tiab] OR mistimed[tiab] OR mistiming[tiab]) AND (pregnancy[MeSH] OR pregnan*[tiab])))) AND (Mental Disorders[MeSH] OR Psychiatric Diagnosis[MeSH] OR Mental Health[MeSH] OR psychiatric[tiab] OR mental health[tiab] OR anxiety[tiab] OR agoraphobi[tiab] OR compulsi*[tiab] OR panic[tiab] OR phobi*[tiab] OR hypochondri*[tiab] OR bipolar[tiab] OR bi-polar[tiab] OR mood[tiab] OR cyclothymic[tiab] OR depress*[tiab] OR dysthymi*[tiab] OR dissociati*[tiab] OR feeding and eating disorder*[tiab] OR feeding disorder*[tiab] OR eating disorder*[tiab] OR food intake disorder*[tiab] OR anorexia[tiab] OR binge-eating[tiab] OR bulimia[tiab] OR personality disorder*[tiab] OR antisocial[tiab] OR anti-social[tiab] OR borderline[tiab] OR dependent personalit*[tiab] OR avoidant personalit*[tiab] OR histrionic[tiab] OR paranoid[tiab] OR schizoid[tiab] OR schizotypal[tiab] OR narcissistic[tiab] OR affective disorder*[tiab] OR psychotic[tiab] OR psychosis[tiab] OR delusional disorder*[tiab] OR schizophren*[tiab] OR schizoaffective[tiab] OR schizo-affective[tiab] OR insomni* OR substance-related disorder*[tiab] OR alcohol-related Disorder*[tiab] OR amphetamine*[tiab] OR cocaine[tiab] OR inhalant abus*[tiab] OR marijuana OR narcotic-related disorder*[tiab] OR neonatal abstinence syndrome[tiab] OR substance abuse[tiab] OR substance withdrawal[tiab] OR tobacco[tiab] OR stress disorder*[tiab] OR trauma related disorder*[tiab] OR stressor related disorder*[tiab] OR adjustment disorder*[tiab] OR posttraumatic stress[tiab] or post-traumatic stress[tiab] OR ptsd[tiab] OR attention deficit and disruptive behavior[tiab] OR somatoform disorder*[tiab] OR body dysmorphi*[tiab] OR conversion disorder*[tiab] OR factitious disorder*[tiab] OR munchausen[tiab] OR munchhausen[tiab]).

Additional file 6.2 'Quality assessment of included studies according to Quality assessment tools by National Institutes of Health (2014)'

Study (author)	1: 1. Was the research question or objective in this paper clearly stated?	2: Was the study population clearly specified and defined?	3: Was the participation rate of eligible persons at least 50%?	4: Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?	5: Was a sample size justification, power description, or variance and effect estimates provided?	6: For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?	7: Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?	8: For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?	9: Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	10: Was the exposure(s) assessed more than once over time?	11: Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	12: Were the outcome assessors blinded to the exposure status of participants?	13: Was loss to follow-up after baseline 20% or less?	14: Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	Overall quality assessment
35	yes	no	yes	no	NA	no	no	yes	no	no	NR	NA	NA	NA	POOR
39	yes	yes	NA	yes	no	yes	yes	no	yes	yes	yes	NR	NA	yes	FAIR
41	yes	yes	yes	yes	no	yes	yes	yes	yes	no	yes	NR	no	yes	FAIR
36	yes	yes	NR	yes	no	no	no	yes	yes	no	yes	NA	NA	no	FAIR
40	no	no	CD	no	no	no	no	no	no	no	NR	NA	NA	no	POOR
37	yes	yes	yes	yes	no	no	no	yes	yes	no	yes	no	NA	yes	FAIR
34	yes	yes	yes	yes	no	yes	no	no	yes	no	no	CD	no	yes	FAIR
42	yes	yes	NR	CD	no	no	no	yes	yes	yes	yes	NA	NA	yes	FAIR
32	yes	yes	yes	yes	no	no	no	no	no	no	no	NR	NA	yes	FAIR
33	yes	yes	yes	yes	no	no	no	no	yes	no	no	NR	NA	yes	FAIR
38	yes	yes	yes	yes	no	no	no	no	yes	no	yes	NR	NA	yes	FAIR

*CD, cannot determine; NA, not applicable; NR, not reported.



CHAPTER 3

Experiences with Family Planning amongst Persons with Mental Health Problems: A Nationwide Patient Survey

Noralie N. Schonewille, Monique J.M. van den Eijnden, Nini H. Jonkman, Anne A.M.W. van Kempen, Maria G. van Pampus, Francisca G. Goedhart, Odile A. van den Heuvel and Birit F.P. Broekman

Published in
International Journal of Environmental Research and Public Health, 2023
DOI 10.3390/ijerph20043070

Abstract

High rates of unintended pregnancies in patients with mental health problems reflect the unmet need for tailored family planning. This study aims to explore aspects of family planning that are especially challenging for patients experiencing health problems by obtaining the perspective of (former) patients and those with close relationships with the (former) patients. In August 2021, members of a Dutch national mental health panel, consisting of (former) patients and close ones, were invited to respond to a 34-question online survey that included questions on four domains: reproductive history, decision making, parenting, and sexuality. This study has revealed the severe and adverse impact of mental health problems across all of the four domains of reproductive health and family planning, which the questions specifically targeted. Based on these results, we recommend discussing family planning with all patients experiencing or at risk for mental health problems and their partners. These discussions should address a desire to have children, (involuntary) childlessness, uncertainties about parenting and sexuality, while remaining considerate of experienced taboos.

Introduction

Family planning is an important aspect for most people at some point in their lives[1]. The working definition of family planning ('the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births', used by the WHO Department of Reproductive Health and Research [2008]), includes prevention of unwanted pregnancies as well as obtaining desired pregnancies. Researchers have become increasingly interested in studying the risk factors for impaired family planning, as unwanted pregnancies have adverse impacts on maternal and child health[2]. One of these risk factors is impaired mental health, as mental health problems can coincide with several aspects of family planning. Unintended pregnancies are often associated with misuse or non-use of contraceptive methods[3,4]. For women with severe mental illnesses such as schizophrenia and bipolar disorders, efficient use of contraceptive methods might, at times, be challenging. This arises from impaired decision-making and advanced planning skills during disease episodes[3-6]. Aside from proper contraceptive use, eating disorders or use of antipsychotic medication disrupted menstruation and could lead to an incorrect belief with respect to fertility[7,8].

Although impaired mental health is an established risk factor for unintended pregnancies[9], the perspective and preferences of persons with mental health problems on their own family planning are currently lacking. Moreover, most studies have a profound focus on preventing unwanted pregnancies and only a minor interest in studying how desired pregnancies can be achieved. As the goal of family planning is to have reproductive intentions met, involuntary childlessness amongst persons with mental health problems should be included in the study of family planning. Several factors related to mental health problems could interfere with achieving desired pregnancies, such as problems with sexual functioning[10], concerns about passing on heritable psychiatric conditions[11], and fears of 'not being a good parent'[12]. Previous literature has shown that persons with mental illnesses (schizophrenia, autism, eating disorders, substance abuse, and/or depression) have lower fecundity when compared to their unaffected siblings[13,14]. These population-based studies clearly suggest that persons with mental health problems might struggle to have their reproductive intentions met.

Despite these additional challenges facing mental health patients in relation to family planning, their perspectives on childlessness have received little scientific attention. A few qualitative interview studies have discussed family planning in small samples of women with severe mental illness[11,15]. These studies demonstrate a lack of findings

from large samples of patients sharing experiences with family planning in relation to various mental health problems, such as depression, anxiety, traumatic experiences, or personality disorders. Additionally, the view of those with close relationships to the patient, i.e., spouses or broader partners, family members, or close friends (from now on named 'close ones') on family planning is generally not included in studies.

In this study, we aimed to elucidate the perspective on family planning from patients with mental health problems and their close ones. We hypothesize that patients and close ones experience various difficulties regarding family planning and subsequently have the desire to discuss family planning with mental health professionals. Understanding the patient's perspective will help to tailor family planning counseling to the needs of patients with mental health problems and their close ones.

Materials and methods

The current study reports the results from a survey that was electronically dispersed in June 2022 among a panel of (former) patients and close ones (the MIND mental health care panel) and was available for four weeks. MIND is a Dutch association for former or current patients with mental health problems and close ones of (former) patients with mental health problems. MIND represents the whole spectrum of mental health (www.wijzijnmind.nl (accessed on 1-12-2022)). Members of the MIND panel are recruited among the public with a request for participation ''Do you have experience with mental health problems yourself or as a close one?''. There are no other selection criteria. The panel consists of 4200 (former) patients and close ones. The members of the panel are invited to complete surveys through an email invitation approximately 10 times a year.

The current survey was developed in close collaboration with the association of patient and relative organizations MIND and a patient–investigator, who is part of the research team (ME). In addition, an expert panel consisting of members of MIND, in addition to a pediatrician, an infant mental health specialist, a gynecologist, a child psychiatrist, an epidemiologist, and two psychiatrists with experience in the field of mental health and family planning, were consulted. The 34 questions, provided in the Dutch language, were a combination of open questions with free-form text fields, multiple choice questions, and 5-point Likert scales. The estimated time to populate the questionnaire was 10–15 min. The first question category regarded patient histories of mental health problems (both diagnosed and self-reported problems), psychoactive medication use, pregnancies including elective abortion and unintended pregnancies, and childlessness. The second question category regarded the perceived relation

between mental health and family planning, the experience with the conversation about family planning in mental health care, and the perception of stigmas and taboos regarding mental health problems, as well as sexuality in both mental health care and the personal environment. Close ones were identified by a first question 'Do you fill in this survey as a patient or as a close one (of a person with mental health problems)?'. For those questionnaires populated by close ones, they received similar questions as (former) patients that specifically asked about the experiences of their close ones. For the current paper, the survey was translated into English in collaboration with a native speaker.

This study included all panel members who populated the survey and provided informed consent. Respondents under the age of 18 years were excluded (as derived from the survey responses). Anonymized data were collected in the software program Spidox (www.spidox.net (accessed on 1-12-2022)) and shared with the research team in a secured Excel file. Subsequently, data were imported into R studio (version 4.2.0) for data cleaning and analysis. We performed descriptive analyses of the respondents' demographics and history of mental health problems. Age was presented as mean and standard deviation (in the case of normal distribution). Other descriptive characteristics were presented as numbers and proportions of the group (all, female, men, other gender, or close ones). Living area was assessed with the question 'What is your living area? Rural/urban'. Education levels were assessed according to the International Standard Classification of Education (ISCED) levels 0–8. Mental health disorder was assessed with the question 'Have you ever received a psychiatric diagnose? Yes/no'. Mental health problems were assessed with the question 'What kind of mental health problems have you encountered in your life? Open question'. Recovery status was assessed with the question 'Do you currently consider yourself recovered? Yes/no/I have learned to live with it/other'. To present histories of mental health problems in the results section, we grouped self-reported mental health problems into larger categories (for example, depression, anxiety, etc.). Grouping was performed by a medical doctor and a researcher in psychology (NS and BW). A Cohen's Kappa was used to measure interrater reliability for grouping between the two researchers[16].

The study group paired questions on similar topics into four domains, reproductive history, reproductive decision making, parenting, and sexuality. Reproductive history was reported separately for respondents identifying as women and men. History of abortion was presented for respondents identifying as women. The results of multiple-choice questions were presented in graphs. Open-text answers that elaborated on multiple choice answers ('if yes, why?') were collected and included in the results'

section to illustrate the findings. Respondents' answers were not cited, nor did we calculate the number of reasons provided by the respondents.

Outcomes were presented for two groups separately: a group of respondents who populated the questionnaire as (former) patients and a group of close ones who represent the views of a close relation experiencing mental health problems. Additionally, we stratified responses for (former) patients and close ones with and without children. Confirmative responses were compared between men versus women or (former) patients with versus without children by Chi^2 tests with a p-value considered significant at <0.05.

Results

The questionnaire was populated by 381 panel members (response rate of 9%). One respondent was excluded due to age <18 years, and two respondents failed to provide informed consent. Data from 378 respondents (354 (ex-)patients and 24 close ones) were included in the analyses (see Table 3.1 for sample characteristics). Close ones were family members (n=18), partners (n=4), or friends (n=2). Respondents were mostly women (81.2%); nearly half of them were urban living (54.5%) and higher educated (50.2%). Fifty-one respondents were men. Most respondents were diagnosed with ≥1 mental health problems (95.5%), and (history of) symptoms of depression (58.7%) were most frequently reported. The inter-rater reliability for the classification of self-reported mental health problems was $\kappa=0.70$ ($p<0.001$), indicating a good level of agreement between the assessors[17,18].

Domain 1: Reproductive history

The reproductive history of women and men is presented in Figure 3.1. Supplementary Table S3.1 provides all raw data supporting Figure 3.1. The proportion of unintended pregnancies in this sample was 21.7%. Unintended pregnancies occurred in almost half of all respondents (45.4%) who were ever pregnant (or the biological father of an unintended pregnancy in the case of men) (data not presented). Amongst the (former) patients, women had significantly more pregnancies (47.8% versus 11.8%, $p<0.001$) and children (46.4% versus 11.8%, $p<0.001$) compared to men (see Figure 3.1). Respondents elaborated on the relationship between unintended pregnancies and mental health problems with examples: alcoholism led to the contraceptive method being unreliable and attention deficit attributed to an unintended pregnancy through obliviousness. The proportion of

elective abortion was 5.4%. A total of 10.6% of those who were ever pregnant have had at least one abortion.

Table 3.1 - Demographics of survey respondents.

	Total n=378	(Former) Patients n=354	Close Ones n=24
Age (mean; (sd))	47.5 (12.9)	47.7 (12.7)	48.4 (16.2)
Minimum age	20	20	23
Maximum age	84	84	73
Gender (n = 374)			
Man	63 (16.7%)	51 (14.4%)	12 (50.0%)
Woman	307 (81.2%)	295 (83.3%)	12 (50.0%)
Other	4 (1.1%)	4 (1.1%)	0
Living area			
Rural	167 (44.2%)	160 (45.2%)	7 (29.2%)
Urban	206 (54.5%)	189 (53.4%)	17 (70.8%)
Missing	5 (1.3%)	5 (1.4%)	0
Education			
ISCED level 6–8 [1]	190 (50.3%)	178 (50.3%)	12 (50.0%)
ISCED level < 6	184 (48.7%)	172 (48.6%)	12 (50.0%)
Missing	4 (1.0%)	4 (1.1%)	0
Paid job			
Yes	142 (37.6%)	135 (38.1%)	7 (29.1%)
No	227 (60.0%)	211 (59.6%)	16 (66.7%)
Missing	9 (2.4%)	8 (2.3%)	1 (4.2)
Mental health disorder			
Yes	361 (95.5%)	338 (95.5%)	23 (95.8%)[2]
No	16 (4.2%)	15 (4.2%)	1 (4.2%)
Missing	1 (0.3%)	1 (0.3%)	0
Recovered			
Yes	32 (8.5%)	29 (8.2%)	3 (12.5%)
No	158 (41.8%)	147 (41.5%)	11 (45.8%)
I learned to live with it	129 (34.1%)	123 (34.7%)	6 (25.0%)
Other	58 (15.3%)	54 (15.3%)	4 (16.7%)
Missing	1 (0.3%)	1 (0.3%)	0
Medication usage when experienced mental health problems			
Yes	340 (89.9%)	321 (90.7%)	19 (79.2%)
No	38 (10.1%)	33 (9.3%)	5 (20.8%)
Missing	0	0	0
Top 5 self-reported mental health problems in history [2,3]			
Depression (any type)	222 (58.7%)	216 (61.0%)	6 (25.0%)
Anxiety including OCD	111 (29.4%)	107 (30.2%)	4 (16.7%)
PTSD, Trauma, and stress-disorder	111 (29.4%)	108 (30.5%)	3 (12.5%)
Personality disorder	56 (14.8%)	56 (15.8%)	0
Autism	46 (12.2%)	43 (12.1%)	3 (12.5%)

ISCED, International Standard Classification of Education; PTSD, posttraumatic stress disorder; OCD, obsessive-compulsive disorder. [1] Finished college or university. [2] More than one possible. Data are presented as numbers (proportions of group 'Total', '(Former) patients' or 'Close ones'). [3] Close ones answered this question for mental health disorders of the (former) patients.

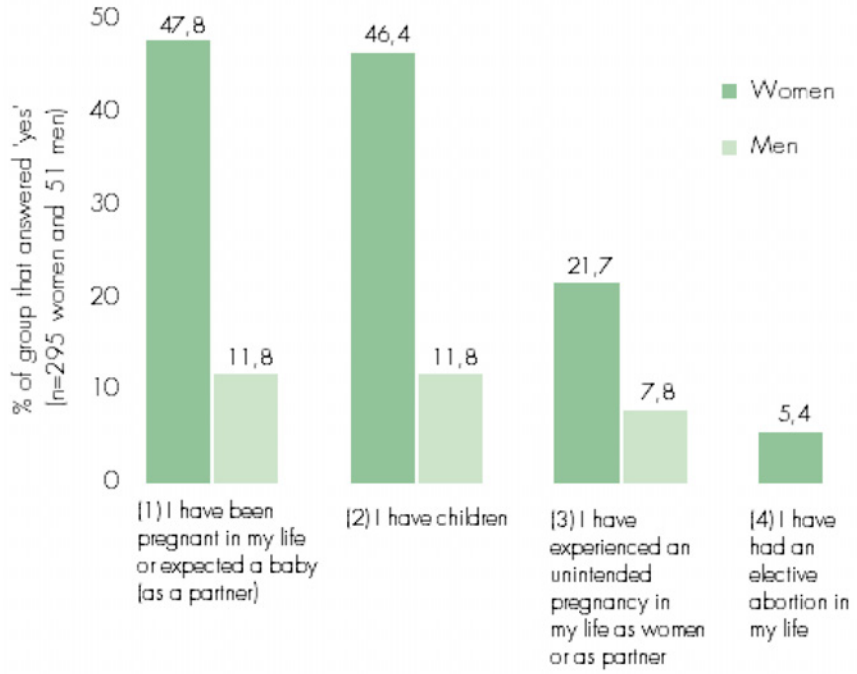


Figure 3.1 - (Former) patients' responses to questions about reproductive history according to gender (questions 1–4).

Domain 2: Reproductive Decision Making

Experiences with the reproductive decision-making of (former) patients and close ones are presented in Figure 3.2. Supplementary Table S3.2 provides all raw data supporting Figure 3.2. Reproductive decision-making was influenced by mental health problems in at least 25.7% of the (former) patients (Figure 3.2b, question 5). Several factors were mentioned where mental health problems influenced (the desire for) having one or more children: the belief that pregnancy is only possible after being recovered from mental health problems, the belief that physical violence in history made pregnancy impossible, and difficulty sustaining a partner relationship led to the belief that pregnancy was impossible.

In addition, the severity of the mental health problems at certain points in time had an influence on the desire for a child. Having a stable mental health outlook, having financial stability, and being able to raise children were mentioned as factors that were a prerequisite for becoming pregnant. The planning of pregnancies was influenced by mental health problems in many ways. Respondents reported that they

chose to postpone a possible pregnancy until the point they felt mentally stable themselves or had a stable relationship with a partner. The fear of becoming mentally unwell during the postpartum period and fear for the health of the baby caused respondents to postpone their wish for pregnancy. Decreasing the dosage of medication or quitting medication was often reported as a prerequisite to becoming pregnant. Medication use was also reported to coincide with having a safe pregnancy. Many close ones also recognized the relationship between mental health problems and various reproductive decisions, except for the question on experiencing taboo (Figure 3.2, question *7*). While a taboo on discussing mental health problems was experienced by most (former) patients (62.4%), this was less mentioned by close ones (25.0%). (Former) patients explained that there was no space to discuss their problems amidst the other problems in traumatized families and that talking about mental health problems was not deemed to be 'appropriate'. (Former) patients described feeling perceived as 'crazy', weak, and felt they should not complain. Moreover, (former) patients reported feeling ashamed, experiencing denial, and feeling misunderstood by family, co-workers, or community. Of the (former) patients and close ones who desired to discuss family planning, only one in five had discussed it with a mental health professional.

A subgroup analysis showed that respondents <40 years of age more often spoke about family planning than respondents >40 years of age (Figure 3.2b, question *7*). Of the childless respondents (n=207), 48.3% attributed childlessness to their mental health state (see Supplementary Table S3.2). After stratification for childlessness, (former) patients without children confirmed the influence of their mental health problems on the desire to have children (75.4% versus 27.2%, $p<0.001$) and the ability to become pregnant (36.7% versus 17.0%, $p<0.001$) more often than (former) patients without children. Almost half of all childless (former) patients never had a conversation about family planning (45.9%). In free-form text boxes, respondents further elaborated that childlessness was related to the fear of transmitting one's mental health disorder or (childhood) trauma to their children, which led them to refrain from having children. Additionally, respondents described a feeling of responsibility in preventing a child from any harm (as they had often endured themselves). It was a conscious decision to be childless for some (couples), while others that had experienced mental health problems (or the treatment thereof with psychoactive medication) attributed this to be the source of fertility problems that resulted in childlessness. Lastly, respondents experienced discouragement from others to have children. Respondents reported that they received no tailored help. Relief and grief about childlessness were both mentioned.

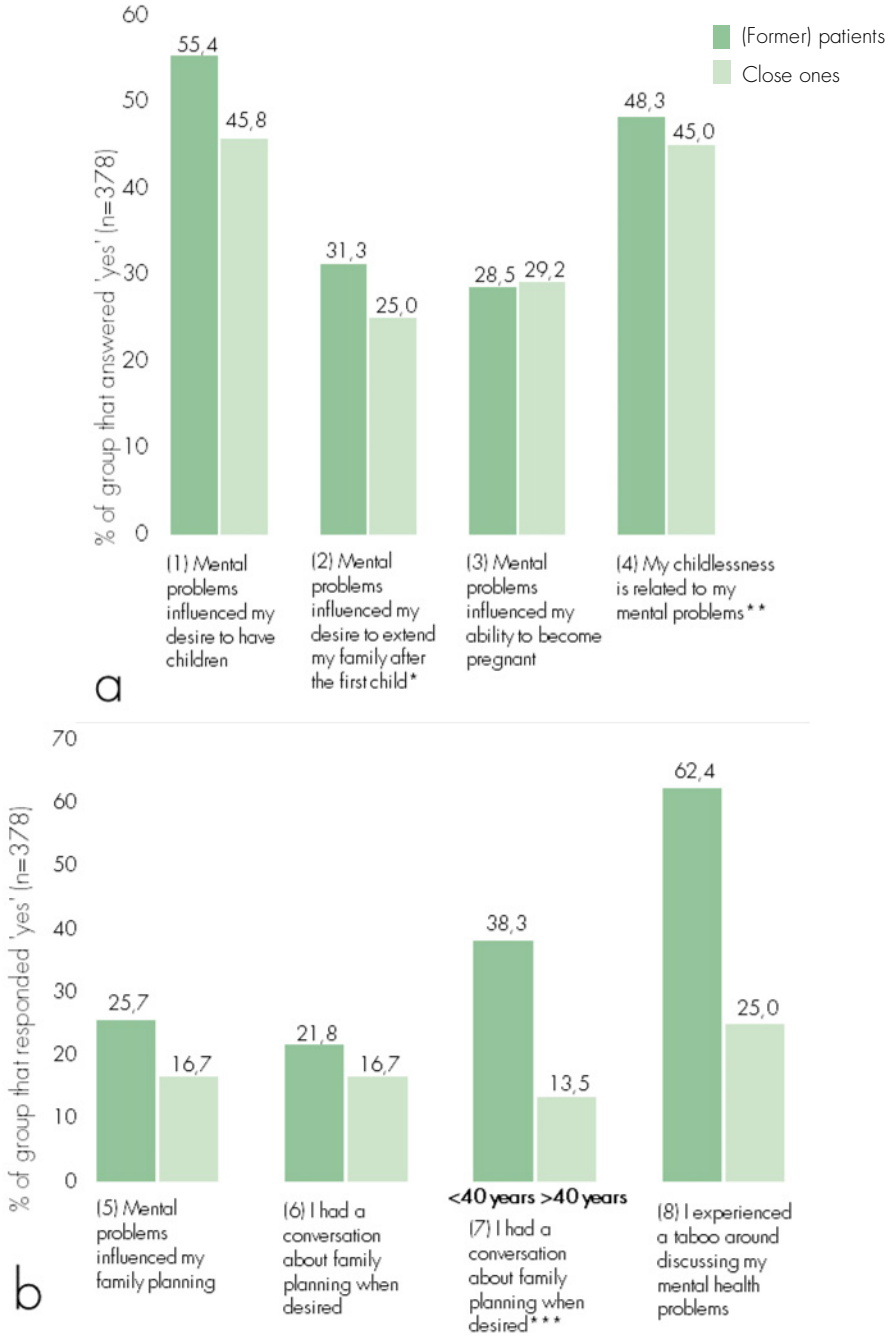


Figure 3.2 - (a, questions 1–4) and (b, questions 5–8) Panel's responses to questions about mental health problems in relation to reproductive decision-making and experiencing taboo.
* Proportion of respondents with children (n=151). ** Proportion of respondents without children (n=227).
*** Proportions of (former) patients with age <40 years (n=107) and age >40 years (n=235).

Domain 3: Parenting

In total, 151 respondents (4 close ones and 147 (former) patients had children or reported for a person with children (in the case of close ones)). Figure 3.3 displays views on the influence of mental health on parenting and early parenthood. Supplementary Table S3.3 provides all raw data supporting Figure 3.3. One-third of 3% of (former) patients expressed that their mental health situation was related to all aspects of parenthood. Approximately half of them felt supported by their partners during parenthood and when mental health impacted the lives of their children (46.9% and 49.0%, respectively). Close ones in our sample responded differently: questions regarding the impact of mental health problems during pregnancy and in the first years of parenthood, in addition to feeling impaired as a parent, were answered with 'yes' by close ones to a lesser extent (respectively, 0.0% and 25.0%). Partner support was present according to 75.0% of close ones in our sample, and support when mental health problems impaired the lives of children was present according to all responding close ones 100% of the time. In free-form text boxes, (former) patients explained that a history of mental health problems also aided in their parenting. The ability to understand their child's needs as they often resembled their own needs, the ability to reflect on one's own actions because of trained self-reflection in therapy, and the ability to ask for help in a timely manner were mentioned as positive aspects of (a history of) mental health problems.

Domain 4: Sexuality

Figure 3.4 presents results for sexuality and contraceptive use. Supplementary Table S3.4 provides all raw data supporting Figure 3.4. Most of the (former) patients experienced a taboo in discussing sexuality (in general), which was not reflected in the close ones' view. In free-form text boxes, (former) patients explained that conversation about sexuality was not permitted in previous generations, in addition to experiences of abuse (in the nuclear family) and feelings of shame. Respondents also mentioned that mental health problems caused by (physical) trauma interfered with sexuality. Moreover, (former) patients explained that not being able to talk about sexuality worsened sexual problems, and both (former) patients and close ones agreed on mental health problems negatively influencing sexual enjoyment. Contraceptive use when at risk for pregnancy (i.e., being sexually active without intention to become pregnant) was the norm (83.3%) according to the close ones and (former) patients (75.3%). Reasons reported by (former) patients and close ones for not using contraceptive methods were: being in a same-sex relationship, having an involuntary sexual relationship, being convinced of one's infertility due to long periods of amenorrhea, having an infertile partner, being convinced by a partner to not use

contraceptive methods, not being adherent to contraceptive pills, using other medication that influenced contraceptive effectiveness, and being intolerant to the use of hormonal contraceptive pills. Stratifications for (former) patients with (n=147) and without children (n=207) showed that experiences of taboos and sexual enjoyment were comparable (p=0.506 and p=0.971, respectively) (see Supplementary Table S3.4).

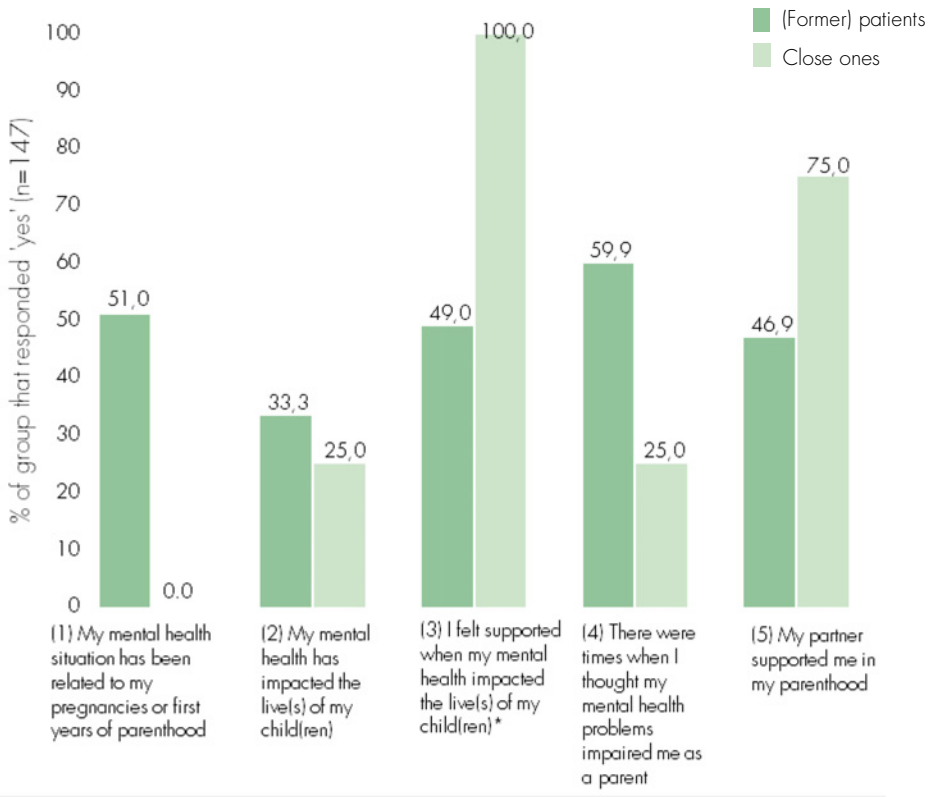


Figure 3.3 - Panel's responses to questions regarding mental health and parenting (questions 1–5).

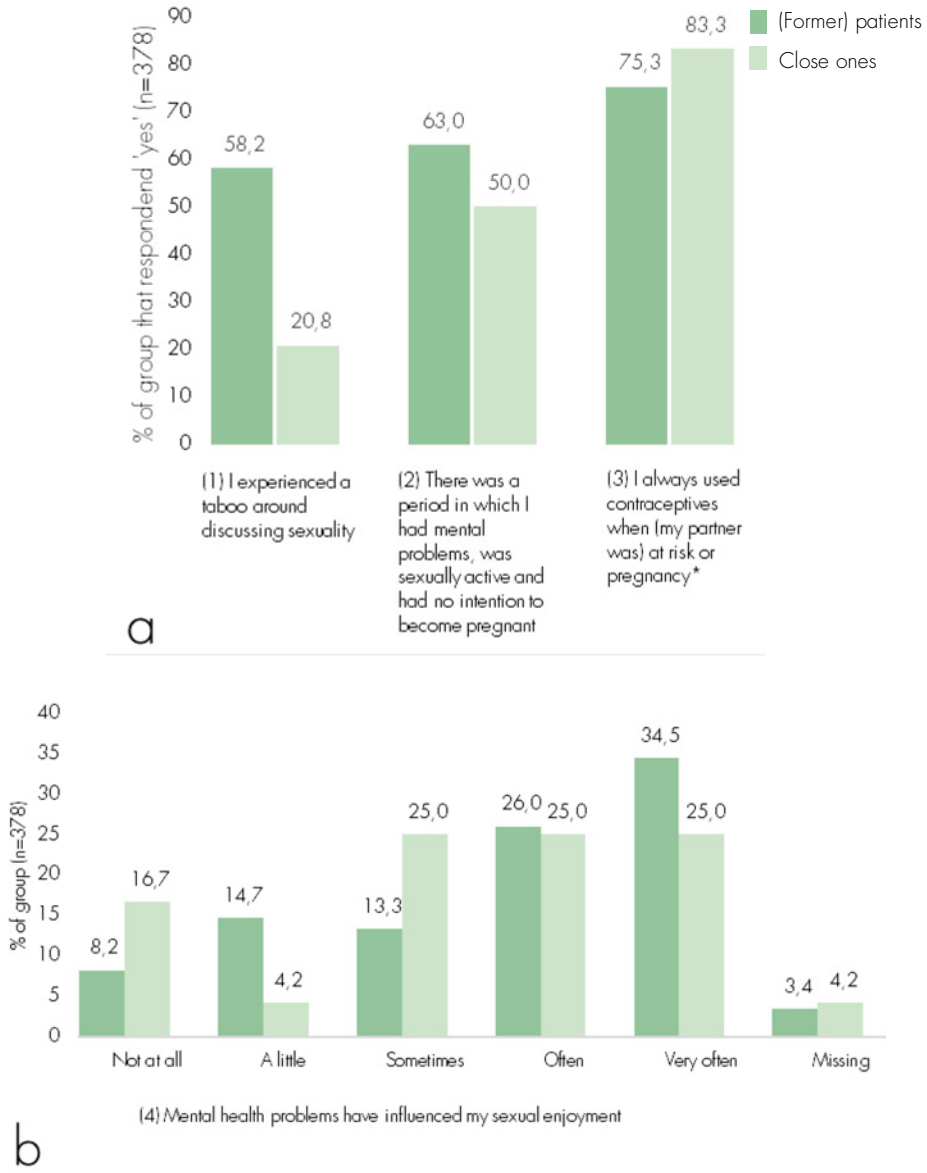


Figure 3.4 - (a, questions 1–3) and (b, question 4) Panel's responses to questions regarding mental health and sexuality.
* Results for 223 (former) patients and 12 close ones who responded 'yes' to question (2).

Discussion

Key results

Our results, derived from survey data from a panel of (former) patients with mental health problems and close ones, reflect the severe and adverse impact of mental health problems on four domains of reproductive health and family planning: reproductive history (including unintended pregnancies), reproductive decision making, parenting, and sexuality. High proportions of unintended pregnancies (45.4%), childlessness related to mental health problems (48.3%), experiencing taboo around sexuality (58.2%), and feeling impaired as a parent due to mental health problems (59.9%) illustrate common challenges that (former) patients with mental health problems face. Given these findings, it is striking that only one in five (former) patients who desired to have a conversation about family planning with a mental health professional were able to have that discussion.

Interpretation of findings

Amidst the (former) patients, the proportion of unintended pregnancies (21.7%) was comparable to the lifetime prevalence of unintended pregnancy in the general Dutch population (20.0%)[19]. However, the proportion of unintended pregnancies amongst women who were ever pregnant in our sample was comparable to other samples of women with anxiety and depression (45.4%)[20]. This confirms the high risk of unintended pregnancies in persons with mental health problems, as previously shown in a review and meta-analysis[9]. Moreover, as a proportion of women in our sample is in the reproductive phase of life, the lifetime prevalence of unintended pregnancies could increase in our sample.

Contraceptive use through self-reporting was high in our study (75.3% according to (former) patients and 83.3% according to close ones). The discrepancy between contraceptive use and unintended pregnancies is generally explained by the suboptimal use of contraceptive methods. This is a common pitfall and appears to exist irrespective of educational level[21]. However, based on the results from our survey, additional reasons have been uncovered, such as intolerance to contraceptive methods and the perception of being infertile (due to mental health problems). Previous studies reported that unintended pregnancies were related to decreased sexual autonomy, impaired coping mechanisms (intimacy-related, ability to say no, or to ask for contraception), involvement in violent relationships, lack of knowledge about unintended pregnancies, or difficult access to, or interaction with, contraceptives[15,22]. In line with these findings, respondents of our study illustrated the inability to protect

against unintended pregnancy with examples of involuntary intercourse, forced non-use of contraceptive methods, and interaction of contraceptive methods and other medication.

Interestingly, 48.3% of the (former) patients in this panel attributed their childlessness to their mental health. For 8.2% of childless (former) patients, mental health was not related to their childlessness. This is in concordance with a Scandinavian population register study that found associations between several major diseases, including mental disorders and being childless[14]. We found that insecurities about being a good parent could be attributed to (involuntary) childlessness, as explained by respondents. Close ones in this sample less frequently reported that mental health problems impaired the mental health patient as a parent or that mental health problems were related to pregnancies or early parenthood. This illustrates how the uncertainties that people with mental health problems encounter are not always visible or understood by others. Our data confirm prior research: fear of transmission of disease increases the fear of becoming a parent[23]. In addition, an unmet need to discuss family planning with mental health professionals could feed beliefs about harmful medication, infertility, and the inability to be a good parent, as described by the respondents. We did not specifically inquire about unwanted childlessness in this study, and thus have no knowledge about the proportions of respondents feeling regret, grief, or satisfaction with having no children and the relationship with mental health problems. Future (qualitative) studies could pay attention to childlessness in relation to mental health.

(Former) patients in this sample experienced a taboo in talking about family planning and sexuality in the context of their mental health problems. These experiences were hardly recognized by close ones. Furthermore, (former) patients felt supported in their mental health problems to a lesser extent than close ones indicated. Feeling an absence of support can negatively impact mental health, as unsupportive responses to mental health problems make it less likely that patients would seek help, as illustrated in another sample of patients with mental health problems and their close ones[24]. In addition, fear of being stigmatized added to the reluctance of patients to express their worries and needs to close ones and mental health professionals[24,25]. This might explain the reported unmet need for discussing family planning in our study. Previous research has shown that mental health professionals considered taboo and stigma barriers to providing care for their patients[26]. For patients with a mental health disorder, complex care needs, care avoidance, and lack of trust in mental health professionals hindered patients from seeking help. This can be further compounded by the practical aspects of healthcare, such as lack of time and waiting lists. However,

family planning could be initiated by both patients and professionals. As previous studies show that professionals are aware of the challenges for patients in discussing their family planning, professionals could initiate a conversation. Possibly, this feeling of reluctance to talk about family planning is less prevalent amongst younger generations, as shown by our respondents <40 years of age, who more often discussed family planning than respondents >40 years of age.

Strengths and Limitations

Our study provides self-reported data from a large sample of (former) patients with mental health problems and a smaller sample of close ones. Although the sample of close ones is limited, the sample is valuable as close ones are often not included in experience surveys in mental health care. We invited all members of the panel, irrespective of self-reported mental health disorder and/or problems and status of recovery. This increases the generalizability of findings, as mental health problems are known to be difficult to classify, subject to cultural differences, and subject to the classifier's interpretation[27]. Our sample was diverse in self-reported mental health problems. Key limitations are the homogeneity of the sample regarding female gender, educational level, and respondents being middle-aged. There may be a sample bias as panel members might have a more intrinsic motivation to participate in research than the general population of people with mental health problems. Furthermore, non-response bias is a common problem in voluntary recruitment in public health studies and could lead to an underestimation of the severity of the problem, as more healthy persons tend to participate in surveys[28,29]. It is possible that (former) patients and close ones who find it difficult to discuss these topics did not fill out the questionnaires, pointing towards an underestimation of perceived taboo in the general population of people with mental health problems. The response rate of 9% among a panel of persons who regularly respond to questionnaires about mental health was lower compared to another survey amongst the panel (21.5% response rate)[30]. This might indicate that wishes for children and family planning are sensitive topics to address. Additionally, questions regarding motherhood and pregnancy might be less relatable to people of non-female gender, people without a life partner, people with no history of pregnancies, or people who have never experienced challenges with reproductive health. With the broad age range of the respondents, recall bias might influence our results as we inquire about experiences that, in some cases, occurred years ago. Moreover, experiences from decades ago may not represent the current situation in mental health care or reproductive care. As younger respondents had a conversation about family planning more often than older ones, a shift towards discussing family planning in mental health care might already be underway.

Recommendations for future research

The results of this exploratory study point to a compelling need to validate the findings in other samples of persons with mental health problems, for example, samples from other geographical regions or inpatients with mental health problems. This would clarify whether our findings are context-specific or universally applicable to persons with mental health problems. Another promising line of research would be to explore the perspective of adolescents and young adults with mental health problems on family planning, as young persons might encounter struggles with family planning in the future. Their experiences might better reflect current practices in mental health care. Although unintended pregnancies are a global public health problem and evidence of the magnitude of this problem is much needed[31], we also emphasize the need to investigate (involuntary) childlessness and fear of impaired motherhood on an individual level, as we found that individuals with mental health problems struggle with family planning. Future (qualitative) studies should focus on how, when, and by whom family planning and parenting should be addressed in people with mental health problems and their close ones and what information a conversation about family planning should entail addressing the unmet need.

Conclusions

This study has uncovered the severe and adverse impact of mental health problems on four domains of reproductive health and family planning: reproductive history (including unintended pregnancies), reproductive decision-making, parenting, and sexuality. Apart from focusing on the prevention of unintended pregnancies, family planning tailored to the needs of those with mental health problems should specifically address (involuntary) childlessness, insecurities about (possible) motherhood, and the influence of mental health on sexuality. It should also be considered that patients experience taboos on discussing sexuality and mental health in general. Ultimately, only one-fifth of the respondents had a conversation about family planning when it was desired, indicating that patients have an unmet need for talking about their challenges (with mental health professionals). Aside from scientific merits, we believe our findings eventually are also important for policymakers. Family planning should be a topic of discussion in psychiatric healthcare.

Acknowledgments

We thank Bianca Weel for her contribution to the data cleaning, Gerda van Ittersum and Nic Vos de Wael for their technical help with the questionnaire, and the (former)

patients and close ones that populated the questionnaire for their participation. We thank Paul Bonanno for revising the final manuscript.

References

1. Hall, J., et al., Addressing reproductive health needs across the life course: an integrated, community-based model combining contraception and preconception care. Lancet Public Health, 2023. 8(1): p. e76-e84.
2. Hall, J.A., et al., Pregnancy Intention and Pregnancy Outcome: Systematic Review and Meta-Analysis. Matern Child Health J, 2017. 21(3): p. 670-704.
3. Catalao, R., et al., Mental health impact on the unmet need for family planning and fertility rate in rural Ethiopia: a population-based cohort study. Epidemiol Psychiatr Sci, 2020. 29: p. e160.
4. Lozano, M., et al., Professional counseling in women with serious mental illness: achieving a shift toward a more effective contraceptive method. J Psychosom Obstet Gynaecol, 2021. 42(3): p. 221-227.
5. Seeman, M.V. and R. Ross, Prescribing contraceptives for women with schizophrenia. J Psychiatr Pract, 2011. 17(4): p. 258-269.
6. Callegari, L.S., et al., Contraceptive adherence among women Veterans with mental illness and substance use disorder. Contraception, 2015. 91(5): p. 386-392.
7. Bulik, C.M., et al., Unplanned pregnancy in women with anorexia nervosa. Obstet Gynecol, 2010. 116(5): p. 1136-1140.
8. Bargiota, S.I., et al., The Effects of Antipsychotics on Prolactin Levels and Women's Menstruation. Schizophr Res Treatment, 2013. 2013: p. 502697.
9. Schonewille, N.N., et al., Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis. BMC Pregnancy Childbirth, 2022. 22(1): p. 153.
10. Basson, R. and T. Gilks, Women's sexual dysfunction associated with psychiatric disorders and their treatment. Womens Health (Lond), 2018. 14: p. 1745506518762664.
11. Stevens, A.W.M.M., et al., Thoughts and Considerations of Women With Bipolar Disorder About Family Planning and Pregnancy: A Qualitative Study. J Am Psychiatr Nurses Assoc, 2018. 24(2): p. 118-126.
12. Moore, D., S. Ayers, and N. Drey, A Thematic Analysis of Stigma and Disclosure for Perinatal Depression on an Online Forum. JMIR Ment Health, 2016. 3(2): p. e18.
13. Power, R.A., et al., Fecundity of patients with schizophrenia, autism, bipolar disorder, depression, anorexia nervosa, or substance abuse vs their unaffected siblings. JAMA Psychiatry, 2013. 70(1): p. 22-30.
14. Liu, A., et al., The relationship of major diseases with childlessness: a sibling matched case-control and population register study in Finland and Sweden. Preprint, 2022.
15. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
16. Hadzi-Pavlovic, D., Agreement II: Categorical measures. . Acta Neuropsychiatrica, 2010.
17. Agresti, A. and B. Finlay, Statistical methods for the social science. 2009: Pearson Education International.
18. Landis, J.R. and G.G. Koch, The Measurement of Observer Agreement for Categorical Data. Biometrics, 1977.
19. Picavet, C., Zwangerschap en anticonceptie in Nederland. Tijdschrift voor Seksuologie, 2012. 36-2: p. 121-128.
20. Tenkku, L.E., et al., Psychiatric disorders among low-income women and unintended pregnancies. Womens Health Issues, 2009. 19(5): p. 313-324.
21. Kakaiya, R., L.L. Lopez, and A.L. Nelson, Women's perceptions of contraceptive efficacy and safety. Contracept Reprod Med, 2017. 2: p. 19.
22. Ajayi, A.I. and H.C. Ezegbe, Association between sexual violence and unintended pregnancy among adolescent girls and young women in South Africa. BMC Public Health, 2020. 20(1): p. 1370.
23. Geerling, I., R.M. Roberts, and A. Sved Williams, Impact of infant crying on mothers with a diagnosis of borderline personality disorder: A qualitative study. Infant Ment Health J, 2019. 40(3): p. 405-421.
24. Samari, E., et al., Perceived mental illness stigma among family and friends of young people with depression and its role in help-seeking: a qualitative inquiry. BMC Psychiatry, 2022. 22(1): p. 107.

25. Reupert, A., et al., Stigma in relation to families living with parental mental illness: An integrative review. Int J Ment Health Nurs, 2021. 30(1): p. 6-26.
26. Rens, E., et al., Unmet mental health needs in the general population: perspectives of Belgian health and social care professionals. Int J Equity Health, 2020. 19(1): p. 169.
27. van Loo, H.M. and J.W. Romeijn, Psychiatric comorbidity: fact or artifact? Theor Med Bioeth, 2015. 36(1): p. 41-60.
28. Cheung, K.L., et al., The impact of non-response bias due to sampling in public health studies: A comparison of voluntary versus mandatory recruitment in a Dutch national survey on adolescent health. BMC Public Health, 2017. 17(1): p. 276.
29. Lindner, J.R., T.H. Murphy, and G.E. Briers, Handling non-response in social science research. Journal of Agricultural Education, 2001.
30. de Waardt, D.A., et al., Dutch Mental Health Patients' and Significant Others' Perspectives on Compulsory Treatment at Home: One Size Does Not Fit All. J Patient Exp, 2021. 8: p. 23743735211033100.
31. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.

Supplementary material

Table S3.1 - Data supporting Figure 3.1.

			All respondents N=378		
			(Former) patients N=354		
Question in survey	Stratified by group	Response category	N	%	P-value*
(1) I have been pregnant in my life or expected a baby (as a partner)	Women (n=295)	Yes	141	47.8	<0.001
		No	154	52.2	
	Men (n=51)	Yes	6	11.8	
		No	45	88.2	
(2) I have children	Women (n=295)	Yes	137	46.4	<0.001
		No	158	53.6	
	Men (n=51)	Yes	6	11.8	
		No	45	88.2	
(3) I have experienced an unintended pregnancy in my life as women or as partner	Women (n=295)	Yes	64	21.7	0.105**
		No	221	74.9	
		Not applicable	4	1.4	
		Missing	6	2.0	
	Men (n=51)	Yes	4	7.8	
		No	41	80.4	
		Not applicable	1	2.0	
		Missing	5	9.8	
(4) I have had an elective abortion in my life	Women (n=295)	Yes	16	5.4	
		No	279	94.6	

*P-value from Chi^2 test comparing 'yes' category between women and men.
** Chi^2 test should be interpreted with caution as numbers in cell are less than 5.

Table S3.2 - Data supporting Figure 3.2.

		All respondents N=378				Respondents with children N=151				Respondents without children N=227				
		(Former) patients N=354		Close ones N=24		(Former) patients N=147		Close ones N=4		(Former) patients N=207		Close ones N=20		
		N	%	N	%	N	%	N	%	N	%	N	%	P-value*
(1) Mental problems influenced my desire to have children	Yes	196	55.4	11	45.8	40	27.2	0	0.0	156	75.4	11	55.0	< 0.001
	No	104	29.4	6	25.0	73	49.7	3	75.0	31	14.8	3	15.0	
	I am not sure	24	6.8	2	8.3	12	8.2	0	0.0	12	5.8	2	10.0	
	Other	27	7.6	5	20.8	21	14.3	1	25.0	6	2.9	4	20.0	
	Missing	3	0.0	0	0.0	1	0.7	0	0.0	2	1.0	0	0.0	
(2) Mental problems influenced my desire to extend my family after the first child (persons with children)	Yes					46	31.3	1	25.0					
	No					56	38.1	2	50.0					
	I am not sure					10	6.8	1	25.0					
	Maybe					14	9.5	0	0.0					
	Not applicable					17	11.6	0	0.0					
	Missing					4	2.7	0	0.0					
(3) Mental problems influenced my ability to become pregnant	Yes	101	28.5	7	29.2	25	17.0	0	0.0	76	36.7	7	35.0	<0.001
	No	183	51.7	6	25.0	98	66.7	3	75.0	85	41.1	3	15.0	
	I am not sure	28	7.9	5	20.8	8	5.4	1	25.0	20	9.7	4	20.0	
	Other	35	9.9	5	20.8	11	7.5	0	0.0	24	11.6	5	25.0	
	Missing	7	2.0	1	4.2	5	3.4	0	0.0	2	1.0	1	5.0	
(4) My childlessness is related to my mental problems	Yes									100	48.3	9	45.0	
	No									17	8.2	4	20.0	
	I am not sure									20	9.7	0	0.0	
	Other									31	15.0	0	0.0	
	Not applicable									0	0.0	1	5.0	
	Missing									39	18.9	6	30.0	
(5) Mental problems influenced my family planning	Yes	91	25.7	4	16.7	40	27.2	1	25.0	51	24.6	3	15.0	0.673
	No	129	36.5	4	16.7	75	51.0	2	50.0	54	26.1	2	10.0	
	I am not sure	26	7.3	1	4.2	13	8.8	0	0.0	13	6.3	1	5.0	
	Not applicable	102	28.8	14	58.3	15	10.2	1	25.0	87	42.0	13	65.0	
	Missing	6	1.7	1	4.2	4	2.7	0	0.0	2	1.0	1	5.0	
(6) I had a conversation about family planning when desired	Yes	77	21.8	4	16.7	20	13.6	0	0.0	57	27.5	4	20.0	0.003
	No	140	39.5	6	25.0	45	30.6	1	25.0	95	45.9	5	25.0	
	I am not sure	9	2.5	5	20.8	3	2.0	0	0.0	6	2.9	5	25.0	
	Other	18	5.1	2	8.3	6	4.1	0	0.0	12	5.8	2	10.0	
	Not applicable	88	24.9	5	20.8	58	39.5	1	25.0	30	14.5	4	20.0	
	Missing	22	6.2	2	8.3	15	10.2	2	50.0	7	3.4	0	0.0	

Table S3.2 –(continued)

			All respondents N=378				Respondents with children N=151				Respondents without children N=227				
			(Former) patients N=354		Close ones N=24		(Former) patients N=147		Close ones N=4		(Former) patients N=207		Close ones N=20		
			N	%	N	%	N	%	N	%	N	%	N	%	P-value*
(7) I had a conversation about family planning when desired	Age <40 years		N=107 (Former) patients		N=6 Close ones										
		Yes	41	38.8	1	16.7									
		No	49	45.8	2	33.3									
		I am not sure	2	1.9	2	33.3									
		Other	5	4.7	0	0.0									
		Not applicable	8	7.5	1	16.7									
		Missing	2	1.9	0	0.0									
	Age >40 years		N=222 (Former) patients		N=13 Close ones										
		Yes	30	13.5	3	23.1									
		No	78	35.1	3	23.1									
		I am not sure	7	3.2	2	15.4									
		Other	12	5.4	1	7.7									
		Not applicable	76	34.2	3	23.1									
		Missing	19	8.6	1	7.7									
(8) I experienced a taboo around discussing my mental health problems		Yes	221	62.4	6	25.0	94	63.9	2	50.0	127	61.4	4	20.0	0.700
		No	94	26.6	15	62.5	41	27.9	1	25.0	53	25.6	14	70.0	
		I am not sure	23	6.5	2	8.3	8	5.4	1	25.0	15	7.2	1	5.0	
		Other	23	3.7	1	4.2	3	2.0	0	0.0	10	4.8	1	5.0	
		Missing	3	0.8	0	0.0	1	0.7	0	0.0	2	1.0	0	0.0	

*P-value from Chi^2 test comparing 'yes' category between (former) patients with children ('yes') and (former) patients without children.

Table S3.3 - Data supporting Figure 3.3.

		All respondents N=378				Respondents with children N=151				Respondents without children N=227			
		(Former) patients n=354		Close ones n=24		(Former) patients N=147		Close ones N=4		(Former) patients N=207		Close ones N=20	
		N	%	N	%	N	%	N	%	N	%	N	%
(1) My mental health situation has been related to my pregnancies or first years of parenthood	Yes					75	51.0	0	0.0				
	No					51	34.7	4	100				
	I am not sure					11	7.5	0	0.0				
	Not applicable					7	4.8	0	0.0				
	Missing					3	2.0	0	0.0				
(2) My mental health has impacted the live(s) of my child(ren)	Yes					49	33.3	1	25.0				
	No					37	25.2	1	25.0				
	I am not sure					17	11.6	0	0.0				
	Maybe					34	23.1	2	50.0				
	Not applicable					7	4.8	0	0.0				
	Missing					3	2.0	0	0.0				
(3) I felt supported when my mental health impacted the live(s) of my child(ren)*	Yes					24	49.0	1	100.0				
	No					25	51.0	0	0.0				
	Missing					0	0.0	0	0.0				
(4) There were times when, during my pregnancy or after my delivery, I thought my mental health problems impaired me as a parent	Yes					88	59.9	1	25.0				
	No					37	25.2	1	25.0				
	I am not sure					11	7.5	1	25.0				
	Not applicable					10	6.8	0	0.0				
	Missing					1	0.7	1	25.0				
(5) My partner supported me in my parenthood	Yes					69	46.9	3	75.0				
	No					42	28.6	1	25.0				
	I am not sure					14	9.5	0	0.0				
	Not applicable					21	14.3	0	0.0				
	Missing					1	0.7	0	0.0				

* Calculated amongst 49 persons who answered yes on question (2) Figure 3.3.

Table S3.4 - Data supporting Figure 3.4.

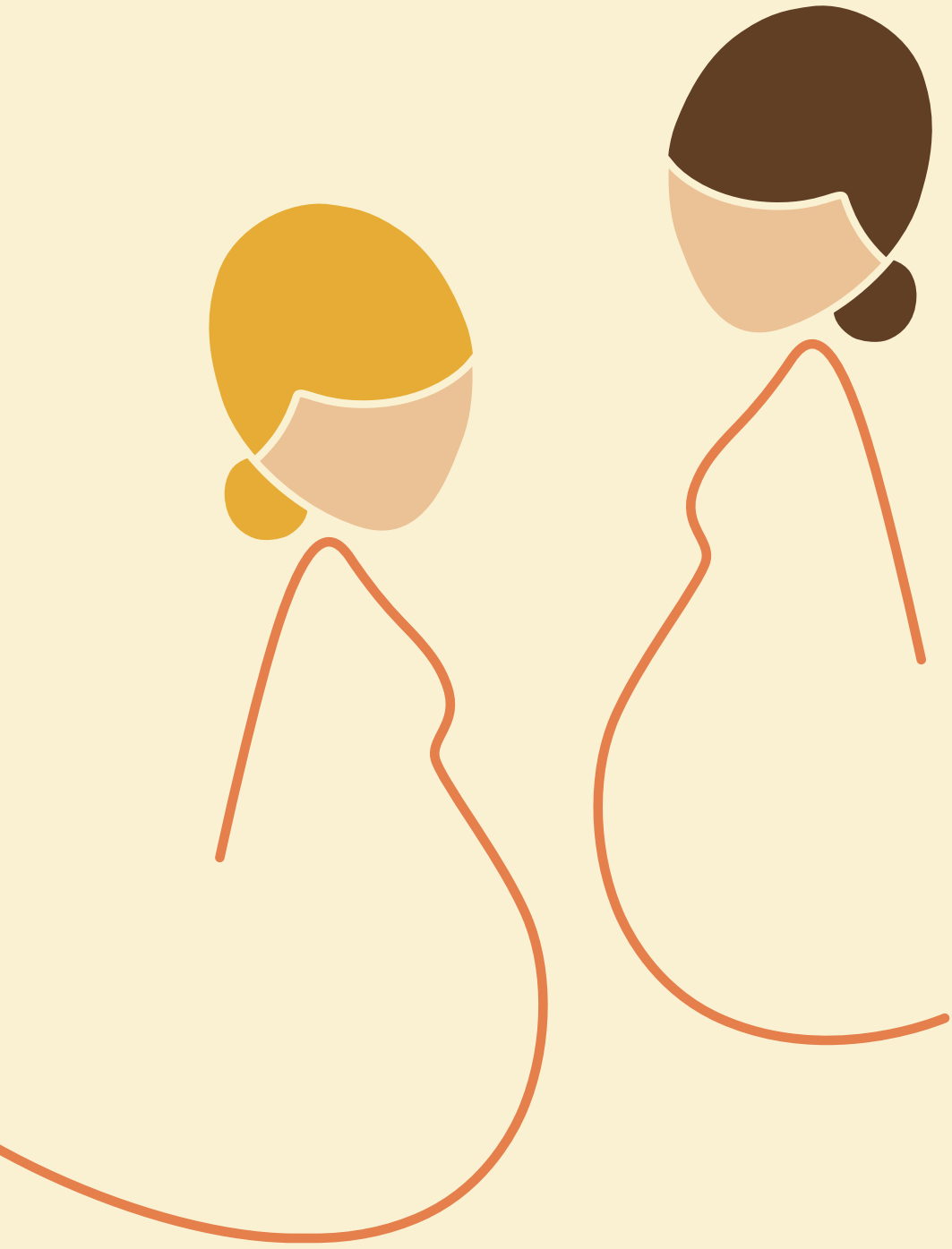
		All respondents N=378				Respondents with children N=151				Respondents without children N=227				
		(Former) patients n=354		Close ones n=24		(Former) patients N=147		Close ones N=4		(Former) patients N=207		Close ones N=20		
		N	%	N	%	N	%	N	%	N	%	N	%	P-value*
(1) I experienced a	Yes	206	58.2	5	20.8	82	55.8	2	50.0	124	59.9	3	15.0	0.506
taboo around	No	137	38.7	19	79.2	60	40.8	2	50.0	77	37.2	17	85.0	
discussing sexuality	Missing	11	3.1	0	0.0	5	3.4	0	0.0	6	2.9	0	0.0	
(2) There was a	Yes	223	63.0	12	50.0									
period in which I had	No	54	15.3	0	0.0									
mental problems, was	I am not sure	22	6.2	5	20.8									
sexually active and	Not	47	13.3	7	29.2									
had no intention to	applicable													
become pregnant	Missing	8	2.3	0	0.0									
(3) I always used	Yes	168	75.3	10	83.3									
contraceptives when	No	45	20.2	1	8.3									
(my partner was) at	I am not sure	8	3.6	1	8.3									
risk or pregnancy**	Missing	2	0.9	0	0.0									
(4) Mental health	Not at all	29	8.2	4	16.7	14	9.5	0	0.0	15	7.2	4	20.0	
problems have	A little	52	14.7	1	4.2	20	13.6	1	25.0	32	15.5	0	0.0	
influenced my sexual	Sometimes	47	13.3	6	25.0	19	12.9	0	0.0	28	13.5	6	30.0	
enjoyment	Often	92	26.0	6	25.0	38	25.9	0	0.0	54	26.1	6	30.0	
	Very often	122	34.5	6	25.0	50	34.0	2	50.0	72	34.8	4	20.0	0.971
	Missing	12	3.4	1	4.2	6	4.1	1	25.0	6	2.9	0	0.0	

** Calculated amongst 235 persons who answered 'yes' in question (2) Figure 3.4.

*P-value from Chi^2 test comparing 'yes' or 'Very often' category between (former) patients with children and (former) patients without children.

PART 2

Psychiatric vulnerability and birth outcomes



CHAPTER 4

Pregnancy intention in relation to maternal and neonatal outcomes in women with versus without psychiatric diagnoses

Noralie N. Schonewille, Nini H. Jonkman, Anne A.M.W. van Kempen, Maria G. van Pampus, Odile A. van den Heuvel, Birit F.P. Broekman

Published in
Acta Psychiatrica Scandinavica, 2022
DOI 10.1111/acps.13625

Abstract

Background

Studies have identified adverse maternal and neonatal outcomes for women with psychiatric disorders. Additionally, psychiatric disorders may pose an increased risk for unintended pregnancies (UPs) which in turn may also impact negatively on outcomes. The present study aims to compare the incidence of UPs in women with versus without current/past psychiatric diagnoses and investigates whether psychiatric history modifies the relation between delivery outcomes in women with and without UPs.

Methods

A retrospective cohort was compiled of women who gave birth in a large hospital in Amsterdam, the Netherlands. Women ≥18 years old with singleton pregnancies and birth registrations in the electronic patient file during 01-01-2015 to 01-03-2020 were included. Patient characteristics (including pregnancy intention and psychiatric history), maternal (gestational diabetes, mode of delivery) and neonatal outcomes (e.g. gestational age (GA), birthweight and Apgar scores) were registered by health care providers in hospital charts. Incidence of UPs was compared between women with versus without current/past psychiatric diagnoses. Maternal and neonatal outcomes were compared between women with versus without UPs with linear or logistic regression models adjusted for relevant confounders with an interaction term for UP with current/past psychiatric diagnoses.

Results

We included 1219 women with and 1093 women without current/past psychiatric diagnoses. Current/past psychiatric diagnoses were significantly associated with UPs after adjustment for confounders (39.0% versus 29.6%, OR 1.56, CI 1.23-2.00, p<0.001). In sub-analyses, women with depressive (OR 1.67, CI 1.24-2.26, p=0.001), personality (OR 2.64, CI 1.38-5.11, p=0.004) and substance-related and addictive disorders (OR 4.29, CI 1.90-10.03, p=0.001) had higher odds of UPs compared to women without current /past psychiatric diagnoses. Amongst women with UPs, current/past psychiatric diagnoses did not modify maternal or neonatal outcomes, except for GA at delivery as women with both UPs and current/past psychiatric diagnosis had a 2.21-day higher mean GA at delivery than women in the reference group (p-value interaction=0.001).

Conclusions

Current/past psychiatric diagnoses are associated with a higher odd of UPs. In our sample, maternal and neonatal outcomes were comparable for women with and without UPs and these results were similar for women with and without current/past psychiatric diagnoses, except for GA at delivery. Although our study is limited by several factors, we found that women with current/past psychiatric diagnoses, irrespective of pregnancy planning status, do not have more adverse maternal or pregnancy outcomes. Increased efforts are needed to ensure that psychoeducation and conversations about pregnancy planning and UPs are available for women with current/past psychiatric diagnoses.

Significant Outcomes

- Current/past psychiatric diagnoses are associated with a higher odd of UPs and demand attention for pregnancy planning in psychiatric healthcare.
- Clinical maternal and neonatal outcomes after UPs were comparable between women with and without current/past psychiatric diagnoses, except from a higher gestational age at delivery in women with current/past psychiatric diagnoses (mean difference 1.83 days, $p = 0.006$).

Limitations

- Pregnancy intention is notoriously difficult to assess and should be assessed prospectively with a validated instrument. Our retrospective study design did not allow prospective assessments, since we used reports by health care providers registered in health records.
- We included women with any current/past psychiatric diagnosis, but did not adjust for severity of symptoms, timing, or current presence of the diagnosis.
- As our study presents data from a birth cohort, women with abortions could not be included. The actual UP rates might thus be underestimated in the current study.

Introduction

The perinatal period is a vulnerable period for women with psychiatric diagnoses and their offspring. First and foremost, the perinatal period can negatively impact maternal mental health[1-3]. Women with previous psychiatric disorders such as psychotic, bipolar, and depressive disorders have a considerable risk of relapse in the peripartum period[1,2,4,5]. Moreover, studies also established severe maternal and neonatal adverse consequences[6-8]. Mothers with psychiatric disorders are at higher risk of admission to an intensive care unit, unplanned cesarean section, gestational diabetes, preeclampsia, induced labor, and have lower rates of breastfeeding[6,7,9]. Neonates more often have low 5-minute Apgar scores, low birthweight or are born preterm[6,9,10]. Besides, psychiatric disorders may increase the risk for unintended pregnancies (UPs)[11]. Similarly, UPs are associated with various adverse outcomes such as increased risk for depression in mothers[12,13], lower rates of breastfeeding[14,15] and preterm birth and low birthweight in neonates[16,17]. In a systematic review and meta-analysis, we demonstrated an increased risk for UPs in women with psychiatric diagnosis compared to women without psychiatric diagnosis (n=2650, 11 studies)[11]. The overall weighed prevalence of UPs was 65% in women with psychiatric diagnoses. There are various factors that may attribute to the UP risk in women with psychiatric disorders such as victimization by sexual violence[18] or disruption of menstrual cycles[19,20]. Additionally, advanced planning capabilities, required for adequate use of contraceptive methods and family planning, might be diminished in women with psychiatric disorders[20,21]. Although possible adverse consequences of both UPs and psychiatric disorders have been studied separately, the impact of UPs on maternal and neonatal outcomes in women with psychiatric disorders has not been studied so far.

The present study elaborates on previous literature by primarily investigating the incidence of UPs amongst women with various current/past psychiatric diagnoses versus women without psychiatric diagnoses. The secondary aim is to compare maternal and neonatal outcomes between women with UPs versus non-UPs who delivered in the hospital and to assess the modifying role of current/past psychiatric diagnoses in the association between pregnancy intention and maternal/neonatal outcomes. We hypothesize that women with both psychiatric diagnoses and UPs have the highest risk for adverse outcomes compared to women without psychiatric diagnoses or with intended pregnancies.

Materials and methods

Study design and eligibility criteria

A retrospective cohort was compiled of women who gave birth in OLVG hospital, Amsterdam, the Netherlands. Women ≥18 years old with birth registrations in the electronic patient file during January 1, 2015 to March 1, 2020 were included. Women with twin pregnancies were excluded. We excluded all women with missing data on psychiatric history and/or pregnancy intention. After selection of all eligible women in the cohort, we included the most recent birth of each individual woman in the cohort, hence, all women were included only once (Figure 4.1).

Data collection

Data collection was conducted using CTcue, a software program that searches free text in pseudonymized electronic hospital charts. Multiple study investigators performed manual checks in hospital charts in case of missing data.

Current/past psychiatric diagnosis

The presence of a current/past psychiatric diagnosis, screened at the pregnancy intake according to the standardized protocol, was defined as one or more of the following: presence and/or history of a psychiatric diagnosis as reported by the pregnant woman herself or by one of her caretakers (general practitioner, midwife, gynecologist, psychiatrist, or psychologist). For the current study, the current/past psychiatric diagnosis had to be present at the beginning of the pregnancy. Aside from diagnosis (yes/no), diagnoses were subsequently classified according to the DSM-5 (depressive disorders, anxiety disorders etc.)[22]. If women used psychopharmacological drugs, they were included in the "current/past psychiatric diagnosis" group if they were also diagnosed with a psychiatric illness. However, if their diagnosis was not clear, women were included in the control group.

Unintended pregnancy

Unintended pregnancy was defined as a pregnancy that was not planned for, intended, and/or wanted at the time of conception as judged by the pregnant woman herself in retrospect. This information was written down in charts by a midwife or doctor. This variable was divided into four groups: "planned and wanted", "planned and unwanted", "unplanned and wanted", or "unplanned and unwanted". For the primary outcome we categorized all unplanned pregnancies as "unintended" pregnancies, both wanted and unwanted. All planned pregnancies were categorized

as "intended" pregnancies (even if a pregnancy was planned but considered unwanted at the pregnancy intake, as these pregnancies were planned at conception). In case of an uncertain pregnancy intention after assessment by the researcher, a second researcher was asked to independently assess the pregnancy intention. If consensus could be reached, the pregnancy was included in the cohort. If uncertainty remained, the pregnancy was excluded from the study.

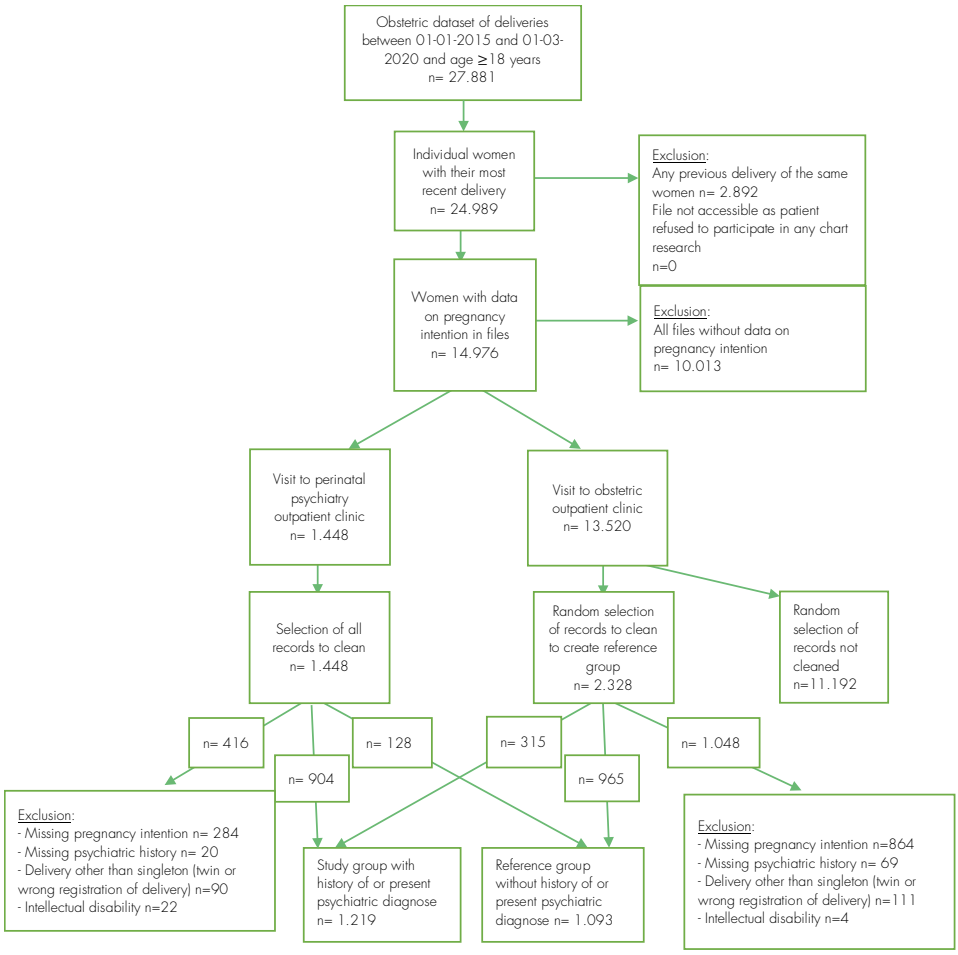


Figure 4.1 - Displays the inclusion process of the retrospective cohort.

Demographic characteristics

Maternal age at delivery was calculated through delivery date of the neonate and date of birth of the mother. Ethnical background was determined by country of birth of

the mother's parents and grouped according to the Dutch obstetric registration system[23]. Employment status of the mother was defined as having a paid job (yes/no) at time of conception. We gathered data on smoking and alcohol use during pregnancy, defined as any use of these substances from the moment of conception onward. Parity was defined as being primiparous (never delivered) or multiparous (delivered previously). We collected data on common somatic conditions and other reasons that require hospital pregnancy care: diabetes mellitus, hypertension, thyroid conditions, asthmatic conditions, epilepsy, history of cesarean section, bariatric surgery, obesity, gynecological conditions, and autoimmune diseases. Psychotropic medication use was defined as use of one or more psychotropic drugs during pregnancy.

Maternal outcomes

Hypertensive disorders of pregnancy (HDP) and gestational diabetes (GDM) were defined in accordance with local guidelines. Deliveries were grouped by spontaneous vaginal delivery, assisted vaginal delivery and cesarean section.

Neonatal outcomes

Prematurity was defined as gestational age (GA) at delivery <37 weeks. Birthweight percentile was calculated according to the Hoftiezer curve, which includes sex, GA at delivery and birthweight[24]. Small for gestational age (SGA) was defined as a birthweight <10th percentile and being large for gestational age (LGA) as a birthweight >90th percentile. Apgar scores after 5 min were collected. Low Apgar score was defined as <7 after 5 min[25]. Admission to the neonatal ward was registered for those neonates in need of pediatric care. In standard care, neonates are admitted to the maternity ward with their mothers in case of absence of pediatric complications. We defined breastfeeding intention as all women who fully or partially breastfed their infants at the moment they left the hospital after delivery.

Statistical methods

A power analysis indicated a minimum required sample size of 119 participants in both groups of the primary analyses (current/past psychiatric diagnoses and UPs) based on a UP rate of 43%–82% in women with psychiatric diagnosis[11]. All analyses were conducted in R studio version 4.2.2[26]. For descriptive analyses of normally distributed variables, means and standard deviations were reported. Continuous variables that were not normally distributed were described with median and interquartile range. Categorical variables were reported with numbers and

percentages. Differences in demographics between women with intended pregnancies and UPs were described using T-tests or Chi-square tests.

For the primary aim, the number of UPs was compared between women with and without current/past psychiatric diagnosis using logistic regression analysis. Odds ratios (ORs) and 95% confidence intervals (CIs) were estimated. Subsequently, we performed logistic regression analyses with a dummy variable for having any current/past psychiatric diagnosis to assess the association of various psychiatric diagnosis with pregnancy intention. All models were adjusted for parity, employment status, psychotropic medication use, age, and ethnicity.

For the secondary aim, we compared maternal and neonatal outcomes between women with UPs versus non-UPs. Generalized linear models were fitted, depending on the nature of the outcome variable: linear regression models for continuous outcomes and logistic regression models for dichotomous outcomes. All models included a main effect for UP (yes/no) and were adjusted for parity, employment status, age, alcohol use, smoking, and psychotropic medication use.

To evaluate a differential effect of psychiatric diagnosis on the association between UP and maternal and neonatal outcomes, each model was extended with a main effect current/past psychiatric diagnosis (yes/no), and an interaction term for UP with current/past psychiatric diagnosis. Main effects and interaction effects were presented as mean difference (MD) or OR with 95% CI. Wald p-values were estimated for all effect sizes, except the interaction term with psychiatric diagnosis, for which we used a Likelihood Ratio Test to assess the added value of the interaction term. P-values of <0.05 were considered statistically significant.

Ethical considerations

The study protocol was approved by the Medical Research Ethics Committees United and the Advisory Committee Scientific Research at OLVG. The study was granted exempt from the Human Subjects Act, as declared by the Medical Research Ethics Committees United and exempt from informed consent procedures given the numbers of inclusion and mostly coded data collection. If patients indicated not to be willing to participate in any chart research (as noted in their medical chart), their data were not included in the study.

Results

General characteristics

In total, 1219 women with and 1093 women without current/past psychiatric diagnoses were included. Figure 4.1 presents the inclusion process. Table 4.1 displays demographic features for both study groups. Women with current/past psychiatric diagnoses were on average 0.6 years younger (p=0.015), more often unemployed (p<0.001) and smoked more often during pregnancy (p<0.001) than women without current/past psychiatric diagnoses. Alcohol use, parity and the presence of somatic illnesses were comparable between the two groups. Ethnicity differed between groups (overall p-value<0.001) as Caucasian were more strongly represented in the current/past psychiatric diagnosis group (48.3% vs. 37.2% in the reference group) and Turkish were more strongly represented in the reference group (12.2% vs. 6.3% in the current/past psychiatric diagnosis group).

Association between current/past psychiatric diagnoses and unintended pregnancies

The incidence of UPs differed between women with (39.0%) versus without current/past psychiatric diagnosis (29.6%) in unadjusted (OR 1.56, 95% CI 1.24-1.97, p<0.001) and adjusted models (OR 1.56, 95% CI 1.23– 2.00, p<0.001), see Table 4.2. Subgroup analyses showed significantly higher UP rates in women with depressive disorders (43.2% UPs, adjusted OR 1.67, 95% CI 1.24-2.26, p=0.001), substance related and addictive disorders (66.7% UPs, adjusted OR 4.29, 95% CI 1.90–10.03, p=0.001) and personality disorders (49.1% UPs, adjusted OR 2.64, 95% CI 1.38–5.11, p=0.004) compared to women without these disorders.

Table 4.1 - Demographic features of women with and without a current or past psychiatric diagnosis.

	Current and/or past psychiatric diagnosis (n=1219)		Reference group (n=1093)		Total group (n=2312)		p-value
Age mean (sd)	33.70	(5.23)	33.14	(5.74)	33.44	(5.48)	0.015
Ethnic background							< 0.001
Asian	34	2.8	31	2.8	65	2.8	
Hindustanian	11	0.9	20	1.8	31	1.3	
Caucasian	589	48.3	407	37.2	996	43.1	
Latin American	3	0.3	2	0.2	5	0.2	
Northern African	259	21.3	249	22.8	508	22.0	
Mixed	99	8.1	98	9.0	197	8.5	
African, not Northern	53	4.1	50	4.9	103	4.5	
Turkish	77	6.3	133	12.2	210	9.1	
Missing ethnicity	94	7.7	103	9.4	197	8.5	
Employment status							< 0.001
Paid job, yes	626	51.4	612	56.0	1238	53.6	
Paid job, no	429	35.2	268	24.5	697	30.2	
Paid job, missing	164	13.5	213	19.5	377	16.3	
Alcohol use during pregnancy							0.089
Alcohol use, yes	53	4.6	32	2.9	85	3.7	
Alcohol use, no	1151	94.4	1048	95.9	2199	95.1	
Alcohol use, missing	15	1.2	13	1.2	28	1.2	
Smoking during pregnancy							< 0.001
Smoking, yes	187	15.3	108	10.0	295	12.8	
Smoking, no	1015	83.3	973	89.0	1988	86.0	
Smoking, missing	17	1.4	12	1.1	29	1.3	
Current and/or past psychiatric diagnosis							
Neurodevelopmental Disorders	52	4.3			52	2.3	
Schizophrenia Spectrum and other Psychotic Disorders	48	3.9			48	2.1	
Bipolar and Related Disorders	41	3.4			41	1.8	
Depressive Disorders	704	57.8			704	30.6	
Anxiety Disorders	399	32.7			399	17.3	
Obsessive-Compulsive and Related Disorders	34	2.8			34	1.5	
Trauma- and Stressor Related Disorders	89	7.3			89	3.9	

Table 4.1 –(continued)

	Current and/or past psychiatric diagnosis (n=1219)		Reference group (n=1093)		Total group (n=2312)		p-value
Dissociative Disorders	6	0.5			6	0.3	
Somatic Symptom and Related Disorders	12	1.0			12	0.5	
Feeding and Eating Disorders	78	6.4			78	3.4	
Sleep-Wake Disorders	34	2.8			34	1.5	
Sexual Dysfunctions	11	0.9			11	0.5	
Disruptive, Impulse-Control, and Conduct Disorders	3	0.3			3	0.1	
Substance-Related and Addictive Disorders	39	3.2			39	1.7	
Neurocognitive Disorders	0	0.0			0	0.0	
Personality Disorders	108	8.9			108	4.7	
Psychotropic medication usage							< 0.001
Psychotropic medication usage, yes	506	41.5	22	2.0	528	22.8	
Psychotropic medication usage, no	702	57.6	1061	97.1	1763	76.3	
Psychotropic medication usage, missing	11	0.9	10	0.9	21	0.9	
Parity							0.773
Primiparous, yes	614	50.4	558	51.1	1172	50.7	
Multiparous, yes	604	49.6	534	48.9	1138	49.2	
Parity, missing	1	0.1	1	0.1	2	0.1	
Somatic illnesses							
Diabetes type I or II	17	1.4	24	2.2	41	1.8	0.19
Chronic hypertension	14	1.1	12	1.1	26	1.1	1.00
Thyroid conditions	74	5.9	51	4.7	125	5.4	0.17
Asthma	55	4.4	56	5.1	111	4.8	0.54
Epilepsy	14	1.1	8	0.7	22	1.0	0.42
Caesarean section in history	61	5.0	37	3.4	98	4.2	0.07
Bariatric surgery	8	0.7	4	0.4	12	0.5	0.50
Obesity (BMI >30)	79	6.5	62	5.7	141	6.1	0.48
Gynaecological[1]	87	7.1	91	8.3	178	7.7	0.31
Autoimmune disease[2]	14	1.1	17	1.6	31	1.3	0.50

Note: Data are presented as n (%), unless indicated otherwise.
Abbreviation: SD, standard deviation.
*p-value <0.05. **Some women were diagnosed with ≥1 disorder.
[1]Polycystic ovary syndrome, subfertility, endometriosis, uterus myomatisis, cervix insufficiency.
[2]Inflammatory bowel disease, coeliakie, rheuma, M. Bechterew, auto-immune hepatitis, artritis, systemische lupus erythematodes, artritis psoriatica.

Table 4.2 - Associations between current and/or past psychiatric diagnoses and pregnancy intention.

	n (total n=2312)	% UPs	Odds ratio[1]	95% CI	P-Value (Wald)	Odds ratio[2]	95% CI	P-Value (Wald)
Reference group (no current and/or past psychiatric diagnosis)	1093	29.6	ref	-	-	ref	-	-
Any current and/or past psychiatric diagnosis	1219	39.0	1.56	1.24 – 1.97	**<0.001**	1.56	1.23 – 2.00	**<0.001**
DSM: Anxiety Disorders	399	35.1	1.26	0.86 – 1.82	0.230	1.21	0.80 – 1.80	0.359
DSM: Bipolar and Related Disorders	41	22.0	0.41	0.11 – 1.38	0.159	0.37	0.10 – 1.34	0.140
DSM: Depressive Disorders	704	43.2	1.74	1.31 – 2.30	<0.001	1.67	1.24 – 2.26	0.001
DSM: Feeding and Eating Disorders	78	25.6	0.75	0.36 – 1.48	0.426	0.78	0.36 – 1.57	0.500
DSM: Neurodevelopmental Disorders	52	36.5	1.70	0.77-3.62	0.179	2.05	0.90-4.56	0.081
DSM: Obsessive-Compulsive and Related Disorders	34	29.4	0.69	0.23 – 1.90	0.488	0.73	0.23 – 2.15	0.588
DSM: Personality Disorders	108	49.1	3.01	1.63 – 5.61	<0.001	2.64	1.38 – 5.11	0.004
DSM: Schizophrenia Spectrum and Other Psychotic Disorders	48	43.8	1.29	0.56 – 2.91	0.537	1.21	0.50 – 2.86	0.662
DSM: Sexual Dysfunctions	11	9.1	0.25	0.01 – 1.44	0.200	0.23	0.01 – 1.38	0.182
DSM: Sleep-Wake Disorders	34	44.1	1.84	0.76 – 4.41	0.169	1.79	0.72 – 4.47	0.208
DSM: Somatic Symptom and Related Disorders	12	41.7	1.29	0.32 – 5.05	0.714	1.06	0.25 – 4.36	0.939
DSM: Substance-Related and Addictive Disorders	39	66.7	4.94	2.25 – 11.28	<0.001	4.29	1.90 – 10.03	0.001
DSM: Trauma- and Stressor-Related Disorders	89	39.3	1.17	0.67 – 2.00	0.570	1.04	0.58 – 1.83	0.900

Odds ratios for unintended pregnancies are presented for any psychiatric diagnosis or a type of psychiatric diagnosis (presented in the first column) versus the reference group. Some women were diagnosed with ≥ 1 disorder. In this table, only psychiatric diagnoses with n>10 were included.
UPs, unintended pregnancies; CI, confidence interval.
[1] Adjusted for parity, employment status, psychotropic medication, and age.
[2] Adjusted for parity, employment status, psychotropic medication use, age, and ethnicity.

Association between unintended pregnancies and adverse maternal and neonatal outcomes

In Supplementary Table S4.1 we present demographic features of all four study groups in the secondary analyses (UP yes/no and current/past psychiatric diagnosis (yes/no). Table 4.3 displays the estimated associations of UPs on maternal and neonatal outcomes in two models: model 1 including main effects for UPs and current/past psychiatric diagnosis and model 2 including an interaction for both variables. There was no association between UPs and maternal outcomes (gestational diabetes mellitus, hypertensive disorders of pregnancy, assisted vaginal delivery and cesarean section). In addition, there was no interaction effect of UPs and current/past psychiatric diagnoses maternal outcomes. Neonatal outcomes were comparable between women with UPs and with intended pregnancies. Except from GA at delivery, current/past psychiatric diagnoses did not modify neonatal outcomes in women with UPs. After addition of the interaction term (model 2), women with UPs had a 2.63 days lower mean GA at delivery than women in the reference group (p=0.096), women with current/ past psychiatric diagnoses had 1.67 days lower mean GA at delivery than women in the reference group (p=0.204), but women with both UPs and current/past psychiatric diagnosis had a 2.21 days higher mean GA at delivery than women in the reference group (p-value interaction = 0.001). All other neonatal outcomes were comparable for UPs versus intended pregnancies, and there were no interaction effects.

Post hoc sensitivity analyses

To comprehend the interaction effect of psychiatric diagnosis on the association between pregnancy intention and GA age at delivery, we performed a post hoc sensitivity analysis focusing on the two largest groups of DSM classified diagnoses; women with a current/past depressive disorder (N=704) and women with a current/past anxiety disorder (n=399). We compared GA at delivery in these two groups of women versus women without any current/past psychiatric diagnosis (n = 1093). Current/ past depressive disorders modified the association between UPs and mean GA (p-value interaction =0.003). Current/past anxiety disorders did not modify the association between UPs and GA at delivery (p-value interaction = 0.068).

Table 4.3 - Associations of UPs and current or past psychiatric diagnosis for all maternal and neonatal outcomes.

		Model 1 without interaction term[1]						Model 2 with interaction term[2]			
	Measure	Main effect UP	95% CI	P-value (Wald)	Main effect PD	95% CI	P-value (Wald)	Interaction term UP*PD	95% CI	P-value (Wald)	P-value interaction term (LRT)
Maternal outcomes											
Gestational diabetes mellitus	OR	1.11	0.82 – 1.49	0.507	0.77	0.56 – 1.05	0.097	0.64	0.37 – 1.13	0.124	0.124
Hypertensive disorders of pregnancy	OR	0.87	0.59 – 1.27	0.492	0.74	0.50 – 1.10	0.140	0.75	0.37 – 1.55	0.439	0.440
Vaginal delivery, assisted	OR	0.95	0.60 – 1.49	0.827	0.72	0.44 – 1.16	0.185	0.69	0.29 – 1.62	0.387	0.388
Caesarean section	OR	0.82	0.64 – 1.03	0.096	1.18	0.93 – 1.50	0.173	0.70	0.45 – 1.10	0.122	0.123
Neonatal outcomes											
Gestational age at delivery in days	MD	1.05	-1.06-3.17	0.329	0.60	-1.58-2.78	0.592	6.51	2.51-10.51	0.001	0.001
Premature birth (<37 weeks)	OR	0.73	0.48 – 1.11	0.144	0.85	0.54 – 1.33	0.492	0.82	0.37 – 1.83	0.618	0.619
Birthweight in grams	MD	-36.72	-89.99 – 16.56	0.177	-33.45	-88.16 – 21.27	0.231	-0.60	-101.48 – 100.27	0.991	0.991
Birthweight percentile	MD	-2.64	-5.64 – 0.36	0.085	-1.97	-5.07 – 1.14	0.214	-5.09	-10.80 – 0.62	0.081	0.081
SGA n, %	OR	1.22	0.89 – 1.68	0.215	1.06	0.77 – 1.46	0.732	1.07	0.59 – 1.96	0.828	0.828
LGA n, %	OR	0.89	0.61 – 1.30	0.546	0.83	0.55 – 1.23	0.349	0.62	0.30 – 1.29	0.200	0.200
5-minute Apgar score	MD	-0.01	-0.13 – 0.11	0.845	0.05	-0.07 – 0.18	0.397	0.18	-0.05 – 0.41	0.129	0.129
Low Apgar Score (<7 after 5 minutes)	OR	1.32	0.67 – 2.54	0.417	1.01	0.47 – 2.15	0.990	0.33	0.09 – 1.20	0.093	0.092
Admission to a neonatal care unit	OR	0.92	0.59 – 1.43	0.724	1.23	0.76 – 1.99	0.391	1.22	0.51 – 3.09	0.661	0.659
Breastfeeding	OR	1.30	0.93 – 1.83	0.129	0.54	0.37 – 0.78	0.001	1.01	0.49 – 2.02	0.969	0.969

OR, odds ratio; MD, mean difference; UP, unintended pregnancy; PD, current or past psychiatric diagnosis; SGA, small for gestational age; LGA, large for gestational age; CI, confidence interval; LRT, likelihood ratio test.

[1]Model included main effects of UP and PD, and was adjusted for psychoactive medication use, parity, employment status, age, alcohol use and smoking.

[2]Model was adjusted for psychoactive medication use, parity, employment status, age, alcohol use, smoking and included the interaction term psychiatric diagnosis*UP.

Discussion

Key results

The results from our retrospective cohort study show that current/past psychiatric diagnoses are significantly associated with UPs after adjustment for relevant confounders (OR 1.56, CI 1.23–2.00, p<0.001). In sub analyses, women with depressive (OR 1.67, CI 1.24–2.26, p=0.001), personality (OR 2.64, CI 1.38–5.11, p=0.004) and substance-related and addictive disorders (OR 4.29, CI 1.90–10.03, p=0.001) showed a higher incidence of UPs compared to women without these disorders. In our population, maternal and neonatal outcomes were comparable between women with and without current/past psychiatric diagnoses in case of UPs, except from GA at delivery. Women with UPs and current/past psychiatric diagnoses had higher GA at delivery (mean difference 2.21 days, p=0.001) compared to the reference group, whereas women with UPs without current/past psychiatric diagnoses and women with planned pregnancies and current/past psychiatric diagnoses showed a lower GA at delivery (resp. −2.63 and −1.67 days). This effect was mainly driven by the group of women with a depressive disorder.

Strengths and limitations

We are the first to compare maternal and neonatal outcomes in a large group of women with and without UPs, also considering the effect of current/past psychiatric diagnosis. Our study is subject to several important limitations. Our dependability on uncontrolled naturalistic medical record information has serious implications on the availability of information on pregnancy intention and the reliability of our findings. Reporting bias probably played a role through various mechanisms. First, there could be an overreporting of UPs as UPs may draw more attention than intended pregnancies and subsequently are more likely to be reported in charts. We excluded files with missing data on pregnancy intention and/or psychiatric history. A comprehensive overview of incidences of UPs would require data on (elective abortions) amongst women with and without current/past psychiatric diagnoses. Unfortunately, these data were not available as our study presents data from a retrospective cohort of women with ongoing pregnancies. Although missing data on abortions could lead to an overall underestimation of UPs in the current study, there are no implications on the difference between women with and without current/past psychiatric diagnoses. Additionally, it is important to consider the possible response bias in women when inquiring for pregnancy intention. Pregnancy intention is notoriously difficult to assess and should be assessed prospectively with a validated instrument, if possible[27]. With our retrospective study design, we were unable to

perform this assessment. Instead, we used registrations in medical charts by health care professionals. Moreover, pregnancy planning could be perceived as a sensitive topic that women do not wish to discuss during a pregnancy intake, resulting in underreporting. Another important source of uncertainty is the severity of psychiatric symptoms at conception. We included women with a current/past psychiatric diagnosis but could not adjust for severity, current presence, or duration of the diagnosis. In fact, as mental health symptoms are more common than psychiatric diagnoses amongst women in the fertile stage of life, UPs amongst all women with mental health symptoms might be even more prevalent. Our study was however limited in the possibility to assess mental health symptoms, and the presence of current/past psychiatric diagnoses was found to be a more reliable predictor variable in our retrospective design. Although the overall sample size of the study was adequate for the performed main analyses, caution must be applied for subgroup analyses of individual psychiatric disorders, specifically with small samples of patients with substance use disorders and personality disorders. As women with psychiatric disorders might underreport the presence thereof, our main predictor (current/past psychiatric diagnosis) may have created a significant bias as it is partially based on self-reported history of diagnosis. Nonetheless, our findings are in concordance with previous studies that also found that women with substance use disorders and personality disorders have an increased odd of UPs[28,29]. Finally, we used the ethnicity variable according to the Dutch obstetric system as this is recorded in the patient file by all health professionals. However, since country of birth of the mother's parents does not always correspond to the ethnical background, this may be only partially correct and may have influenced our findings with regards of ethnicity. Notwithstanding these limitations, our findings have value as they are based on a large dataset that was compiled independently by several researchers which decreases the possibility of researcher bias. Information bias was diminished by performing manual checks on chart data. The hospital provides with thousands of well documented patient charts including data from pregnant patients with psychiatric diagnoses, enabling us to collect detailed data on psychiatric history and pregnancy intention. Although prospective measurement of pregnancy intention is ideal, our work offers valuable insights in the incidence UPs amongst women with current/past psychiatric diagnoses.

Interpretation

Psychiatric diagnoses and UPs

Our findings consolidate previous research that establishes psychiatric disorders as a predictor of UPs[11]. There are several hypotheses that explain why. First, psychiatric symptoms can influence psychological mechanisms that are key for adequate use of contraceptive methods, such as planning, overview and impulse control regarding reproductive decision making[30]. Moreover, reduced autonomy, lack of information, perceived stigma and worries about safety of contraceptive methods complicate pregnancy planning[31]. Studies also showed that stress levels and depressive symptoms in young women with mental health problems[32] and longer disease duration in patients with severe mental illnesses[33] predict UPs. Alternatively, an overlap between psychiatric disorders and social and psychological predictors of ineffective contraceptive use could explain risk for UPs[34]. Intimate partner violence, lack of social support[35,36] and low self-esteem[37] are related to both reproductive decision making and psychiatric disorders. In our study, presence of UPs was found in the overall group of women with a current/past psychiatric diagnosis (39.0% UPs, $p<0.001$), and even higher in women with depressive (43.2% UPs, $p=0.001$), substance use (66.7% UPs, $p=0.001$) and personality disorders (49.1% UPs, $p=0.004$). As depressive disorders are a common psychiatric disorder, especially for women of reproductive age,[38,39] the risk for UPs in this group is highly relevant. Previous studies show comparable findings amongst women with personality disorders and substance use disorders[28,29]. Contrary to expectations, we did not report and increased odds of UPs in women with schizophrenia and eating disorders[11,40]. Analyses in these relatively small samples of women could have been underpowered to find associations. This could explain relatively low UP rates in women with these severe mental illness compared to UP rates in literature[41]. Also, our data did not show increased odds of UPs for women with anxiety disorders, which accords with previous data from a Japanese birth cohort[42]. However, Tenkku et al. found a lower incidence of UPs in women with anxiety disorders, as opposed to a similar incidence between women with versus without anxiety disorders in our cohort. As qualitative studies on the psychological mechanisms behind UPs amongst women with anxiety disorders are currently lacking, it is challenging to hypothesize why women with anxiety disorders are less likely to become pregnant unintendedly. One of the possibilities is that individuals with anxiety disorders in general show harm avoidance and a drive to maintain control, which positively impact pregnancy planning behavior.

UPs and maternal and neonatal outcomes

We found that on itself, UPs were not related to adverse maternal or neonatal outcomes. Our findings oppose most previous studies that showed robust associations between UPs and adverse outcomes in retrospective studies, prospective studies[43-45] and meta-analysis originating from various geographic regions[16,17]. However, a recent large Swedish prospective cohort study found no association between UPs and severe pregnancy outcomes such as hypertensive disorders of pregnancy, gestational diabetes mellitus, assisted birth or cesarean section[46]. Possibly, free health care settings with possibilities to choose abortion, like in Sweden and the Netherlands, can influence the consequences of UPs. Another reason is that more positive feelings towards the pregnancy could have mediated stress levels during pregnancy and thus positively impact birth outcomes after UPs such as premature birth and low birthweight[36]. In our study, likewise, current/ past psychiatric diagnoses did not predict adverse maternal and neonatal outcomes. Irrespective of pregnancy planning, antenatal psychiatric disorders such as depressive disorders, anxiety disorders, schizophrenia spectrum disorders and bipolar disorders have been related to adverse maternal and neonatal outcomes in previous studies[8,47-50].

Mediation by current/past psychiatric diagnoses

Our data showed a higher GA in women with UPs and current/past psychiatric diagnoses (p=0.001). This is probably a chance finding, as no other maternal or neonatal outcomes differed between the groups in our data, and no previous studies have shown more positive outcomes in women with both UPs and current/past psychiatric diagnoses. However, the lack of comparative literature illustrates the need for further evaluation of maternal and neonatal outcomes in these women. Additionally, there was no difference in the clinically relevant outcome preterm birth (p=0.618). A previous paper showed that adverse outcomes after UPs were similarly adverse in subsamples of women with prenatal depression[17]. Although antenatal depression severity was not measured in our population, we also found that in our sensitivity analysis of women with current/past depression versus without, UPs were not related to adverse maternal or neonatal outcomes. Due to the limited available literature on this association, it is challenging to interpret our findings.

Implications for future research

This research has thrown up several questions in need for further investigation. It would be interesting to study pregnancy planning amongst women with psychiatric diagnoses (other than severe mental illnesses) with qualitative research methods, to gain insight in the psychological mechanisms behind the wish for children and

pregnancy planning. Both qualitative and quantitative studies could consider the role of intimate partner violence, social support, and autonomy in studying the impact of UPs in women with psychiatric diagnoses. To further evaluate neonatal outcomes, psychological adaptation to an UP during pregnancy and consequent presence or absence of psychological distress could be included in studies as a moderating variable. Last, our data provide insights in the short-term outcomes after UPs. Little is known about long-term outcomes after Ups in women with (severe) psychiatric disorders, such as mother child interaction and parenting stress[51,52]. To conclude, our data confirm the hypothesis that current/past psychiatric diagnoses are associated with UPs. Women with depressive, personality and substance abuse disorders have increased odds for UPs compared to women without these diagnoses. These findings underscore the need for attention for pregnancy planning in psychiatric healthcare, especially as these psychiatric disorders have a high prevalence in society. We found no differences in maternal and neonatal outcomes after UPs versus intended pregnancies, neither did we find clinically relevant modification of psychiatric diagnosis on the relation between pregnancy intention and outcomes. Our data attenuate previous findings on adverse neonatal outcomes after UPs in addition to adverse pregnancy outcomes for women with psychiatric diagnoses. Although our study is limited by several factors, short-term maternal and neonatal outcomes for women with current/past psychiatric diagnoses in a hospital population might be better than expected. Increased efforts are needed to ensure that psychoeducation and conversations about pregnancy planning and UPs are available for women with current/past psychiatric diagnoses.

Acknowledgments

We thank Nadine Rijkers, Dasha Hageman, Margaux Pons, Noa Roumimper, Mei Yi de Jong, Yunus Erkan, Lisa Staghouwer, Sabine Westinga, and Githa Panman for their help with data cleaning.

References

1. Conejo-Galindo, J., et al., Postpartum Relapse in Patients with Bipolar Disorder. J Clin Med, 2022. 11(14): p. 3979.
2. Taylor, C.L., R.J. Stewart, and L.M. Howard, Relapse in the first three months postpartum in women with history of serious mental illness. Schizophr Res, 2019. 204: p. 46-54.
3. Yang, K., J. Wu, and X. Chen, Risk factors of perinatal depression in women: a systematic review and meta-analysis. BMC Psychiatry, 2022. 22(1): p. 63.
4. Wesseloo, R., et al., Risk of Postpartum Relapse in Bipolar Disorder and Postpartum Psychosis: A Systematic Review and Meta-Analysis. Am J Psychiatry, 2016. 173(2): p. 117-127.
5. Puyané, M., et al., Personality traits as a risk factor for postpartum depression: A systematic review and meta-analysis. J Affect Disord, 2022. 298(Pt A): p. 577-589.
6. Edvardsson, K., et al., Severe mental illness and pregnancy outcomes in Australia. A population-based study of 595 792 singleton births 2009-2016. PLoS One, 2022. 17(2): p. e0264512.
7. Etchecopar-Etchart, D., et al., Schizophrenia pregnancies should be given greater health priority in the global health agenda: results from a large-scale meta-analysis of 43,611 deliveries of women with schizophrenia and 40,948,272 controls. Mol Psychiatry, 2022. 27(8): p. 3294-3305.
8. Vlenterie, R., et al., Associations Between Maternal Depression, Antidepressant Use During Pregnancy, and Adverse Pregnancy Outcomes: An Individual Participant Data Meta-analysis. Obstet Gynecol, 2021. 138(4): p. 633-646.
9. Heun-Johnson, H., et al., Association between maternal serious mental illness and adverse birth outcomes. J Perinatol, 2019. 39(5): p. 737-745.
10. Sūdžiūtė, K., et al., Pre-existingmental health disorders affect pregnancy and neonatal outcomes: a retrospectivecohort study. BMC Pregnancy Childbirth, 2020. 20(1): p. 419.
11. Schonewille, N.N., et al., Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis. BMC Pregnancy Childbirth, 2022. 22(1): p. 153.
12. Abajobir, A.A., et al., A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. J Affect Disord, 2016. 192: p. 56-63.
13. Biaggi, A., et al., Identifying the women at risk of antenatal anxiety and depression: A systematic review. J Affect Disord, 2016. 191: p. 62-77.
14. Cheng, D., et al., Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors. Contraception, 2009. 79(3): p. 194-198.
15. Lindberg, L., et al., Pregnancy intentions and maternal and child health: an analysis of longitudinal data in Oklahoma. Matern Child Health J, 2015. 19(5): p. 1087-1096.
16. Hall, J.A., et al., Pregnancy Intention and Pregnancy Outcome: Systematic Review and Meta-Analysis. Matern Child Health J, 2017. 21(3): p. 670-704.
17. Nelson, H.D., et al., Associations of Unintended Pregnancy With Maternal and Infant Health Outcomes: A Systematic Review and Meta-analysis. JAMA, 2022. 328(17): p. 1714-1729.
18. Taylor, C.L., et al., The characteristics and health needs of pregnant women with schizophrenia compared with bipolar disorder and affective psychoses. BMC Psychiatry, 2015. 15: p. 88.
19. Bulik, C.M., et al., Unplanned pregnancy in women with anorexia nervosa. Obstet Gynecol, 2010. 116(5): p. 1136-1140.
20. Seeman, M.V. and R. Ross, Prescribing contraceptives for women with schizophrenia. J Psychiatr Pract, 2011. 17(4): p. 258-269.
21. Callegari, L.S., et al., Contraceptive adherence among women Veterans with mental illness and substance use disorder. Contraception, 2015. 91(5): p. 386-392.
22. Association, A.P., Diagnostic and statistical manual of mental disorders 5th ed. 2013.
23. Perined Methodologie Perinatologie Data. 2022.
24. Hoftiezer, L., et al., From population reference to national standard: new and improved birthweight charts. Am J Obstet Gynecol, 2019. 220(4): p. 383.e1-383.e17.
25. APGAR, V., A proposal for a new method of evaluation of the newborn infant. Curr Res Anesth Analg, 1953. 32(4): p. 260-267.
26. Wallace, B.C., et al., Closing the Gap between Methodologists and End-Users: R as a Computational Back-End. 2012, Journal of Statistical Software

27. Yargawa, J., et al., Pregnancy intention data completeness, quality and utility in population-based surveys: EN-INDEPTH study. Popul Health Metr, 2021. 19(Suppl 1): p. 6.
28. MacAfee, L.K., et al., Sexual and Reproductive Health Characteristics of Women in Substance Use Treatment in Michigan. Obstet Gynecol, 2020. 135(2): p. 361-369.
29. De Genna, N.M., et al., Pregnancies, abortions, and births among women with and without borderline personality disorder. Womens Health Issues, 2012. 22(4): p. e371-7.
30. Posada Correa, A.M., et al., Sexual and Reproductive Health in Patients with Schizophrenia and Bipolar Disorder. Rev Colomb Psiquiatr, 2020. 49(1): p. 15-22.
31. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
32. Hall, K.S., et al., The risk of unintended pregnancy among young women with mental health symptoms. Soc Sci Med, 2014. 100: p. 62-71.
33. Tozoglu Ozcan, E., et al., Unintended and Unwanted Pregnancies in Women with Major Psychiatric Disorders: A Cross-Sectional Comparative Study. Psychiatry and Clinical Psychopharmacology, 2020.
34. Enthoven, C.A., et al., Clustering of characteristics associated with unplanned pregnancies: the generation R study. BMC Public Health, 2022. 22(1): p. 1957.
35. Miller, E. and J.G. Silverman, Reproductive coercion and partner violence: implications for clinical assessment of unintended pregnancy. Expert Rev Obstet Gynecol, 2010. 5(5): p. 511-515.
36. Goossens, J., et al., The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. Hum Reprod, 2016. 31(12): p. 2821-2833.
37. Moyano, N., et al., Self-Esteem, Attitudes toward Love, and Sexual Assertiveness among Pregnant Adolescents. Int J Environ Res Public Health, 2021. 18(3): p. 1270.
38. Arias-de la Torre, J., et al., Prevalence and variability of current depressive disorder in 27 European countries: a population-based study. Lancet Public Health, 2021. 6(10): p. e729-e738.
39. Ten Have, M., et al., Prevalence and trends of common mental disorders from 2007-2009 to 2019-2022: results from the Netherlands Mental Health Survey and Incidence Studies (NEMESIS), including comparison of prevalence rates before vs. during the COVID-19 pandemic. World Psychiatry, 2023. 22(2): p. 275-285.
40. Micali, N., et al., Fertility treatment, twin births, and unplanned pregnancies in women with eating disorders: findings from a population-based birth cohort. BJOG, 2014. 121(4): p. 408-416.
41. Green, L., et al., An audit of pregnant women with severe mental illness referred during the first 2 years of a new perinatal mental health service. Arch Womens Ment Health, 2008. 11(2): p. 149-158.
42. Tenkku, L.E., et al., Psychiatric disorders among low-income women and unintended pregnancies. Womens Health Issues, 2009. 19(5): p. 313-324.
43. Hall, J.A., et al., Reassessing pregnancy intention and its relation to maternal, perinatal and neonatal outcomes in a low-income setting: A cohort study. PLoS One, 2018. 13(10): p. e0205487.
44. Eftekhariyazdi, M., et al., Comparison of pregnancy complications in unintended and intended pregnancy: A prospective follow-up study. Biomedicine (Taipei), 2021. 11(4): p. 51-56.
45. Ticona, D.M., D. Huanco, and M.B. Ticona-Rendón, Impact of unplanned pregnancy on neonatal outcomes: findings of new high-risk newborns in Peru. Int Health, 2024.16(1): p. 52-60.
46. Carlander, A., et al., Unplanned pregnancy and the association with maternal health and pregnancy outcomes: A Swedish cohort study. PLoS One, 2023. 18(5): p. e0286052.
47. Miller, E.S., et al., Trajectories of antenatal depression and adverse pregnancy outcomes. Am J Obstet Gynecol, 2022. 226(1): p. 108.e1-108.e9.
48. Jablensky, A.V., et al., Pregnancy, delivery, and neonatal complications in a population cohort of women with schizophrenia and major affective disorders. Am J Psychiatry, 2005. 162(1): p. 79-91.
49. Scrandis, D.A., Bipolar Disorder in Pregnancy: A Review of Pregnancy Outcomes. J Midwifery Womens Health, 2017. 62(6): p. 673-683.
50. Jarde, A., et al., Neonatal Outcomes in Women With Untreated Antenatal Depression Compared With Women Without Depression: A Systematic Review and Meta-analysis. JAMA Psychiatry, 2016. 73(8): p. 826-837.
51. McCrory, C. and S. McNally, The effect of pregnancy intention on maternal prenatal behaviours and parent and child health: results of an irish cohort study. Paediatr Perinat Epidemiol, 2013. 27(2): p. 208-215.

52. Shreffler, K.M., et al., Pregnancy intendedness, maternal-fetal bonding, and postnatal maternal-infant bonding. Infant Ment Health J, 2021. 42(3): p. 362-373.

Supplementary material

Table S4.1 - Demographic features of women with and without psychiatric diagnosis and with and without unintended pregnancies.

	Current and/or past psychiatric diagnosis (n=1219)		Reference group (n=1093)	
	IP (n=743)	UP (n=476)	IP (n=769)	UP (n=324)
Age (mean, sd)	34.39 (4.83)	32.64 (5.64)	33.60 (5.46)	32.06 (6.22)
Ethnic background n, %				
Asian	23 (3.1)	11 (2.3)	22 (2.9)	9 (2.8)
Hindustani	6 (0.8)	5 (1.1)	14 (1.8)	6 (1.9)
Caucasian	436 (58.7)	153 (32.1)	322(41.9)	85 (26.2)
Latin American	2(0.3)	1 (0.2)	2 (0.3)	0 (0.0)
Northern African	107 (14.4)	152 (31.9)	152 (19.8)	97 (29.9)
Mixed	47 (6.3)	52 (10.9)	59 (7.7)	39 (12.0)
African, not Northern	24 (3.2)	29 (6.1)	22 (2.9)	28 (8.6)
Turkish	43 (5.8)	34 (7.1)	95 (12.4)	38 (11.7)
Missing ethnicity	55 (7.4)	39 (8.2)	81 (10.5)	22 (6.8)
Employment status n, %				
Paid job, yes	452 (60.8)	174 (36.6)	466 (60.6)	146 (45.1)
Paid job, no	192 (25.8)	237 (49.8)	149 (19.4)	119 (36.7)
Paid job, missing	99 (13.3)	65 (13.7)	154 (20.0)	59 (18.2)
Alcohol use during pregnancy n, %				
Alcohol use, yes	19 (2.6)	34 (7/1)	22 (2.9)	10 (3.1)
Alcohol use, no	712 (95.8)	439 (92.2)	735 (95.6)	313 (96.6)
Alcohol use, missing	12 (1.6)	3 (0.6)	12 (1.6)	1 (0.3)
Smoking during pregnancy n, %				
Smoking, yes	80 (10.8)	107 (22.5)	53 (6.9)	55 (17.0)
Smoking, no	650 (87.5)	365 (76.7)	705 (91.7)	268 (82.7)
Smoking, missing	13 (1.7)	4 (0.8)	11 (1.4)	1 (0.3)
Psychotropic medication use n, %				
Psychotropic medication use, yes	319 (42.9)	187 (39.3)	13 (1.7)	9 (2.8)
Psychotropic medication use, no	418 (56.3)	284 (59.7)	748 (97.3)	313 (96.6)
Psychotropic medication use, missing	6 (0.8)	5 (1.1)	8 (1.0)	2 (0.6)
Parity n, %				
Primiparous	425 (57.2)	189 (39.7)	445 (57.9)	113 (34.9)
Multiparous	318 (42.8)	286 (60.1)	323 (42.0)	211 (65.1)
Parity, missing	0 (0.0)	1 (0.2)	1 (0.1)	0 (0.0)
Chronic somatic illnesses n, %				
Diabetes type I or II	11 (1.5)	6 (1.3)	15 (2.0)	9 (2.8)
Chronic hypertension	8 (1.1)	6 (1.3)	5 (0.7)	7 (2.2)
Thyroid conditions	56 (7.5)	18(3.8)	33 (4.3)	18 (5.6)
Asthma	32 (4.3)	23 (4.8)	34 (4.4)	22 (6.8)
Epilepsy	8 (1.1)	6 (1.3)	6 (0.8)	2 (0.6)
Caesarean section in medical history	41 (5.5)	20 (4.2)	22 (2.9)	15 (4.6)

Data are presented as number (%), unless indicated otherwise. IP, intended pregnancy; UP, unintended pregnancy; SD, standard deviation.
*p-value <0.05; ** Some women were diagnosed with >1 disorder.

CHAPTER 5

Neonatal admission after lithium use in pregnant women with bipolar disorders: a retrospective cohort study

Noralie N. Schonewille, Pleun A. Terpstra, Maria E.N. van den Heuvel, Maria G. van Pampus, Odile A. van den Heuvel and Birit F. P. Broekman

Published in
International Journal of Bipolar Disorders, 2023
DOI 10.1186/s40345-023-00306-7

Abstract

Background

Lithium is the preferred treatment for pregnant women with bipolar disorders (BD), as it is most effective in preventing postpartum relapse. Although it has been prescribed during pregnancy for decades, the safety for neonates and obstetric outcomes are a topic of ongoing scientific debate as previous research has yielded contradicting outcomes. Our study aims to compare (re)admission rates and reasons for admissions in neonates born to women with bipolar disorders (BD) with and without lithium exposure.

Methods

A retrospective observational cohort study was conducted in a Dutch secondary hospital (two locations in Amsterdam). Women with BD who gave birth after a singleton pregnancy between January 2011 and March 2021 and their neonates were included. Outcomes were obtained by medical chart review of mothers and neonates and compared between neonates with and without lithium exposure. The primary outcome was admission to a neonatal ward with monitoring, preterm birth, small for gestational age (SGA), 5-minute Apgar scores, neonatal asphyxia, and readmission ≤ 28 days.

Results

We included 93 women with BD, who gave birth to 117 live-born neonates: 42 (36%) exposed and 75 (64%) non-exposed to lithium. There were no significant differences in neonatal admission with monitoring (16.7 vs. 20.0%, p=0.844). Additionally, preterm birth (7.1 vs. 5.3%), SGA (0.0 vs. 8.0%), 5-minute Apgar scores (means 9.50 vs. 9.51), neonatal asphyxia (4.8 vs. 2.7%) and readmission (4.8 vs. 5.3%) were comparable. Overall, 18.8% of BD offspring was admitted. Women with BD had high rates of caesarean section (29.1%), gestational diabetes (12.8%) and hypertensive disorders of pregnancy (8.5%).

Conclusions

In a sample of neonates all born to women with BD using various other psychotropic drugs, exposure to lithium was not associated with greater risk of neonatal admission to a ward with monitoring compared to non-exposure to lithium, questioning the necessity for special measures after lithium exposure. However, offspring of women with BD was admitted regularly and women with BD have high obstetric risk which require clinical and scientific attention.

Background

Lithium is the preferred treatment for pregnant women with bipolar disorders (BD), as it is most effective in preventing postpartum relapse[1,2]. Although it has been prescribed during pregnancy for decades, the safety for neonates and obstetric outcomes are a topic of ongoing scientific debate[3]. Previous research has yielded contradicting outcomes. Various cohort studies and systematic reviews (with meta-analyses) have found no increased risk in obstetric outcomes such as hypertensive disorders of pregnancy and gestational diabetes in women with BD with versus without lithium use[4-8]. Yet, some studies have suggested a small increased risk of spontaneous abortion, preterm birth, and increased birthweight after maternal lithium use[3,9]. Others described an association of BD with adverse obstetric and pregnancy outcomes such as increased risk of caesarean section, small- or large for gestational age neonates and preeclampsia[10,11]. Moreover, previous research has reported an association between lithium and congenital malformations[3,7,12], lower Apgar scores[8,13] neonatal readmission within 28 days postpartum[5]. Although reasons for admission of lithium-exposed neonates were not available, the authors suggested that admissions were the result of increased vigilance towards neonates exposed to lithium, neonatal withdrawal syndrome and vulnerability of neonates due to impaired maternal mental health. Most guidelines and hospitals preventatively admit neonates to monitor their condition postpartum[10,11]. However, admission to a neonatal ward with monitoring may also have adverse consequences. It can lead to increased feelings of parental stress, and a negative effect on early mother-infant attachment, which is especially important for patients who are already vulnerable for mental health disorders[14,15]. Preferably, admission to a neonatal ward with monitoring for lithium- exposed neonates should be evidence-based. As also mental health disorders may impact obstetric outcomes it is important to differentiate lithium-related adverse outcomes from adverse outcomes related to the mental disorder. The aim of the current study is to validate previous findings on neonatal outcomes after lithium exposure by comparing (re)admission rates in neonates born to women with BD with versus without lithium exposure. Moreover, we aim to elucidate the reasons for admissions in neonates born to women with BD.

Methods

Participants and eligibility criteria

Methods were reported according to the STROBE checklist (https:// www. equat or-netwo rk. org/ repor ting- guidelines/ strobe/) for reporting observational cohort

studies. The retrospective cohort consisted of a convenience sample of neonates of singleton pregnant women, ≥18 years, with BD diagnosed by a psychiatrist before pregnancy, or clear symptoms of BD before pregnancy and confirmed diagnosis (by a psychiatrist) postpartum. Participants gave birth to a liveborn neonate between January 2011 and March 2021 at OLVG hospital (a large secondary care hospital in Amsterdam, the Netherlands), or had their child admitted directly postpartum after home delivery due to complications or as per protocol. In the Netherlands, obstetric care is divided between community midwifes (primary care), obstetrician-gynaecologists (secondary care) and academic referral centres (tertiary care). When lithium was used at any point throughout the pregnancy, neonates were included in the lithium exposed group (including women who started lithium after the first trimester (n=3)), other neonates were included in the non-lithium exposed group. We excluded women with an uncertain diagnosis of BD, twin pregnancies, or records with missing information on maternal and neonatal outcomes. All records were hand searched by one researcher and discussed with a second or third researcher if necessary to prevent misclassification of outcomes. The Medical Research Involving Human Subjects Act was not applicable for this study. The study was approved by the Advisory Committee Scientific Research at OLVG hospital who granted exemption for written informed consent because of the large number of records to search.

Study variables and definition of outcomes

We primarily investigated the number of, and reasons for admissions to the neonatal ward with monitoring (level 2 care). In OLVG hospital, neonates born to women with BD are observed for minimally 24 h while roomed in with their mothers on the maternity ward (level 1 care, which has no opportunity for continuous monitoring of vital parameters) and only admitted to the neonatal ward with monitoring when indicated by the paediatrician. In other Dutch hospitals, admission to a neonatal ward with monitoring of vital parameters for at least 24–48 h is generally the norm. Data on all other adverse outcomes in neonates admitted within 28 days postpartum was collected from obstetric and neonatal patient files. Data on the mothers' sociodemographic characteristics, medication use (including lithium dosage of pregnant women), and neonatal outcomes were extracted from patient files. Prematurity was defined as delivery before 37 weeks of gestation, large for gestational age as weight above the 97th percentile, small for gestational age under the 10th percentile[16] and maternal obesity as a body mass index > 30 kg/m^2.

Statistical analysis

Statistical analyses were performed using R Studio version 4.0.4 (www.rstudio.com). For normally distributed continuous baseline characteristics, means and standard deviations were calculated with T-tests to assess differences between groups. Categorical and dichotomous variables were presented with numbers and percentages per category and Chi2 tests were performed to assess differences. The primary outcome (re)admission to a neonatal ward with monitoring was compared between groups using a Chi2 test and additional logistic regression analysis was performed to adjust for psychotropic medications other than lithium as a dichotomous variable. Odds ratio (OR) with a 95% confidence interval and p-values were reported.

Results

Out of 32,705 birth registration records, we identified 970 records of women with the term 'bipolar disorder' in their electronic files, of which 119 women met inclusion criteria and were evaluated in-depth. Subsequently, 26 women were excluded because of unclear diagnosis of BD (n = 3) and missing data on maternal, delivery and neonatal outcomes (n = 23). A total of 117 liveborn neonates were included, born to 93 women. See Table 5.1 for maternal and pregnancy characteristics.

Two women were diagnosed with BD in the postpartum period, 91 women were diagnosed before or during pregnancy. Some women had several pregnancies. Forty-two neonates were exposed to lithium during pregnancy and 75 were not. Thirty-nine lithium-exposed neonates (93%) were already exposed to lithium from the first trimester onwards. Of the 42 women in the lithium exposed group, 41 women used lithium during pregnancy until delivery and continued lithium use in the first 28 days postpartum. One woman caesed lithium in the first trimester of pregnancy. Type of lithium was unknown in five women and the other 37 women used a form of lithium carbonate with dosages between 400 and 2400 mg a day (see Table 5.1).

Table 5.1 - Descriptive characteristics of study sample.

	Total (n=117)	Non-lithium exposed group (n=75)	Lithium-exposed group (n=42)	P-value
Maternal and pregnancy characteristics				
Maternal age at delivery, years mean (SD)	34.31 (4.24)	34.79 (4.21)	33.45 (4.20)	0.102
Multipara, n (%)	51 (43.6)	28 (37.3)	23 (54.5)	0.198
Intoxication*, n (%)	23 (19.7) Missing 3	17 (22.7) Missing 3	6 (14.3)	0.340
Smoking, n (%)				0.698
No	95 (81.2)	59 (78.7)	36 (85.7)	
Yes, all trimesters	13 (11.1)	9 (12.0)	4 (9.5)	
Yes, only in first trimester	8 (6.9)	6 (8.0)	2 (4.8)	
Lithium exposure				
During pregnancy at any point, n (%)	42	NA		
In third trimester, n (%)	41	NA		
Dosage, mean mg/day (range)	1051.28 (400-2400)	NA		
Psychotropic medication other than lithium, n (%)	66 (56.4)	44 (58.6)	23 (54.8)	0.940
Typical antipsychotics	8 (6.8)	4 (5.3)	4 (9.5)	NA
Atypical antipsychotics	39 (33.3)	26 (34.7)	13 (31.0)	0.838
SNRI	6 (5.1)	5 (6.7)	1 (2.4)	NA
SSRI	12 (10.3)	6 (8.0)	6 (14.3)	0.4488
TCA	1 (0.9)	0 (0.0)	1 (2.4)	NA
TeCA	1 (0.9)	1 (1.3)	0 (0.0)	NA
Benzodiazepines	7 (6.0)	5 (6.7)	2 (4.8)	NA
Atypical antidepressants	2 (1.7)	1 (1.3)	1 (2.4)	NA
Anticonvulsants	15 (12.8)	11 (14.7)	4 (9.5)	NA
Type of bipolar disease, n (%)				0.012**
I	46 (39.3)	21 (28.0)	25 (59.5)	
II	54 (46.2)	39 (52.0)	15 (37.5)	
Rapid cycling	4 (3.4)	2 (2.7)	2 (4.8)	
Not otherwise specified	2 (1.7)	2 (2.7)	0 (0.0)	
Planned pregnancy, n (%)	70 (60.0) Missing 22	42 (56.0) Missing 16	28 (66.7) Missing 6	0.640
Obesity, n (%)	25 (21.4) Missing 40	12 (16.0) Missing 28	13 (31.0) Missing 12	0.168
Pregnancy outcomes				
Gestational diabetes mellitus***, n (%)	15 (12.8)	9 (12.0)	6 (14.3)	0.947
Hypertensive disorders of pregnancy, n (%)				0.218
No	107 (91.5)	71 (94.7)	36 (85.7)	
Pregnancy induced hypertension	4 (3.4)	2 (2.7)	2 (4.8)	
Preeclampsia	6 (5.1)	2 (2.7)	4 (9.5)	
Polyhydramnios, n (%)	7 (6.0) Missing 40	2 (2.7) Missing 30	5 (11.9) Missing 10	0.201
Caesarean section, n (%)	34 (29.1)	18 (24.0)	16 (38.1)	0.162
Of which unplanned n (% of total caesarean sections per group)	22 (64.7)	13 (72.2)	9 (56.3)	0.540

NA, not applicable; GAD, gestational age at delivery; n, number; IQR, interquartile range; SD, standard deviation.
*Alcohol/smoking/recreational drugs; **p<0.05; ***According to local protocols.

Psychotropic medication other than lithium was used frequently in both groups (54.8% in lithium-exposed and 58.6% in non-lithium exposed neonates). Nine out of 42 lithium-exposed neonates were also exposed to antipsychotics (21.4%), four to serotonergic antidepressants (9.5%) and eight neonates to a combination of psychotropic medication (19.0%). In the non-lithium exposed neonates, antipsychotics (as monotherapy) were most frequently reported during pregnancy (25.3%), followed by serotonergic antidepressants (as monotherapy) in four cases (5.3%) and 13 neonates were exposed to a combination of psychotropic medication (17.3%). Type of BD differed between groups (with more type-I in the lithium-exposed group), all other characteristics were comparable between mothers. Admission to a neonatal ward with monitoring and adverse neonatal outcomes up to 28 days postpartum. Overall admission rate to a neonatal ward with monitoring was 19%, with a median duration of 3 days, see Table 5.2.

Lithium-exposed neonates had a significantly higher birth weight ($p = 0.040$) and birth weight percentile ($p = 0.021$) than non-exposed neonates. There was no significant difference in admission rate to a neonatal ward with monitoring between lithium-exposed and non-lithium exposed neonates when estimated using a Chi2 test (OR 0.80, 95% CI 0.25–2.34, $p = 0.844$), a logistic regression analysis without any covariates (OR 0.80, 95% CI 0.28–2.09, $p = 0.658$) and after adjustment for 'other psychotropic medication than lithium' (OR 0.75, 95% CI 0.26–1.99, $p = 0.671$). A posthoc sensitivity analysis was performed to assess neonatal admission for neonates exposed to lithium in the third trimester of pregnancy ($n = 41$) versus neonates not exposed to lithium in the third trimester of pregnancy ($n = 76$) (OR 0.84, 95% CI 0.26–2.45, $p = 0.808$ using a Chi2 test).

Figure 5.1 demonstrates reasons for admission to a neonatal ward with monitoring in both lithium-exposed and non-lithium exposed neonates, in addition to other psychotropic medication used in neonates with complications.

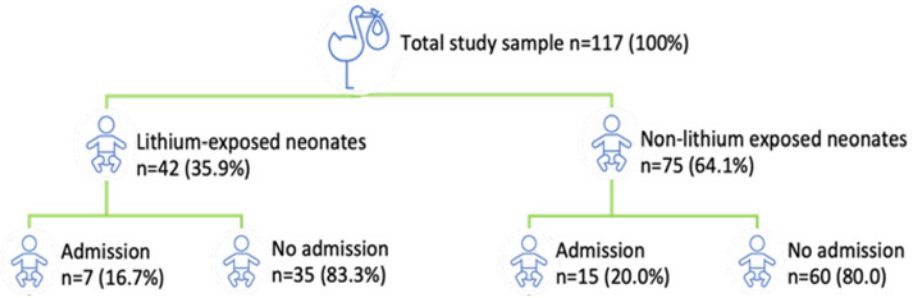
One serious adverse outcome possibly related to lithium exposure was observed: a case of atrium flutter that required adenosine treatment. Three lithium-exposed neonates had glandular hypospadias, as opposed to four congenital malformations in the non-lithium exposed neonates (congenital foot deviation, polydactyly, ventricular septal defect, and central congenital hypothyroidism). Two lithium-exposed neonates were readmitted to a neonatal ward with monitoring within 28 days postpartum (the neonate with atrial flutter for relocation from an academic centre and one neonate with progressive posthemorrhagic hydrocephalus) and four non-lithium exposed neonates were readmitted (one with congenital hypothyroidism and adrenal

insufficiency, two with feeding difficulties, one after relocation because of shoulder dystocia with severe asphyxia).

Table 5.2 - Neonatal outcomes according to lithium exposure.

	Total (n=117)	Non-lithium exposed group (n=75)	Lithium-exposed group (n=42)	P-value
Neonatal outcomes				
Sex, female, n (%)	62 (53.0)	44 (58.7)	18 (42.0)	0147
Gestational age, mean (SD)	276.23 (11.10)	276.55 (11.27)	275.67 (10.92)	0.283
Gestational age, weeks + days (SD)	39+4 (1+5)	39+5 (1+6)	39+4 (1+5)	0.283
Preterm birth, n (%)	7 (6.0)	4 (5.3)	3 (7.1)	NA
Birth weight in grams, mean (SD)	3445.16 (492.94)	3375.36 (481.14)	3569.81 (494.80)	0.040*
Percentile weight, mean (SD)	51.25 (28.58)	46.72 (27.55)	59.33 (28.92)	0.021*
Large for gestational age, n (%)	12 (10.3)	6 (8.0)	6 (14.3)	0.449
Small for gestational age, n (%)	6 (5.1)	6 (8.0)	0 (0.0)	NA
Apgar scores				
Apgar score 1 min, mean (SD)	7.75 (2.21)	7.71 (2.32)	7.83 (2.01)	7.758
Apgar score 5 min, mean (SD)	9.50 (1.13)	9.51 (1.26)	9.50 (0.89)	0.973
Neonatal asphyxia**, n (%)	4 (3.4)	2 (2.7)	2 (4.8)	NA
Admission to neonatal ward with monitoring, n (%)	22 (18.8)	15 (20.0)	7 (16.7)	0.844
Duration admission to care unit in days, median (IQR)	3 (5.00)	5 (5.00)	2 (0.75)	NA
Congenital malformations, n (%)	8 (6.9)	4 (5.3)	4 (9.5)	NA
Readmission ≤ 28 days postpartum	6 (5.1)	4 (5.3)	2 (4.8)	NA

*p<0.05; ** According to local protocol.
n, number; SD, standard deviation; IQR, interquartile range; NA, not applicable.
Chi^2 tests were not applicable if value in cell <5.



Reasons for admission in lithium-exposed group (n=7)	Psychotropic medication exposure	Reasons for admission in non-lithium exposed group (n=15)	Psychotropic medication exposure
Prematurity			
Prematurity and infection	Lithium	Prematurity, hyperbilirubinemia	Quetiapine
Prematurity, hyperbilirubinemia, mild hypotonia, hypothermia and necrotizing enterocolitis	Lithium, nortriptyline, olanzapine	Prematurity, respiratory distress, feeding difficulties, hypothermia	Aripiprazole
		Prematurity, hyperbilirubinemia, exposure to labetalol intravenously, premature caesarean section	Labetalol intravenously during delivery
Infectious			
Infection	Lithium	Infection	
Mild hypotonia and antibiotics for suspected infection	Lithium	Infection, intrapartum foetal distress	
Meningitis and hydrocephalus	Lithium	Infection	
		Infection, anaemia	Lamotrigine
Respiratory			
		Respiratory distress, feeding difficulties	Venlafaxine, quetiapine
		Transient tachypnoea of neonate	
		Dysmaturity, hypoglycaemia, transient tachypnoea of neonate, exposure to alcohol and cannabis during pregnancy	

Reasons for admission in lithium-exposed group (n=7)	Psychotropic medication exposure	Reasons for admission in non-lithium exposed group (n=15)	Psychotropic medication exposure
Neurological			
		Severe perinatal asphyxia after shoulder dystocia	
		Hypotonia, hypocapnia (unexplained), feeding difficulties, respiratory distress	Clozapine, general anaesthesia during delivery
		Hypotonia, dyspnoea, perinatal asphyxia, hypoglycaemia	
		Severe neonatal abstinence syndrome	Olanzapine, quetiapine
Other			
Atrial flutter	Lithium	Preventative monitoring for psychoactive medication exposure	Quetiapine, oxazepam
Choking accident	Lithium		

Figure 5.1 - Neonatal outcomes according to lithium exposure during pregnancy.
In the table within Figure 5.1, each half row represents the reason for admission of a single neonate (7 in the lithium exposed group and 15 in the non-exposed group). In the column to the right, we present any psychotropic medication used by the mother. Furthermore, we categorized all reasons for admission to larger groups (prematurity, infectious, respiratory, neurological, and other).

Discussion

Main findings

There was no association between lithium exposure and admission to a neonatal ward with monitoring during the first 28 days after delivery ($p = 0.844$). One (1%) serious adverse outcome was possibly related to lithium exposure. One in five neonates born to women with BD, independent of lithium exposure, required admission to a neonatal ward with monitoring. Remarkably, pregnant women with BD had high obstetric vulnerability shown by high caesarean section, gestational diabetes, and hypertensive disorders. Our findings that lithium exposure is not associated with more frequent admissions to a neonatal ward with monitoring in a sample of women with BD only is in concordance with findings from a sensitivity analysis in the study of Munk-Olsen et al. (2018).

Strengths and limitations

Our focus on neonatal admissions to a ward with monitoring after lithium exposure in solely women with BD is novel. Many studies have focused primarily on congenital malformations or birth outcomes instead of the necessity of monitoring the neonate for 24 h on a neonatal ward, which is an important clinical outcome that affects parents and neonates. Moreover, inclusion of a control group consisting of neonates born to women who were diagnosed with BD decreased confounding bias. This is important, as mental disorders itself, including BD, have shown to increase the risk of pregnancy, obstetric and neonatal adverse outcomes[6,17]. However, this study has potential limitations. First and foremost, analyses were based on a limited sample of neonates, leading to a lack of statistical power when discussing neonatal outcomes, and reason for (re)admission, with low prevalence. This is also applicable to the primary outcome neonatal admission after lithium exposure. Within this sample, lithium-exposed versus non-exposed neonates differed regarding type of BD, which we were unable to correct for due to the limited sample size. Moreover, as 93% of neonates were already exposed to lithium in the first trimester, we were unable to create different research groups to investigate possible differences in first, second or third trimester lithium use. Lithium levels of these women were monitored externally and could not be accessed. Due to the careful monitoring and information of lithium dosage, it is probably safe to assume lithium levels were within therapeutic range. However, other factors such as hydration status could impact lithium levels in neonates. In future studies it is advised to include lithium levels. Also, we found low numbers of women diagnosed with BD recorded in our hospital's charts in this sample compared to the lifetime prevalence of BD[18]. Possibly, women with BD were underrepresented or underdiagnosed in OLVG hospital. This would be worrisome, as women with severe mental illness deserve and require tailored obstetric care which is available at the specialised clinic for pregnancy and psychiatric vulnerability in OLVG hospital. Another noteworthy limitation is the common use of psychotropic medication other than lithium in both groups. Although we have adjusted for other psychotropic use in our logistic regression to understand the effect of lithium aside from other psychotropic drugs, overall the other psychotropic medicine (such as antipsychotics (typical and atypical), various types of antidepressants, benzodiazepines, and anticonvulsants could have influenced birth outcomes in both groups, and therefore admission to a neonatal ward with monitoring[6]. Given this influence of psychotropic medication, we have no information on a causal association between lithium exposure and neonatal admission to a ward with monitoring. On the other hand, the diversity in medication use will make our results more generalizable to the clinical population, as many patients with BD use multiple psychotropic medications. As lithium-exposed neonates were not standardly monitored, not all anomalies might have been discovered. This

can be considered a strength rather than a limitation because neonates born after an uncomplicated pregnancy would also not be monitored. It can therefore be argued that potentially missed anomalies were clinically insignificant and would have skewed the results towards an overestimation of adverse outcomes in lithium-exposed neonates compared to the reference group.

Interpretation

Similar admission rates between lithium and non-lithium exposed neonates seem to contradict previously described increased admissions to a neonatal ward with monitoring after lithium exposure due to floppy infant syndrome, cardiac arrhythmia, thyroid disorder, congenital malformations and Ebstein anomaly[7]. However, our relatively high overall admission rate to a neonatal ward with monitoring of 19% may be related to the BD status of the mother more than to lithium exposure to the neonate. This is argued by comparable admission rates between lithium-exposed neonates and neonates born to mothers with BD in previous study samples[5]. Our findings showed lower absolute rates of (re)admission to a neonatal ward with monitoring in both groups compared to the previously described 27.5% in lithium-exposed neonates in the study of Munk-Olsen et al. (2018). As the reason for (re)admission is not described in the study of Munk-Olsen, we are unable to interpret this difference in (re)admission rate within the first 28 days of life. In our study, neonates with severe adverse outcomes were identified immediately postpartum in the delivery rooms or the maternity ward and not through preventative admission to a neonatal ward with monitoring. More importantly, none of the lithium-exposed neonates who were not initially admitted to a neonatal ward with monitoring, suffered any adverse outcomes within the first 28 days postpartum. For these neonates, rooming-in with the mother on a maternity ward without monitoring was safe and, according to earlier research, beneficial for parental mental health and parent-infant bonding[14,15,19,20]. As for the possible lithium-related admission to the neonatal ward with monitoring, an atrial flutter was observed in a lithium-exposed neonate at 37 + 3 weeks' gestation. A previous case was described in 1983[21], with toxic lithium levels of 1.5 mmol/l, compared to 0.42 mmol/l in our case. Nowadays lithium levels are routinely checked in the last weeks before delivery, thus toxic lithium levels are rare. Whether this atrial flutter was a result of lithium toxicity or a congenital condition, is unclear. With no significant risk of neonatal complications in lithium-exposed newborns, our study, except for their finding of lower Apgar scores, is in accordance with a recent cohort study[8]. Obstetric vulnerability in our sample of women with BD was marked by higher levels of caesarean section[22], gestational diabetes[23], and hypertensive disorders[24]. This is in line with findings of various studies, who previously described high risk obstetric profiles of women with BD[11,25]. Maternal obesity, high prenatal stress levels, smoking

during pregnancy and comorbid psychiatric medication use may increase this vulnerability and alter birth outcomes[11]. In our sample, 11.1% of all women with BD smoked during all trimesters of pregnancy. Although the percentage of women smoking in the lithium and non-lithium exposed groups were comparable, smoking is a potential confounder with regards to neonatal morbidity. Preterm birth was not associated to lithium exposure in our study ($p = 1.00$), in contrast to previous research[3]. Although we did not find a difference in large for gestational age neonates, we found higher birth weight in lithium-exposed neonates and higher percentile birth weight compared to non-exposed neonates in line with previous studies[9].

Conclusions

The results of this study show that one in five neonates was admitted to a neonatal ward with monitoring. Obstetric risks of mothers with BD were high and overall neonatal admissions were frequent. However, lithium exposure in itself was not a reason for admission to a neonatal ward with monitoring. We argue that special measures with regards to lithium use might be abundant, and advise joint observation of mothers with BD and their offspring in a nursery (level 1 care) to promote mother-infant bonding. Future studies should further explore factors related to the mental disorder in relation to obstetric vulnerability and adverse neonatal outcomes in women with BD.

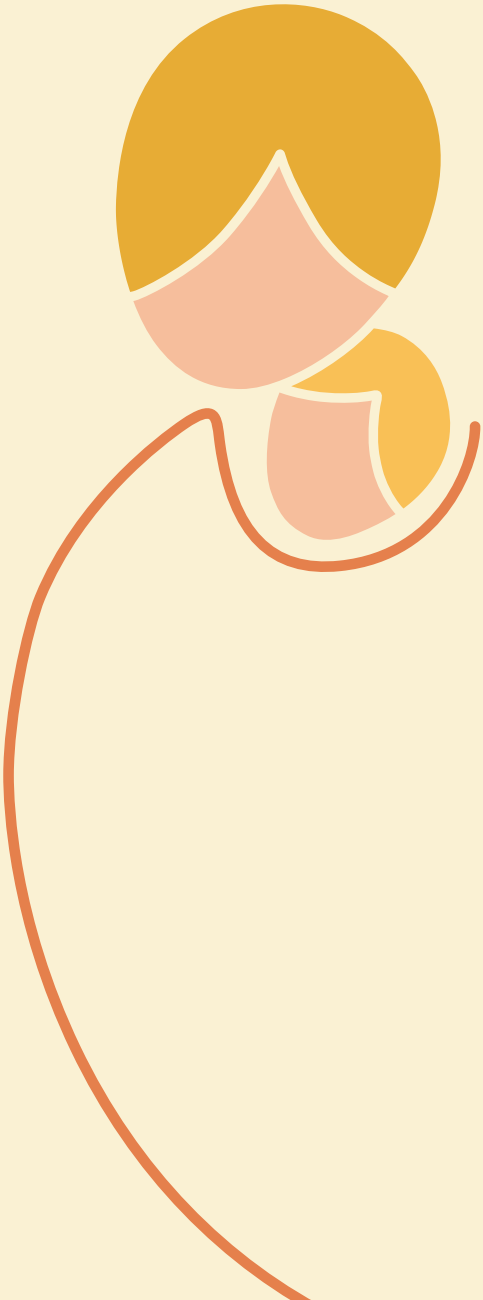
References

1. Wesseloo, R., et al., Risk of Postpartum Relapse in Bipolar Disorder and Postpartum Psychosis: A Systematic Review and Meta-Analysis. Am J Psychiatry, 2016. 173(2): p. 117-127.
2. Gilden, J., et al., Bipolar episodes after reproductive events in women with bipolar I disorder, A study of 919 pregnancies. J Affect Disord, 2021. 295: p. 72-79.
3. Hastie, R., et al., Maternal lithium use and the risk of adverse pregnancy and neonatal outcomes: a Swedish population-based cohort study. BMC Med, 2021. 19(1): p. 291.
4. Poels, E.M.P., et al., Lithium during pregnancy and after delivery: a review. Int J Bipolar Disord, 2018. 6(1): p. 26.
5. Munk-Olsen, T., et al., Maternal and infant outcomes associated with lithium use in pregnancy: an international collaborative meta-analysis of six cohort studies. Lancet Psychiatry, 2018. 5(8): p. 644-652.
6. Bodén, R., et al., Risks of adverse pregnancy and birth outcomes in women treated or not treated with mood stabilisers for bipolar disorder: population based cohort study. BMJ, 2012. 345: p. e7085.
7. Fornaro, M., et al., Lithium Exposure During Pregnancy and the Postpartum Period: A Systematic Review and Meta-Analysis of Safety and Efficacy Outcomes. Am J Psychiatry, 2020. 177(1): p. 76-92.
8. Sagué-Vilavella, M., et al., Obstetric outcomes regarding the use of lithium in pregnant women with bipolar disorders: a prospective cohort study. Arch Womens Ment Health, 2022. 25(4): p. 729-737.
9. Poels, E.M., et al., Lithium exposure during pregnancy increases fetal growth. J Psychopharmacol, 2021. 35(2): p. 178-183.
10. Vigod, S.N., et al., Maternal and newborn outcomes among women with schizophrenia: a retrospective population-based cohort study. BJOG, 2014. 121(5): p. 566-74.
11. Rusner, M., M. Berg, and C. Begley, Bipolar disorder in pregnancy and childbirth: a systematic review of outcomes. BMC Pregnancy Childbirth, 2016. 16(1): p. 331.
12. Patorno, E., et al., Lithium Use in Pregnancy and the Risk of Cardiac Malformations. N Engl J Med, 2017. 376(23): p. 2245-2254.
13. Newport, D.J., et al., Lithium placental passage and obstetrical outcome: implications for clinical management during late pregnancy. Am J Psychiatry, 2005. 162(11): p. 2162-2170.
14. Obeidat, H.M., E.A. Bond, and L.C. Callister, The parental experience of having an infant in the newborn intensive care unit. J Perinat Educ, 2009. 18(3): p. 23-9.
15. Al Maghaireh, D.F., et al., Systematic review of qualitative studies exploring parental experiences in the Neonatal Intensive Care Unit. J Clin Nurs, 2016. 25(19-20): p. 2745-2756.
16. Hoftiezer, L., et al., From population reference to national standard: new and improved birthweight charts. Am J Obstet Gynecol, 2019. 220(4): p. 383.e1-383.e17.
17. Scrandis, D.A., Bipolar Disorder in Pregnancy: A Review of Pregnancy Outcomes. J Midwifery Womens Health, 2017. 62(6): p. 673-683.
18. Merikangas, K.R., et al., Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. Arch Gen Psychiatry, 2007. 64(5): p. 543-552.
19. van Veenendaal, N.R., et al., Family integrated care in single family rooms for preterm infants and late-onset sepsis: a retrospective study and mediation analysis. Pediatr Res, 2020. 88(4): p.593-600.
20. van Veenendaal, N.R., et al., Hospitalising preterm infants in single family rooms versus open bay units: A systematic review and meta-analysis of impact on parents. EClinicalMedicine, 2020. 23: p. 100388.
21. Wilson, N., J.D. Forfar, and M.J. Godman, Atrial flutter in the newborn resulting from maternal lithium ingestion. Arch Dis Child, 1983. 58(7): p. 538-539.
22. Seijmonsbergen-Schermers, A.E., et al., Regional variations in childbirth interventions in the Netherlands: a nationwide explorative study. BMC Pregnancy Childbirth, 2018. 18(1): p. 192.
23. Horsselenberg, M., et al., Zwangerschapsdiabetes in Nederland: incidentie en behandeling. 2021: Utrecht, Netherlands.

24. Koopmans, C.M., et al., Induction of labour versus expectant monitoring for gestational hypertension or mild pre-eclampsia after 36 weeks' gestation (HYPITAT): a multicentre, open-label randomised controlled trial. Lancet, 2009. 374(9694): p. 979-988.
25. Frayne, J., et al., Lithium exposure during pregnancy: outcomes for women who attended a specialist antenatal clinic. J Psychosom Obstet Gynaecol, 2018. 39(3): p. 211-219.

PART 3

Psychiatric vulnerability and lived experiences with family planning



CHAPTER 6

Family planning decision-making in relation to psychiatric disorders in women: a qualitative focus group study

S. Ahmad, J. Holtrop, M.J.M. van den Eijnden, N.H. Jonkman, M.G. van Pampus, O.A. van den Heuvel, B.F.P. Broekman and N.N. Schonewille

Published in
Reproductive Health, 2024
DOI: 10.1186/s12978-024-01836-8

Abstract

Background

Recent studies revealed an elevated likelihood of unintended pregnancies among women with psychiatric disorders compared to their counterparts without such vulnerability. Despite the importance of understanding family planning decision-making in this group, qualitative inquiries are lacking. This study explored family planning decisions among women with psychiatric disorders.

Methods

Utilizing a qualitative approach, three focus group discussions were conducted with purposive sampling: women with a history of unintended pregnancies (N=3), women without children (N=5), and women with a history of intended pregnancies (N=9), all of whom had self-reported psychiatric disorders. Using thematic framework analysis, we investigated the themes "Shadow of the past," reflecting past experiences, and "Shadow of the future," reflecting future imaginaries, building upon the existing "Narrative Framework."

Results

The Narrative Framework formed the foundation for understanding family planning among women with psychiatric disorders. The retrospective dimension of focus group discussions provided opportunities for reflective narratives on sensitive topics, revealing emotions of regret, grief and relief. Childhood trauma, adverse events, and inadequate parenting enriched the "Shadow of the past". The "Shadow of the present" was identified as a novel theme, addressing awareness of psychiatric disorders and emotions toward psychiatric stability. Social influences, stigma, and concerns about transmitting psychiatric disorders shaped future imaginaries in the shadow of the future.

Conclusion

This study enlightens how family planning decision-making in women with psychiatric disorders might be complex, as marked by the enduring impact of past experiences and societal influences in this sample. These nuanced insights underscore the necessity for tailored support for women with psychiatric disorders.

Introduction

Literature suggests that psychiatric disorders and family planning decision-making are related. Recent studies revealed that women with psychiatric disorders more often experience unintended pregnancies compared to counterparts without such vulnerability[1-3]. Moreover, childlessness is associated with having chronic illnesses, among which are psychiatric illnesses[4,5]. However, there is limited knowledge about contributing factors that shape family planning decision-making in women with psychiatric disorders[6,7]. Family planning decision-making defines the process through which individuals make choices about whether to have children, when to have them, and how many children to have[8]. It involves contemplating economic, social, cultural, and health-related factors[9]. Understanding family planning decision-making is fundamental for estimating the need for contraception, predicting reproductive patterns, and developing programs aimed at preventing unintended pregnancies[10]. The use of (emergency) contraceptives[11], improved accessibility to abortion services[12], and increased understanding of risk factors[11,13,14] have reduced unintended pregnancies. However, in 2010–2019, more than half of all pregnancies worldwide were still unintended[15].

Unintended pregnancies are particularly common among women with psychiatric disorders, reaching rates of up to 65%[16,17]. Aside from difficulties with planning, women with psychiatric disorders face elevated risks of psychiatric problems after pregnancy, leading to additional risks for adverse outcomes for both mothers and children[18-21]. The preconception phase is crucial for women planning to conceive by offering an opportunity to enhance nutrition and lifestyle choices to minimize maternal and child health risks[22]. Pregnancy planning is especially important for women with psychiatric disorders because they may need to make medication adjustments, take precautionary measures regarding the relapse of psychiatric disorders, and optimize mother–child attachment[18-21]. Indeed, women with unintended pregnancies encounter significant additional challenges due to the absence of the pregnancy planning phase, such as limited access to prenatal care, financial strain, and emotional stress[1]. Several frameworks exist for describing the factors that shape family planning decision-making[23-29]. However, most frameworks are past-driven and focus predominantly on cognitive factors[30]. We hypothesize that these frameworks are inadequate for capturing the uncertainty about the future faced by women with psychiatric disorders. The "Narrative Framework" provides a different perspective on family planning decision-making, particularly amid the amplified uncertainty and stress of the COVID-19 pandemic. It integrates past experiences, psychological predispositions, and socioeconomic factors, termed the "Shadow of the past,"

alongside expectations, future imaginaries, and future narratives, termed the "Shadow of the future." This framework captures decision-making processes by including these elements.

The aim of this qualitative study was to delve into the family planning experiences of women with psychiatric disorders (history of psychiatric disorder and/or current diagnosis). The "Narrative Framework" will provide a foundation for structuring the themes involved in the decision-making process[30]. The results of this study will contribute to knowledge about family planning decision-making in women with psychiatric disorders.

Materials and methods

Study design

A qualitative study of experiences with family planning in women with self-reported psychiatric disorder(s) was conducted. We adopted a constructionist approach in which we acknowledged the role of society in shaping perspectives on family planning decision-making[30]. Therefore, focus group discussions were selected as the method of data collection because participants themselves can represent societal influences on each other's perspectives.

Participant recruitment

Seventeen volunteers of the Dutch mental health umbrella organization MIND with self-reported psychiatric disorders were included. Participants were recruited from a sample of survey respondents (n=378) from MIND[5]. The survey was conducted to collect quantitative and qualitative information about family planning. Participants were given the option to provide their email address if they wished to participate in a focus group discussion. Both men and women participated in the survey, but to address the current research question, only women were eligible (n=17). Prior to participating in the focus groups, and after explanation of the study, all participants signed an informed consent form. Focus group discussion 1 (n=3) consisted of women with a history of (initially) unintended pregnancies. Women who experienced an unintended pregnancy but did not remain pregnant (due to miscarriage or abortion) also participated in focus group discussion 1. Focus group discussion 2 (n=5) consisted of women who did not have children and who had not been pregnant prior to participation. Focus group discussion 3 (n=9) consisted of women with a history of intended pregnancies resulting in one or more children. Purposeful sampling created

homogeneous focus group discussions regarding pregnancy intentions, ultimately benefiting the willingness of women to engage in discussions[31]. Due to the anonymous nature of the survey, it was unclear prior to the focus group discussions which psychiatric disorders the participants had been diagnosed with. Medical records were inaccessible; participants disclosed their psychiatric diagnoses during the focus group discussions. Figure 6.1 provides an overview of participant inclusion.

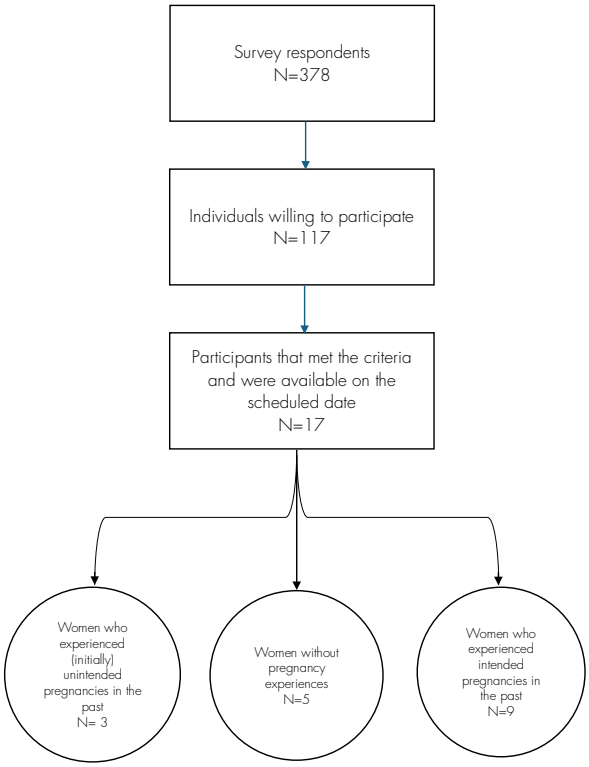


Figure 6.1 - Flowchart of participant inclusion.
Flowchart of participant inclusion. Legend: this figure outlines the participant selection process for the study.

Data collection and storage

Three focus group discussions were held at a central location in the Netherlands (organization MIND, Amersfoort, The Netherlands) between October and November 2021. The interview guide was created based on answers to an earlier survey and consisted of two main research questions, complemented by specific questions per focus group discussion: 1) How does your (history with) psychiatric disorder influence your desire for children? and 2) What is your experience discussing family planning

with your mental health professional? The interview guide for each focus group is provided in Additional file 6.1. The focus group discussions were held in Dutch and lasted between 120 and 155 min (median duration 123 min). A researcher with lived experience with perinatal mental health problems [ME] led the discussions, [NS] was present to observe and take field notes. Digital research data, including audio recordings and ad verbatim transcripts of the focus group discussions, were pseudonymized and stored in a password-protected file on a secure server of the hospital (OLVG). Paper consent forms are stored in a locked research cabinet of the same hospital. This process ensures that the data is securely stored, and that participants' anonymity is protected throughout the study.

Data analysis

The focus group discussions were audio-recorded and transcribed ad-verbatim. The transcripts were converted to ATLAS.ti v9 for data analysis. Table 6.1 summarizes the steps performed during the analysis.

Table 6.1 - Thematic framework analysis process

↑ Inductive	Step 1	Self-acquainting with the data, by reading and rereading of the transcripts [JH, NS, SA, YD, ME].
	Step 2	Line-by-line analysis and inductive coding by three researchers independently [NS, SA, YD]. [NS] and [YD] performed the coding process directly after the focus group discussions, while [SA] performed the coding process later. Open codes with a low interpretation degree were applied.
	Step 3	Merging of similar codes by one researcher [SA] by which the quantity of the codes was reduced.
	Step 4	Excluding codes with no relation with the family planning decision-making process by two researchers [JH, SA]. A step known as selective coding.
Deductive ↓	Step 5	The selective codes were applied to the "Narrative Framework" ([30]) by two researchers independently [SA, JH].
	Step 6	A within-person analysis was performed by charting the selective codes for every participant individually in the framework. This was done by two researchers separately [JH, SA]. Codes that were not applicable to the preexisting themes (shadow of the past and shadow of the future) were discussed during group meetings and later identified as new themes (shadow of the present and reflections).
	Step 7	A between-person analysis was carried out through axial coding by two researcher individually [JH, SA], producing categories. Categories were discussed in severa group meetings resulting in a new framework visualizing four overarching themes an several categories.

This table presents the thematic framework analysis, showing the inductive steps (1-4) and deductive steps (5-7) taken in the analysis process

Methodological integrity

The research team, with backgrounds in psychiatry, obstetrics, neurosciences, and health behavior, ensured a foundation for conducting a nuanced and in-depth qualitative analysis of family planning decision-making, thereby incorporating triangulation. The epistemological approach was clearly stated and closely adhered to, which helped to align the research question with the applied methods. The conclusions were grounded in the evidence through the inclusion of quotations. Providing contextual information, such as the study setting and participant details, enhanced the comprehensibility of the results. Unlike a conventional consensus-reaching method, different interpretations were integrated into the findings to enrich the data analysis process. Utilizing methods of researcher reflexivity, such as memos and field notes, contributed to a reflexive and transparent analytical process. Reflexivity was considered throughout the process, acknowledging that [ME]'s background with lived experience with perinatal mental health problems may have influenced the discussions and interaction with participants, potentially fostering a more open and empathetic environment.

Results

Demography

Information about the demographics of the participants (n=17) is reported in Table 6.2. Ages ranged between 24 and 70 years, with a median age of 57 years. All women had a Dutch background. The participants exhibited diverse occupational backgrounds, with six (35%) declaring themselves unfit for employment for reasons related to their psychiatric disorder(s). A history of pregnancy and psychiatric disorder(s) are described in Table 6.3. Mood disorders were the predominant psychiatric disorder (n=10), manifesting across all focus group discussions. Subsequently, trauma-related disorders (n=8) and anxiety disorders (n=6) were the most prevalent.

Table 6.2 - Demographic features of participants.

Demographic characteristic	Category	Focus group discussion		
		Women with (initially) unintended pregnancies (n=3)	Women without children (n=5)	Women with intended motherhood (n=9)
Age	20-30	0	2	0
	31-40	0	0	2
	41-50	0	1	1
	51-60	0	2	2
	61-70	2	0	3
	Unknown[a]	1	0	1
Occupation	Employed	0	2	2
	Unemployed	0	1	0
	Declared unfit for employment	0	2	4
	Unknown[a]	3	0	3

[a]Information may not be available for all participants, as noted by the 'unknown' lines.
This table presents the demographic characteristics of participants ($n = 17$), including participants per age category and employment status in each focus group discussion

Table 6.3 - History of pregnancy and psychiatric disorder(s) of participants.

Demographic characteristic	Category	Focus group discussion		
		Women with (initially) unintended pregnancies (n=3)	Women without children (n=5)	Women with intended motherhood (n=9)
History of pregnancy	Primipara	1	0	5
	Multipara	2	0	4
	Abortion or miscarriage	2	0	1
Parent	Yes	2	0	9
	No	1	5	0
(History of) psychiatric disorder per category [a]	Anxiety disorders	1	0	5
	Mood disorders	2	4	4
	Psychotic disorders	0	0	1
	Personality disorders	1	0	1
	Neurodevelopmental disorders	1	5	3
	Trauma related disorders	3	2	3

[a]Multiple psychiatric disorders per person are possible, all participants described ≥ 1 disorder
This table presents the demographic characteristics of participants ($n = 17$), including obstetric (pregnancies and parenthood) and psychiatric disorder history in each focus group discussion

Framework

Our findings are presented within the context of an adapted version of the "Narrative Framework". While the original framework highlights "Shadow of the past" and "Shadow of the future" as primary themes, our findings expanded this framework by incorporating two additional themes, namely "Reflections on the decision" and

"Shadow of the present", which were specifically tailored to our study population. This adaptation is illustrated in Figure 6.2. Each theme includes categories supported by quotations translated into English. Additional file 6.2 provides the original Dutch quotations.

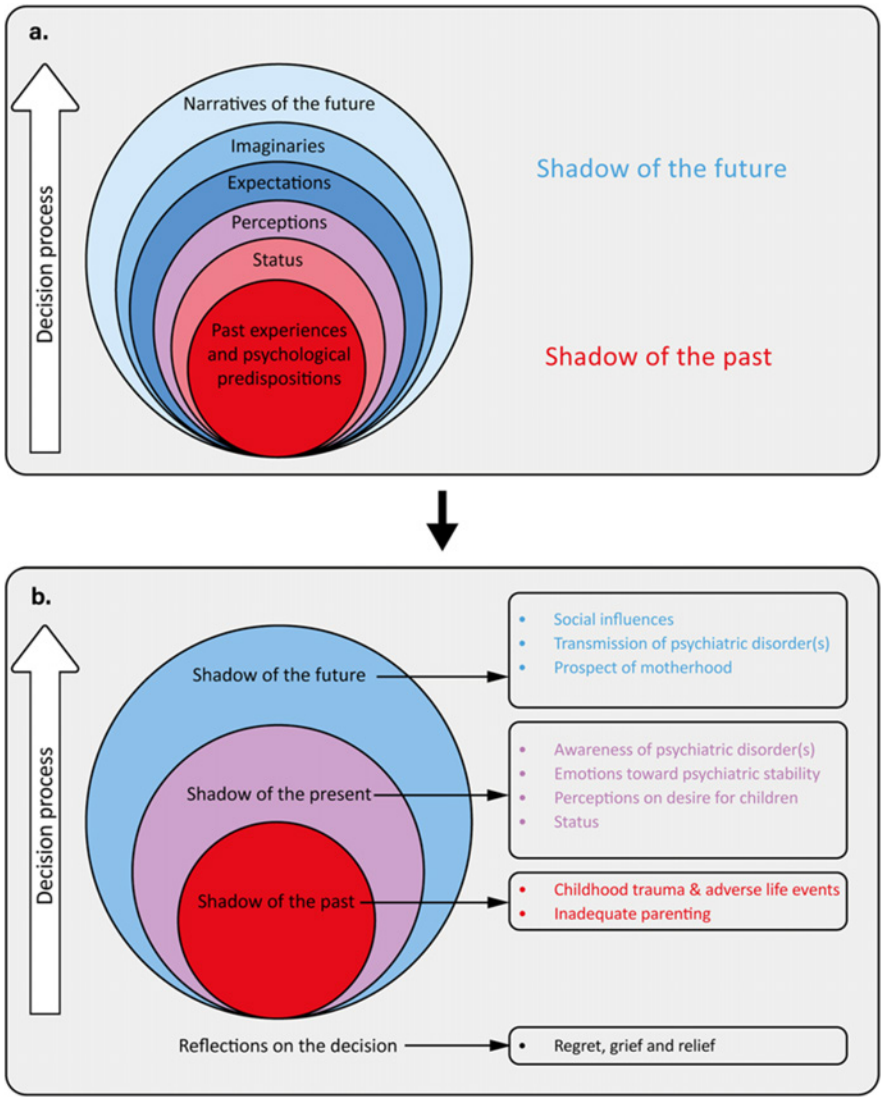


Figure 6.2 - Framework of family planning decision-making in women with psychiatric disorders.
Framework of family planning decision-making in women with psychiatric disorders. Legend: this figure shows the framework of family planning decision-making with part (**a**) illustrating the Narrative Framework and part (**b**) illustrating the adapted version tailored to women with psychiatric disorders. For each theme categories are listed on the right side of figure b. This figure is reproduced with permission from "Guetto R, Bazzani G, Vignoli D (2022) Narratives of the future and fertility decision-making in uncertain times. An application to the COVID-19 pandemic. Vienna Yearb Popul Res 20:223–260. https://www.jstor.org/stable/27222579."

Reflections on the decision

The retrospective nature of the focus group discussions allowed 17 women to delve into reflective narratives concerning sensitive topics regarding their psychiatric disorder(s) and family planning decision-making. The importance of these reflections, amplified by their emotionally charged nature, justifies the creation of a dedicated theme to them, as they were not yet addressed by the Narrative Framework[29]. Table 6.4 provides several quotations belonging to this theme.

Table 6.4 - Quotations belonging to the theme reflections on the decision.

Regret, grief and relief	57 years, two daughters: "From the age of forty-eight, I became conscious of the fact that I have been psychiatrically vulnerable since my youth. It has cast a significant shadow over the pregnancies and childbirths." 61 years, one daughter: "Because in 2012 my daughter, who is now 30, suffered from severe depression and she has still not recovered from it. And if I had known that in advance, I also have depression, I am also in depression now. Then she would never have been born... If I had known that she would develop such a severe depression (other participant: that you passed on). Yeah, I probably passed that on. And I find that very terrible." 53 years, no children: "At a certain point I noticed that I had Tourette's, and there are all kinds of complaints associated with it. And then I was very happy because of heredity that I didn't do it [have a child]. It remains painful sometimes, it always remains a sore spot somewhere. Yes, very happy, and very sorry, it's just a shame sometimes." 70 years, two sons, experienced an unintended pregnancy: "When I look back on my life, I am now seventy, those were my golden years [with the children]. It was very busy and I had to take a lot of care, having four hands at the same time, but I did it." 59 years, no children: "Give me the box of tissues [crying and laughing]. My psychiatrist always says to me, because we have talked about it [not having children], you have taken very good care of your children. You have kept them well."

This table shows quotations belonging to the theme Reflections on the decision, grouped by the category: Regret, grief, and relief

Regret, grief, and relief

Reflections on family planning decisions revealed a mix of emotions experienced by the participants. Participants without children often felt grief, yet some also found relief in their decision. This illustrates the complexity of emotions within individuals. The impact of participants' psychiatric disorder(s) on family planning was central in all focus group discussions. For some women, challenges in parenting due to personal circumstances brought feelings of grief and regret. However, positive reflections on motherhood also emerged, particularly from mothers who found fulfillment in motherhood despite initially unintended pregnancies.

Shadow of the past

Originally, the shadow of the past reflected the impact of life experiences, psychological predispositions, and socioeconomic factors on an individual's decision about having children[29]. In our sample, this theme was enriched by the interplay between personal experiences in the women's upbringing, the perceived parenting skills of their parents, and how those women respond to these experiences. Quotations are provided in Table 6.5.

Table 6.5 - Quotations belonging to the theme shadow of the past.

Childhood trauma and adverse life events	62 years, no children, experienced an unintended pregnancy: "Even though I never really felt at home in my parental home, I still wanted something of a family." 53 years, no children: "I come from a German family, which also caused war trauma. And then I think, what are you passing on, apart from the technical story of passing on. That is my justification [for not having a child]."
Inadequate parenting	32 years, one son: "Yes, I had that too. That you did have an [bad] example. I was like, I don't want to do it like my parents … I want to do it differently." 59 years, no children: "My father had a mood disorder, manic depressive [disorder]. … My mother has ADD, or ADHD, so I see it from both sides. I see my mother running back and forth hysterically, and I know my father has had huge lows. And then I look back and I'm glad that I didn't have any children."

ADD attention deficit disorder, *ADHD* attention deficit hyperactivity disorder
This table shows quotations belonging to the theme shadow of the past, grouped by the categories: childhood trauma and adverse life events, and inadequate parenting

(Childhood) trauma and adverse life events

The participants of all focus group discussions spontaneously shared (childhood) trauma and adverse life events when asked about their family planning decision-making, revealing their perceived connection between these experiences and their family planning considerations. They believed that their upbringing impacted their decisions. Lived experience with trauma affected perspectives on family planning differently: some women were motivated to move past their childhood trauma by building a (better) family for themselves by having a child, while other women refrained from having children because of their adverse life events.

Inadequate parenting

This category showed how reflections on their own upbringing, specifically on their parents' parenting skills or the lack thereof, can influence women's perspectives on having children. The decision to have children became a personal and reflective process shaped by the desire to replicate positive aspects of one's upbringing or breaking away from negative patterns and challenges.

Shadow of the present

In the Narrative Framework[29], (socioeconomic) status and personal perceptions bridged the gap between the shadow of the past and the shadow of the future. While socioeconomic factors such as financial considerations or the availability of a (suitable) partner contributed to the decision-making process of the participants, personal perceptions of their psychiatric disorder(s) were pertinent. This led to the extension of the framework with a novel theme: the shadow of the present. This theme incorporates categories relevant to our sample, including awareness of psychiatric disorder(s) and psychiatric stability, which were previously unaddressed in empirical models of family planning (Table 6.6).

Table 6.6 - Quotations belonging to the theme shadow of the present.

Awareness of psychiatric disorder(s)	70 years, two sons, experienced an unintended pregnancy: "I had children at a time when I wasn't very aware of my psychiatric disorders. But I always knew that I was different." 47 years, two sons: "I had myself diagnosed [with autism], and that immediately explained a whole lot, why things were always so challenging, including motherhood, which was a bit more difficult for me than for most parents of my children's friends."
Emotions toward psychiatric stability	61 years, one daughter: "I developed a psychosis at the age of eighteen and yet I dared to get pregnant around the age of thirty. I thought, I can handle this." 40 years, no children: "I've always known no children for me because then the whole mess [depression] would repeat itself, I'm not going to do that."
Perceptions on desire for children	70 years, two sons, experienced an unintended pregnancy: "The fact that [name son] was born, was in my case, a conscious choice. (Interviewer: but did you have doubts about the decision?). I had some doubts; I did not actually know what I wanted [laughing]. I did not even know what I wanted to do with my life." 62 years, no children, experienced an unintended pregnancy: "Maybe that's why I can't come to terms with it [unintended pregnancy] emotionally. It's a lot. Just traumatized."
Status	40 years, no children: "I have had a very stable partner for about four years now, and now I sometimes think a bit [of wanting a child], but I am forty, so…"

This table shows quotations belonging to the theme shadow of the present, grouped by the categories: awareness of psychiatric disorder(s), emotions toward psychiatric stability, perceptions on the desire for children, and status

Awareness of psychiatric disorder(s)

Awareness of psychiatric disorder(s) at the time of the decision was a recurrent theme among participants with children. Some participants mentioned the impact of not being aware of their psychiatric disorder at the time of the decision, indicating that they would have made different choices if they had been aware of the diagnosis earlier. For some of the participants, the diagnosis was liberating, explaining the challenges of motherhood.

Emotions toward psychiatric stability

Psychiatric stability at the time of decision-making was mentioned as one of the factors influencing choices. For some individuals, the stability of symptoms presented an opportunity to pursue parenthood, while for others, psychiatric stability did not hold the same level of deliberative weight. Diverse attitudes toward this issue highlight how some participants experienced resilience by learning from previous experiences, while others did not.

Perceptions of desire for children

A spectrum of diverse viewpoints on the desire for children was described as a complex array of thoughts, emotions, and perspectives that concurrently coexist, contributing to a fluctuating experience over time and giving rise to feelings of ambivalence and uncertainty. As one participant expressed "childbearing desire is not 100% yes or 100% no," highlighting nuanced attitudes toward motherhood and childlessness. While 'perceptions' were originally emphasized as personal interpretations of past and current experiences[29] our participants argued that viewpoints on the desire for children change over time.

Status

Opportunities and constraints for childbearing plans resemble the (socioeconomic) status element of the Narrative Framework[29]. This category includes several factors mentioned as reasons whether to have a child, including maternal age, financial stability or having a (stable) partner.

Shadow of the future

The shadow of the future emphasizes the importance of expectations and personal narratives in uncertain situations[29]. Our study shows how social influences, stigma around mental health, and uncertainty about passing on a condition can influence future imaginaries (Table 6.7).

Social influences

During the focus group discussions, the social system's impact was heavily discussed. Many expressed frustrations with the lack of support from their social environment for their desire for children, leading to uncertainty about their decision. While personal visions of the future can be influenced by society, personal visions may also differ, thereby placing social influences in the shadow of the future[29]. Participants'

experiences with stigma due to their psychiatric disorder(s) often leaned toward deciding against having children.

Table 6.7 - Quotations belonging to the theme shadow of the future, grouped by the categories: social influences, transmission of psychiatric disorder(s), and the prospect of motherhood.

Social influences	24 years, no children: "Yes, I don't have that much support from the family. So, then I think, why [would I have child]." 53 years, no children: "My best friend took over my favorite name for a daughter, that has happened twice now. "you're not having children anyway" I just think that's so inconsiderate. And I'm glad that I only now know that I have autism, because people have a prejudice, like I couldn't do that [be a mother]. While that doesn't have much to do with it. I know plenty of people with autism who can take excellent care of their children." age unknown, one son: "And what I found very difficult, was that people automatically assumed that I did not want to keep the child. I found that difficult. While for me that is not a question at all."
Transmission of psychiatric disorder(s)	29 years, no children: "I wouldn't want to bring a child into the world who might inherit some of my psychiatric complaints." 53 years, no children: "It is a line that had to be stopped (Interviewer: Yes, the past, whether that continues, and whether you still want to create something new for yourself, right?) … Yes, I now have more self-confidence and knowledge about that, that it is possible (other participant: to break the cycle of intergenerational transmission)."
Prospect of motherhood	59 years, no children: "I don't think I could have raised them [children] well in the years before." 29 years, no children: "Can I be a good parent? I wonder if I could give a lot of love. … I don't think that I could really be a good mother. So yes, also a bit out of protection, I think." 53 years, no children: "No one is 100% successful in raising children. There are also people without any history [of psychiatric disorder] where things go terribly wrong. And of course, you never know what will come your way." 32 years, one son: "Thanks to the knowledge I now have, I can say clearly that I have a heavy genetic burden. And that is of course also something that I am now more aware of, and "what if my child gets that" goes through my mind. On the other hand, I can say that I have it myself and I now know very well how to deal with it, so I probably recognize it sooner (other participants: yes, yes, yes) and I can also provide better support if so. That makes that I don't doubt myself as a mother."

This table shows quotations belonging to the theme shadow of the future, grouped by the categories: social influences, transmission of psychiatric disorder(s), and the prospect of motherhood

Transmission of psychiatric disorder(s)

The transgenerational transmission of psychiatric disorder(s) to children was a key theme among participants, as discussed in all focus group discussions. Many participants were conscious of the risk of passing their condition to their offspring, which influenced their decisions against having children or causing regret if transmission occurred. Awareness of the challenges varied, with some participants

doubting the possibility of breaking the transmission cycle, while others remained hopeful.

Prospect of motherhood

Insecurities about motherhood were deliberated. Participants felt incapable of raising a child for varying reasons, such as difficulty combining motherhood and having psychiatric symptoms. Other participants could rationalize this by referring to 'other mothers' without psychiatric disorder(s) who make parenting mistakes. Another participant stated that although her illness was heritable, it also aided her in supporting her child.

Discussion

Key findings

This study has provided insights into family planning decision-making among women with psychiatric disorders by extending the Narrative Framework[29] with two themes. First, we dedicated a theme to reflections on decision-making, which encompasses emotions of grief, relief and regret. Second, we introduced the shadow of the present, which emphasized the impact of psychiatric disorders on decision-making by considering awareness of psychiatric disorders and psychiatric stability. Furthermore, the shadows of the past and future were broadened by integrating categories tailored to women with psychiatric disorders, including trauma, adverse life events, and social influences.

Interpretation in relation to literature

The retrospective nature of the focus group discussions allowed us to reflect on the participants' family planning decisions, where the emotions of regret, grief and relief emerged. Regret over the delay in childbearing decisions has been described before in couples seeking fertility treatments[32]. Like our participants, voluntary childless women reported relief, feeling financially unburdened compared to their parenting peers, and enjoying various forms of freedom. However, they also faced stigmatization, and some expressed that their decision was influenced by their concern about potentially transmitting diseases to their children[33]. We hypothesize that cognitive dissonance, influenced by the type of psychiatric disorder, may contribute to regret in individuals as they grapple with conflicting thoughts and emotions[34].

Our study enhanced the shadow of the past with insights from 17 women with psychiatric disorder(s), shedding light on the impact of (childhood) trauma and adverse experiences on family planning decision-making. Previous research has shown an increased risk of unintended pregnancy in mothers with adverse childhood experiences[35]. Furthermore, women with unintended pregnancies reported more psychosocial problems[36]. Together with our findings, these findings imply that past experiences (related to psychiatric disorders) play a significant role in shaping family planning decisions and outcomes.

In the shadow of the present, we expanded upon the existing themes of (socioeconomic) status and perceptions[29]. Various enablers and constraints in the decision-making process surfaced, aligning with descriptions in other frameworks[22,23,25,26], and are therefore not unique to our population. The personal perceptions of our participants were portrayed as a complex array of emotions and thoughts, contributing to a fluctuating experience of family planning marked by ambivalence and uncertainty. Ambivalence toward motherhood in women with severe mental illness has been previously documented[37]. However, our study focused primarily on ambivalence in decision-making. Surprisingly, participants did not bring up the issue of psychoactive medication usage in relation to family planning. Although most psychotropic medication can be continued during pregnancy, some psychoactive medications can be teratogenic and should be used with caution[38,39]. Also, previous studies showed that (pregnant) women with psychiatric disorders contemplate their medication usage[40]. Overall, our findings suggest that family planning decision-making is more complex in women with psychiatric disorders than in those without psychiatric disorders, consistent with prior research[41]. A potential explanation lies in additional factors influencing the decision, such as awareness of the psychiatric disorder and psychiatric stability at the time of the decision.

The notion that social influences, including stigma, shape the shadow of the future through uncertainty is not limited to women with psychiatric disorders. A study on disabled women's childbirth experiences revealed diverse reactions from their surroundings, leading to heightened fears and a sense of diminished control over their childbirth experiences[42]. Despite the difference in study populations, similar findings indicate a convergence in the experiences of women. While uncertainty about the future during the COVID-19 pandemic has been noted among the general population[28,29], we specifically examined uncertainty regarding stigma surrounding psychiatric disorders and their potential transmission. Participants' narratives may be influenced by maladaptive prospection seen in persons with psychiatric disorders such as depression and anxiety, which distorts future expectations[43]. Additionally, the

potential of transmitting psychiatric disorders to their children might have intensified feelings of uncertainty about the future and thus made the decision-making process more challenging. This phenomenon is not novel and has been documented in various other hereditary diseases[44,45]. The actual extent of inheritance in psychiatric disorders significantly influences this dynamic. For instance, the estimated heritability for psychotic and neurodevelopmental disorders ranges from 74–85%, whereas for mood and anxiety disorders, it ranges between 37–58%[46]. The high heritability rate of these disorders aligns with the uncertainty as described in the narratives.

Strengths and limitations

This study provides a nuanced exploration of family planning decision-making in 17 women with psychiatric disorders. The transdiagnostic approach sheds light on overarching issues that were experienced. The use of focus group discussions captured societal dynamics and fostered an interactive environment for reflective perspectives[47,48]. Thematic framework analysis offered a structured examination of identified themes[29]. However, limitations include the small group of women with unintended pregnancies (n=3) and the retrospective nature of reflections, potentially introducing recall bias[49,50]. Moreover, it is important to acknowledge the wide age range of participants, as this may affect the consistency of the data. We addressed the potential recall bias by incorporating the reflective nature of our framework and acknowledging its influence on the findings. The iterative process did not include respondent validation of the findings. To mitigate potential misinterpretations, we involved a researcher with lived experience with perinatal mental health problems.

Furthermore, the utilization of focus groups may restrict the depth of individual analyses. Although all our participants had been known with a psychiatric disorder according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), we hypothesize that within the diverse array of disorders represented, each psychiatric disorder may have impacted family planning decisions in distinct ways. Additionally, the focus groups did not allow for an in-depth examination of the individual socioeconomic status of the women and how this influenced their reproductive desires. Given the established importance of socioeconomic status in the context of unintended pregnancies[14], it is crucial to consider this factor in individual sessions. Opting for individual interviews could provide a more comprehensive exploration.

Suggestions for future research

Future research could benefit from longitudinal and prospective study designs, allowing examination of family planning decision-making in women with psychiatric

disorders considering the fluctuating aspect of family planning. Distinguishing between various psychiatric disorders and their unique impact on decision-making could provide a more nuanced understanding, possibly through individual in-depth interviews. As women with unintended pregnancies and psychiatric disorders may experience more challenges with family planning decision-making, it would be interesting to include these women in future research.

Conclusions

Our study sheds light on family planning decisions among women with psychiatric disorders. Like women without psychiatric disorders, past experiences, socioeconomic status, and perceptions on the desire for children shape decision-making. We found that traumatic events have a lasting impact on family planning choices. Stigma, uncertainty about parenting skills, and concerns about transmitting psychiatric disorder(s) contribute to ambivalence about having children. Feelings of regret, grief and relief regarding these decisions reflect the influence of psychiatric disorders. Our results emphasize that women with psychiatric disorders deserve support tailored to their needs, e.g. the possibility to discuss family planning at perinatal mental health facilities. Moreover, healthcare professionals could consider offering ongoing emotional support beyond the reproductive phase to those reflecting on their family planning decisions.

Acknowledgements

We express our gratitude to all the women who participated in the focus group discussions. Additionally, we extend our appreciation to Yente Dubbeldam for her contribution to data cleaning and analysis.

References

1. Enthoven, C.A., et al., Clustering of characteristics associated with unplanned pregnancies: the generation R study. BMC Public Health, 2022. 22(1): p. 1957.
2. Schonewille, N.N., et al., Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis. BMC Pregnancy Childbirth, 2022. 22(1): p. 153.
3. Gariepy, A.M., et al., Are pregnancy planning and pregnancy timing associated with maternal psychiatric illness, psychological distress and support during pregnancy? J Affect Disord, 2016. 205: p. 87-94.
4. Liu, A., et al., The relationship of major diseases with childlessness: a sibling matched case-control and population register study in Finland and Sweden. Preprint, 2022.
5. Schonewille, N.N., et al., Experiences with Family Planning amongst Persons with Mental Health Problems: A Nationwide Patient Survey. Int J Environ Res Public Health, 2023. 20(4) p. 3070.
6. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
7. Becker, p.T. and S. Krumm, Research on family planning issues in women with mental disorders. Journal of Mental Health, 2006.
8. Santelli, J., et al., The measurement and meaning of unintended pregnancy. Perspect Sex Reprod Health, 2003. 35(2): p. 94-101.
9. Santelli, J.S., et al., Toward a multidimensional measure of pregnancy intentions: evidence from the United States. Stud Fam Plann, 2009. 40(2): p. 87-100.
10. Klerman, L.V., The intendedness of pregnancy: a concept in transition. Matern Child Health J, 2000. 4(3): p. 155-162.
11. Finer, L.B. and M.R. Zolna, Declines in Unintended Pregnancy in the United States, 2008-2011. N Engl J Med, 2016. 374(9): p. 843-852.
12. Bearak, J., et al., Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model. Lancet Glob Health, 2018. 6(4): p. e380-e389.
13. Goshu, Y.A. and A.E. Yitayew, Prevalence and determinant factors of unintended pregnancy among pregnant women attending antenatal clinics of Addis Zemen hospital. PLoS One, 2019. 14(1): p. e0210206.
14. Thaxton, L. and E. Espey, Family Planning American Style Redux: Unintended Pregnancy Improves, Barriers Remain. Obstet Gynecol Clin North Am, 2017. 44(1): p. 41-56.
15. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.
16. Dossett, E.C., et al., Reproductive psychiatric advance directives: promoting autonomy for perinatal people with serious mental illness diagnoses. Arch Womens Ment Health, 2023.
17. Kent, A., Psychiatric disorders in pregnancy. Obstet Gynaecol Reprod Med, 2011. 21(11): p. 317-322.
18. Miller, L.J., Sexuality, reproduction, and family planning in women with schizophrenia. Schizophr Bull, 1997. 23(4): p. 623-635.
19. Mohamed, M.A., et al., Effects of bipolar disorder on maternal and fetal health during pregnancy: a systematic review. BMC Pregnancy Childbirth, 2023. 23(1): p. 617.
20. Viguera, A.C., et al., Episodes of mood disorders in 2,252 pregnancies and postpartum periods. Am J Psychiatry, 2011. 168(11): p. 1179-1185.
21. Stephenson, J., et al., Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. Lancet, 2018. 391(10132): p.1830-1841
22. Ajzen, I., The theory of planned behavior. . Organ Behav Hum, 1991. 50(2): p. 179-211.
23. Ajzen, I. and J. Klobas, Fertility intentions: An approach based on the theory of planned behaviour. . Demogr Res 2013. 29(8): p. 203–232.
24. Miller, W.B., Personality traits and developmental experiences as antecedents of childbearing motivation. Demography, 1992. 29(2): p. 265-285.

25. Miller, W.B., Childbearing motivations, desires, and intentions: a theoretical framework. Genet Soc Gen Psychol Monogr, 1994. 120(2): p. 223-258.
26. Miller, W.B., L.J. Severy, and D.J. Pasta, A framework for modelling fertility motivation in couples. Popul Stud (Camb), 2004. 58(2): p. 193-205.
27. Ganle, J.K., et al., 'They are my future': childbearing desires and motivations among women with disabilities in Ghana - implications for reproductive healthcare. Reprod Health, 2020. 17(1): p. 151.
28. Vignoli, D., et al., Uncertainty and Narratives of the Future: A Theoretical Framework for Contemporary Fertility. . Schoen R (eds) Analyzing Contemporary Fertility, The Springer Series on Demographic Methods and Population Analysis, 2020. 51: p. 25-47.
29. Guetto, R., G. Bazzani, and D. Vignoli, Narratives of the future and fertility decision-making in uncertain times. An application to the COVID-19 pandemic. Vienna Yearbook of Population Research, 2022. 20: p. 223-260.
30. Braun, V. and V. Clarke, Using thematic analysis in psychology. Qualitative Research in Psychology, 2006.
31. Palinkas, L.A., et al., Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Adm Policy Ment Health, 2015. 42(5): p. 533-544.
32. Adachi, T., M. Endo, and K. Ohashi, Regret over the delay in childbearing decision negatively associates with life satisfaction among Japanese women and men seeking fertility treatment: a cross-sectional study. BMC Public Health, 2020. 20(1): p. 886.
33. Mollen, D., Voluntarily Childfree Women: Experiences and Counseling Considerations. J Ment Health Couns, 2006. 28(3): p. 269-282.
34. Baumann, T., et al., Kognitive Dissonanz nach Entscheidungen und psychische Erkrankungen: Explorative Untersuchung von Patienten mit Zwangsstörung oder Depressionen. . Psychotherapeut, 2014. 59(2): p. 130–137. .
35. Testa, A., et al., Maternal adverse childhood experiences and pregnancy intentions. Ann Epidemiol, 2021. 64: p. 47-52.
36. Dijkstra, C.I., et al., Women with unwanted pregnancies, their psychosocial problems, and contraceptive use in primary care in Northern Netherlands: insights from a primary care registry database. Fam Pract, 2023. 40(5-6): p. 648-654.
37. Banerjee, D., et al., "It seemed like my fault for wanting to become a mother …"-Experiences and perceptions related to motherhood in women with severe mental illness. Asia Pac Psychiatry, 2022. 14(4): p. e12519.
38. Damkier P, Videbech P. The Safety of Second-Generation Antipsychotics During Pregnancy: A Clinically Focused Review. CNS Drugs. 2018;32(4):351–66. https://doi.org/10.1007/s40263-018-0517-5.
39. Kautzky A, Slamanig R, Unger A, Höflich A. Neonatal outcome and adaption after in utero exposure to antidepressants: A systematic review and meta-analysis. Acta Psychiatr Scand. 2022;145(1):6–28. https://doi.org/10.1111/acps.13367.
40. Stevens AWMM, Daggenvoorde TH, van der Klis SMD, Kupka RW, Goossens PJJ. Thoughts and Considerations of Women With Bipolar Disorder About Family Planning and Pregnancy: A Qualitative Study. J Am Psychiatr Nurses Assoc. 2018;24(2):118–26. https://doi.org/10.1177/1078390317711251.
41. Ross, N.E., et al., Reproductive Decision-Making Capacity in Women With Psychiatric Illness: A Systematic Review. J Acad Consult Liaison Psychiatry, 2022. 63(1): p. 61-70.
42. Walsh-Gallagher, D., M. Sinclair, and R. Mc Conkey, The ambiguity of disabled women's experiences of pregnancy, childbirth and motherhood: a phenomenological understanding. Midwifery, 2012. 28(2): p. 156-162.
43. Seligman, M., et al., Navigating Into the Future or Driven by the Past. . Perspect Psychol Sci 2013. 8(2): p. 119-141.
44. Severijns, Y., et al., Hereditary diseases and child wish: exploring motives, considerations, and the (joint) decision-making process of genetically at-risk couples. J Community Genet, 2021. 12(3): p. 325-335.
45. Fahy, N., et al., Genetic risk for Huntington Disease and reproductive decision-making: A systematic review. Clin Genet, 2023. 104(2): p. 147-162.

46. Andreassen OA, Hindley GFL, Frei O, Smeland OB. New insights from the last decade of research in psychiatric genetics: discoveries, challenges and clinical implications. World Psychiatry. 2023;22(1):4–24. https://doi.org/10.1002/wps.21034.
47. Krueger, R. and M. Casey, Focus groups: a practical guide for applied research. . 2015, Thousand Oaks: California.
48. Tausch, A.P. and N. Menold, Methodological Aspects of Focus Groups in Health Research: Results of Qualitative Interviews With Focus Group Moderators. Glob Qual Nurs Res, 2016. 3: p. 2333393616630466.
49. Guzzo, K.B. and S.R. Hayford, Revisiting retrospective reporting of first-birth intendedness. Matern Child Health J, 2014. 18(9): p. 2141-2147.
50. Chamberlin, S., et al., Women's Life Experiences and Shifting Reports of Pregnancy Planning. Matern Child Health J, 2022. 26(8): p. 1719-1726.

Additional file 6.1: Interview guides

This file provides the interview guides for the three focus group discussions.

	Focus group 1: Women with unintended pregnancies.	Focus group 2: Women without children.	Focus group 3: Women with intended pregnancies.
Introduction	Can you introduce yourself? Why are you participating in this focus group?	Can you introduce yourself? Why are you participating in this focus group?	Can you introduce yourself? Why are you participating in this focus group?
Relation between symptoms and the topic	(How) have your symptoms contributed to an unintended pregnancy? (planning, physical aspects, sexual aspects)	(How) have your symptoms contributed to the fact that you did not have children? Was this decision your own?	(How) have your symptoms contributed to an intended pregnancy? (planning, physical aspects, sexual aspects)
Challenges	Which factors have made the process of fertility, childlessness, and family planning challenging?	Which factors have made the process of fertility, childlessness, and family planning challenging?	Which factors have made the process of fertility, childlessness, and family planning challenging?
Support	Did you wish for support in this, how, and from whom?	Did you wish for support in this, how, and from whom?	Did you wish for support in this, how, and from whom?
Group specific questions	Which coping mechanisms have/had helped you (especially during pregnancy)? Do you have suggestions how to turn an unintended pregnancy into an intended pregnancy?	Do you experience societal stigma regarding childlessness and mental health issues? If yes, how do you deal with those?	Which coping mechanisms have/had helped you (during pregnancy and after your baby was born)?
Needs	What support do women with an unintended pregnancy need? What is the role of the psychiatrist, nurse, general practitioner, or environment?	What support do women need in the decision to not have children? What is the role of the psychiatrist, nurse, general practitioner, or environment?	How can women with mental health issues and a desire to have been supported? What is the role of the psychiatrist, nurse, general practitioner, or environment?
Control	Do you experience that you have control over your desire for children and desire for a pregnancy?	Do you experience that you have control over your desire for children and desire for a pregnancy?	Do you experience that you have control over your desire for children and desire for a pregnancy?
Conversation with mental health professionals	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?

Additional file 6.2: Dutch quotations

This file provides the original quotations for each theme per category in Dutch language.

Shadow of the past

(Childhood) trauma & adverse life events

Woman, 70 years, two sons, experienced an unintended pregnancy: "Ik heb de eerste ander halfjaar met mijn ouders in Indonesië gezeten, daar werden heel veel mensen vermoord en daar zit je als baby tussen en dat neem je uiteindelijk mee."
Woman, 32 years, one son: " Ja dat had ik ook wel. Dat je wel een voorbeeld had. Ik had wel zoiets van ik wil het niet zo doen als mijn ouders. … Ja je wil het toch anders doen."
Woman, 62 years, no children, experienced an unintended pregnancy: "Ook al, ook al, het was meer voor mij, ik heb me eigenlijk nooit thuis gevoeld in mijn ouderlijke huis, en ik wilde toch iets van gezin en (…) (ja, hmhm)."
Woman, 53 years, no children: "En ook van al die diagnoses dacht ik nou, ja, ik geloof toch wel, en ik kom ook uit een familie, nou niet NSB maar een Duitse een ehh een Duitse familie, gaf ook oorlogstrauma. En dan denk ik van ja, wat ben je allemaal aan het doorgeven (ja), nog los van het technische verhaal van het doorgeven. Dan is dat mijn verantwoording."

Parental naivety and inadequate parenting

Woman, 59 years, no children: "… Mijn vader hij had een stemmingsstoornis, manisch depressief. Uhm mijn broer heeft dat ook (hmm). Dat zie ik nu in hem terug. Mijn moeder heeft ADD, of ADHD (ja), dus ik zie het van van twee kanten ehh (ja). Ik zie mijn moeder hysterisch heen en weer rennen. En ik weet dat mijn vader enorme diepe dalen had (ja). En dan zie ik ben achteraf blij dat ik toch ehh (ja) geen ehh… kinderen heb gekregen. (Ja, ja)"
Woman, 40 years, no children: "Mijn ouders bijvoorbeeld die hadden een hele sterke kinderwens. Allebei. … Maar die hele, makkelijke houding! Zo, ja dan heb ik nu even geen zin, of o jammer, leuk klein kinderen! En, gewoon helemaal zonder na te denken, lijkt wel, wat je dan voor een werk te doen hebt (ja)."
Woman, 62 years, experienced an unintended pregnancy: "… want mijn moeder kreeg kinderen omdat het zo hoorde. En, ik denk niet dat ze ooit een benul heeft gehad van wat ervoor nodig is om kinderen goed op te voeden. Ik denk dat ze dat nog niet weet."

Shadow of the present

Continuum of perceptions

Woman, 70 years, two sons, experienced an unintended pregnancy: "Nee dat was wel, in mijn geval, een bewuste keuze he. Dat mijn eerste zoon kwam. Dus dat uhm… (M: Maar twijfels over de eigen keuze?) De twijfel was een beetje, ja ik wist eigenlijk niet wat ik wilde haha. Ik wist überhaupt niet wat ik met mijn leven wilde."

Woman, 40 years, no children: "En uhm, maar nu heb ik sinds een jaar of vier een hele stabiele partner (hmm), en nu zit ik toch ook weleens af en toe een beetje te denken, maar ja ik ben veertig dus dus"

Woman, 59 years, one daughter: "Ja ehh… Kinderwens. Ik wilde nooit kinderen ik vond ze nooit leuk. En ehh ehh… Maar dat veranderde eigenlijk toen mijn zus in 1989 ehm, ehh, een dochtertje kreeg en dat vond ik wel heel erg leuk daar was ik heel nauw bij betrokken."

Woman, 59 years, no children: "Doe mij dan maar die doos tissues (huilt) (gelach). Mijn psychiater zegt altijd tegen me, want we hebben het er dus ook over gehad, ja maar je moet het zo zien, je hebt heel goed voor je kinderen gezorgd (hmm, ja). Je hebt, ze goed bewaard. En ze, ja.. (ja, ja)

Woman, 62 years, experienced an unintended pregnancy: "Misschien dat ik er daarom emotioneel niet bij kom (unintended pregnancy). Het is wel heel veel (ja). Gewoon getraumatiseerd."

Lack of awareness of mental issues

Woman, 70 years, two sons, experienced an unintended pregnancy: "Eeuhm, ik heb kinderen gekregen op een moment dat ik me nog niet zo heel erg bewust was van mijn psychische aandoeningen. Eeuhm, maar ik wist altijd wel dat ik anders was."

Woman, 47 years, two sons: "… toen heb ik mezelf laten diagnosticeren (met autisme), toen werd nog duidelijker, en dat verklaarde ook meteen een hele boel ehh, … daarom dat het ook altijd zo moeizaam ging, ook het moederschap wat mij toch wat lastiger af ging, dan het gros van de ouders van vriendjes."

Fear and courage

Woman, 61 years, one daughter: "Ja ehh… Ik kreeg op mijn achttiende een psychose en toch durfde ik het aan om rond mijn dertigste zwanger te raken. Ik dacht, ik kan dit wel bolwerken."

Woman, 40 years, no children: "Uhm, en ik heb altijd geweten voor mij geen kinderen want dan herhaalt de hele bende (recidiverende depressies) zich, ehh dat ga ik niet doen."

Shadow of the future

Social influences

Woman, 24 years, no children: "Ja ook mijn familie, die eh, ik heb ook niet zo veel steun vanuit de familie dus (ja). Dus dan denk ik ja, ja, waarom."

Woman, 53 years, no children: "Ja, mijn beste vriendin ook (enorm lastig vinden) die heeft mijn favoriete naam voor een dochter overgenomen (zo), dat is nu twee keer gebeurd. Ja jij krijgt toch geen kinderen. Ja weet je, ik vind dat gewoon zo onattent (ja). En ik ben blij dat ik nu pas weet dat ik autisme heb, ehm, omdat mensen dan iets hebben van, ehm, daar heb je ook al het vooroordeel voor, van ik zou dat niet kunnen (hmm). Terwijl, en dat heeft er eigenlijk niet zoveel mee te maken (hmm). Ik ken genoeg mensen met autisme die uitstekend voor hun kinderen kunnen zorgen."

Woman, age unknown, one son: "En wat ik heel, heel, het was best wel lastig dat, maar ook weer niet heel erg, maar wel een beetje, dat, dat mensen automatisch zeiden van, ervan uitgingen dat je het kind niet wilde houden. Dat vond ik wel lastig. Terwijl ik zoiets had, voor mij is dat helemaal geen vraag. En dan was het van of het allemaal wel verantwoord was terwijl ik zoiets had, dat was voor mij helemaal geen punt."

Woman, 32 years, one son: "Ja ja ik wilde heel graag een kindje (hmm). Ehm en dat was al een tijdje. Ik wist dus nog niet dat ik OCD had, en ehm, ik had wel in de loop van mijn leven verschillende keren therapie gekregen en diagnoses … Ja bij mij is het hele diepe dalen maar ook wel periodes dat het wat beter ging. En omdat ik best wel diagnoses op mijn bordje had liggen dacht ik ja, en het ging al een tijdje stabiel dacht ik ja ik wil heel graag een kindje dus ik dacht we gaan er gewoon voor (ja, ja)"

Transmission of mental issues

Woman, 29 years, no children: "Ik wil het niet doorgeven. Ik kom uit een gezin met oorlogstrauma's (hmm)."

Woman, 29 years, no children: "Ja ik zou niet zo'n kind op de wereld willen zetten wat mogelijk een beetje van mij qua psychische klachten meekrijgt."

Woman, 59 years, no children: "Ik heb zoveel mensen gezien die het anders wilden doen en en die dan toch weer hetzelfde deden. Dat ik dacht van oooohh. Nou en dat is uit onderzoek ook wel bekend, van er is wel iets nodig he? (door elkaar gepraat) Om dat om dat intergenerationeel te doorbreken (ja, ja) (ook hechten moet je leren) Ja. Nee maar bizar, dan zijn er zoveel mensen die het anders willen doen. En dan kan je er ik weet niet wat aan aan familiegesprekken, ehm en en therapieën, en en en of hoe ga je met je kind om. En dan, hè. Je draait je om, en ze gaan precies dezelfde kant op dat ik dacht oh jongens."

Woman, 53 years, no children: "het is wel een lijn die gestopt moest worden (M: Ja, het verleden, of dat doorspeelt, en of je dan toch iets nieuws voor jezelf wil creëren, toch?).... Ja daar heb ik nu wel meer zelfvertrouwen en kennis over., dat dat gewoon kan."

Prospect of motherhood

Woman, 59 years, no children: "Maar ik denk niet dat ik ze ehm ... Ja, goed had kunnen grootbrengen zal ik maar zeggen (ja), in de jaren daarvoor."

Woman, 29 years, no children: "en ook ja, kan ik een goede ouder zijn?. Dat vraag ik me ook af, zou ik veel liefde kunnen geven. ... Ja, ik denk niet ehh, dat kinderen echt een goede moeder zou kunnen zijn. Dus ja ook een beetje uit bescherming denk ik."

Woman, 53 years, no children: "Dat je daar een besluit in kan nemen en dat je met hulp, en... Bij niemand gaat het honderd procent goed. Om mensen zonder enige voorgeschiedenis, ehm, die ehh, ja waar het vreselijk mis gaat. En je weet natuurlijk nooit wat er op je pad komt (ja)."

Woman, 32 years, one son: "Door de kennis die ik nu heb kan ik wel hard zeggen, ik ben zwaar genetisch belast (ja). En dat is natuurlijk ook iets waar ik me nu meer bewust van ben waar inderdaad ook wel door mijn hoofd gaat van wat als mijn

kindje dat krijgt. Aan de andere kant kan ik daar dan wel weer tegenover zetten van ik heb het zelf ook en ik weet nu heel goed hoe ik ermee om kan gaan dus ik herken het waarschijnlijk eerder (ja, ja ja) en ik kan er ook beter in ondersteunen als het zo is (ja). Dat maakt dan ook wel weer dat ik denk ja… (ja). Dat ik dan niet twijfel aan mezelf als moeder ofzo."

Reflections

Influence of mental issues

Woman, *57* years, two daughters: "Als ik het heb over mijn psychische kwetsbaarheid, die heb ik jarenlang weggestopt. En vanaf mijn achtenveertigste ben ik eigenlijk bewust van dat ik vanaf mijn jeugd al psychisch kwetsbaar ben. En heeft het een hele kleur over de zwangerschappen en de bevallingen gelegd, ja."

Woman, *57* years, two daughters: "Ik heb ook mijn hand opgestoken. En dat niets meer zeer doet dan nu dat mijn kleindochter ook… En toch vind ik heel vaak ook dat het door me heen gaat, had ik dit moeten doen (hmm). Had ik dit geweten."

Regret, grief, and relief

Woman, 61 years, one daughter: "Want ik 2012 kreeg mijn dochter, die nu 30 is een ernstige depressie en daar is ze nog steeds niet uit. En als ik dat van tevoren had geweten, ik heb ook depressie, zit ook nu in een depressie. Dan had ik, dan was zij nooit geboren geweest… Als ik had geweten dat ze zo'n ernstige depressie zou krijgen (dat je dat hebt doorgegeven). Ja ik heb dat waarschijnlijk doorgegeven. En dat vind ik heel verschrikkelijk."

Woman, 69 years, one daughter: "Had ik dat iemand moeten aandoen? Als ik had geweten wat die vaccinaties kunnen veroorzaken en beenmerg en dat zoveel kan (nee, nee, ja). En dan is dan als ik dan in Rome loop met mijn dochter en er komt een mevrouw naar mij toe in zo'n congres over vaccinaties en autisme. En dan denk ik, oké wat is waar. Ik weet ook nu niet wie de waarheid spreekt. Maar ons moedergevoel is altijd waar. Dus voel je niet schuldig. Ik zeg het ook gewoon weleens tegen mijn dochter ik had je dit willen besparen, maar."

Woman, 53 years, no children: "Ja en toen wist ik daarna, op een gegeven moment kreeg ik in de gaten dat ik Tourette had, en daar hangt weer, daar hangen van allerlei klachten onder. En toen was ik wel heel erg blij in verband met de erfelijkheid dat ik het niet gedaan heb. Hè het blijft soms toch ook weer, ja het blijft altijd ergens

nog een zere plek (ja ja ja). (Heel duidelijk) Ja, heel blij, en heel erg, ehh ja het blijft gewoon jammer soms. (Ja ja)"

Experiences with motherhood

Woman, 47 years, two sons: "Ja gewoon daar zelf compleet overprikkeld doordat hij niet voorspelbaar (ja, ja). Want ja hij kreeg zijn voeding en dan nog huilen (ja). Dat ik dacht van maar… ja wat dan nog? En gewoon de paniek de onrust de stress. Ik liep dan altijd nog in die tijd met vier hoofden in de rondte. Dat jij dat vroeg, achteraf gezien, gewoon teveel (ja, ja)."

Woman, 70 years, two sons, experienced an unintended pregnancy: "Mijn kinderen die hebben allebei daar uiteraard gevolgen aan ondervonden voor de jeugd die ze hadden. Ook al heb ik nog zo mijn best gedaan. En eentje lijdt helaas ook aan depressies. Dat had ik hem niet gegund, maar dat zegt nog niets over mijn functioneren trouwens. Want dat is wel doorgegeven."

Woman, 32 years, one son: "… ik zou graag een tweede kindje willen, het gaat met mij in principe goed. Maar ik durf niet te zeggen van stel ik word weer zwanger, ik heb het gevoel dat dat die verantwoordelijkheid me weer zo ja om de nek vliegt (ja). Dat ik denk ja maar ik durf het niet wat als het nou misgaat. En toen had ik, ja naast GGD alleen mezelf erbij maar nu heb ik ook mijn kindje van vijf zorgen. En zijn met zijn drieën heel gelukkig en durf ik om die reden zeg maar niet meer zwanger te raken ja. En dat moet ergens heel veel verdriet, maar aan de andere kant ik heb zo diep gezeten en ik ben nu echt gelukkig. Ehm… (dat het ook goed is zeg maar?) Ja ik denk we zijn gelukkig met zijn drieën, het is goed zo."

Woman, 57 years, two daughters: "… toen overleed moeder, want toen had ik zoiets van ja als wij snel overlijden, dan ehm dan staat ons kind alleen in deze situatie dus ik wil heel graag dat ze nog een zusje krijgt, of een broertje."

Woman, 32 years, one son: "Terwijl ik dan ook aan de ene kant denk van het heeft mij wel zoveel gebracht. Het heeft me zoveel geleerd over mezelf, met mijn kindje (ja)"

Woman, 70 years, two sons, experienced an unintended pregnancy: "…Als ik nu op mijn leven, ik ben nu zeventig, als ik nu op mijn leven terugkijk, dan waren dat mijn gouden jaren (ja). Het was hartstikke druk en ik moest heel erg zorgen, vier handen tegelijk hebben maar ik heb het wel gedaan."

CHAPTER 7

Exploring unintended pregnancy journeys among women with psychiatric vulnerability using interpretative phenomenological analysis: a prospective interview study

Noralie N. Schonewille, Elena Soldati, Monique J.M. van den Eijnden, Nini H. Jonkman, Maria G. van Pampus, Odile A. van den Heuvel and Birit F.P. Broekman

Submitted for publication

Abstract

Background

Recent studies revealed an elevated likelihood of unintended pregnancies among women with psychiatric disorders compared to their counterparts without such vulnerability. Despite the importance of understanding family planning decision-making in this group, qualitative inquiries are lacking. This study explored family planning decisions among women with psychiatric disorders.

Methods

Utilizing a qualitative approach, three focus group discussions were conducted with purposive sampling: women with a history of unintended pregnancies (N=3), women without children (N=5), and women with a history of intended pregnancies (N=9), all of whom had self-reported psychiatric disorders. Using thematic framework analysis, we investigated the themes "Shadow of the past," reflecting past experiences, and "Shadow of the future," reflecting future imaginaries, building upon the existing "Narrative Framework."

Results

The Narrative Framework formed the foundation for understanding family planning among women with psychiatric disorders. The retrospective dimension of focus group discussions provided opportunities for reflective narratives on sensitive topics, revealing emotions of regret, grief and relief. Childhood trauma, adverse events, and inadequate parenting enriched the "Shadow of the past". The "Shadow of the present" was identified as a novel theme, addressing awareness of psychiatric disorders and emotions toward psychiatric stability. Social influences, stigma, and concerns about transmitting psychiatric disorders shaped future imaginaries in the shadow of the future.

Conclusion

This study enlightens how family planning decision-making in women with psychiatric disorders might be complex, as marked by the enduring impact of past experiences and societal influences in this sample. These nuanced insights underscore the necessity for tailored support for women with psychiatric disorders.

Background

Unintended pregnancies (UPs) (pregnancies that are mistimed and/or unwanted) account for up to 50% of all pregnancies worldwide[1]. UPs have a tremendous impact on pregnant women[a], their newborns and society, as they influence the risk of mental health disorders such as perinatal depression, impair parent–child interactions, and increase parenting stress[2-5]. This impact is especially relevant to patients with psychiatric vulnerability (present or past psychiatric disorders), as they have an increased risk for UPs and an increased risk for adverse pregnancy and birth outcomes irrespective of pregnancy planning status[6-11]. Hypotheses on how psychiatric vulnerability contributes to challenges with family planning include difficulties adhering to contraceptives, oversight, planning and reproductive autonomy[12-16]. These hypotheses are mainly based on quantitative studies, which do not explore the individual experiences of pregnant women and expectant parents. To date, some qualitative studies have explored the experiences of UPs of women without psychiatric vulnerability. These studies describe pregnancy intentions as complex processes influenced by extrinsic factors, such as social, financial and relationship status, and intrinsic factors, such as the emotional and mental health status of the pregnant woman[17,18]. The impact of UPs on the lives of the interviewed women varied greatly and included experiences of guilt, self-blame, stress, worry, interpersonal conflict and societal stigma[19,20]. It has not yet been explored whether similar processes apply to women with psychiatric vulnerability. Previous research on family planning perceptions of nonpregnant women with psychiatric vulnerability revealed specific concerns such as the transmission of psychiatric vulnerability, parenting skills and bonding capacities with children[21-26]. Based on these qualitative findings, we hypothesize that in pregnant women with psychiatric vulnerability, factors related to mental health may specifically impact the experience of UPs.

This study aims to explore how women with psychiatric vulnerability experience unintended and ongoing (i.e., nonaborted) pregnancy journeys. We also include the partner's perspective on women's pregnancy journeys, as the partner's perspective is often overlooked in studies on UPs, and little is known about their experiences[27]. To support women with psychiatric vulnerability and UPs emotionally and practically, it is crucial to understand the challenges these women encounter and the needs that are derived from those challenges. Understanding women's self-expressed needs is key in developing family planning programs tailored to the needs of women with psychiatric vulnerability.

[a] In this article, the word 'women' represents persons who are assigned female sex at birth and identify as women.

Methods

Research design overview

A prospective qualitative research methodology was adopted to gain a deep understanding of women's lived experiences over time. We conducted semi structured interviews during pregnancy and after delivery that used a narrative approach. The analysis was grounded in the phenomenological tradition, and we adhered to the principles of interpretative phenomenological analysis (IPA)[28,29]. The IPA fits the aims of the current study, as it sets priority to the individual experience, has a mission in providing a detailed and nuanced analysis of people's experiences, is appropriate for studying life event[28,30] and focuses on a specific context[31]. Additionally, IPA appears suitable for amplifying the concerns of underrepresented groups, such as women with psychiatric vulnerability whose experiences are currently understudied[32]. The Qualitative Design Reporting Standards of the American Psychological Association were followed to ensure transparent reporting[33].

Researcher description

The position of the researchers holds specific relevance in any study conducting IPA, as it adheres to the double hermeneutic position: the researchers attribute meaning to how the participants attribute meaning to their own experience[34]. Credibility was enhanced through investigator triangulation[35] involving multiple researchers with diverse backgrounds. NS is a medical doctor with experience in the field of obstetrics and perinatal psychiatry; HS is a midwife with special knowledge of and interest in international public health; ES is a medical doctor with experience in psychiatry and obstetric care for marginalized groups of pregnant women; ME is a postdoc researcher who has lived experience in perinatal psychiatry and is an employee of organization MIND (the Dutch mental health patient and family umbrella organization); NJ is a postdoc researcher with methodological expertise; MP is a senior researcher and perinatologist; OH is a senior researcher, psychiatrist with expertise in hospital psychiatry and has lived experience with UPs and psychiatric vulnerability; and BB is a senior researcher and psychiatrist with perinatal expertise.

Participant selection and recruitment

Recruitment took place between March 2022 and February 2023 among all patients who visited the perinatal outpatient clinic of OLVG because of psychiatric vulnerability. We included pregnant women who perceived their pregnancies as unintended, were willing to discuss their pregnancy journeys, were aged 18 or older

and seemed proficient in Dutch or English. We excluded women who were diagnosed with intellectual disabilities, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), or who had a florid psychotic state, as diagnosed by a consulting psychiatrist at the clinic. Partners of pregnant women were invited for the study, irrespective of their mental health status. Eligible women were informed about the research during routine clinic visits between nine and 34 weeks of gestation and were invited by a researcher via email or telephone. The consulting psychiatrist did not participate in the interviews. When pregnant women agreed to participate, patient information files and informed consent files were sent via email. The pregnant woman was asked if there was a partner involved and if this partner wanted to be interviewed too, separately or together. Participants were also invited to bring a support person to the interviews, as the interview topic might be perceived as sensible. Participants and partners were invited for two consecutive interviews—one during pregnancy and one within three to six months postpartum—to capture their experiences with parent–infant bonding. Participants could also bring their newborn to the interview. Participants received reimbursement for their time and travel expenses. Purposeful sampling enabled the inclusion of participants with UPs, a willingness to discuss the topic and varying psychiatric vulnerability. In accordance with the IPA principle of including a maximum of 10-15 participants, we halted data collection for 11 participants[29].

Data collection

The interview guide (see Appendix 7.1) was developed based on qualitative data collected from focus groups with the MIND mental health panel[36]. Throughout the study, the interview guide was modified to accommodate any new themes that emerged during the interviews. Employing a semi structured interview format allowed participants the flexibility to share information beyond what was specifically asked about, providing an advantage in capturing unanticipated insights[37]. All interviews were conducted by two researchers: one as an interviewer and one as an observer (rotating roles). The interviews were conducted either via videoconference using Zoom or at OLVG hospital, depending on the participant's preference, and were audio recorded. During the interviews, the researchers made notes and captured nuances such as body language and facial expressions to supplement the audio recordings for a more comprehensive analysis. Participants were invited to read their summaries and comment on the interpretation of their narrative.

Data analysis

The recorded interviews were transcribed verbatim. We generated summaries and shared them with participants for credibility checks. Data analysis was conducted by two researchers (NS, ES) and a patient investigator (ME), who offered diverse perspectives to enrich trustworthiness. The IPA was conducted using ATLAS.ti V9.1. We adhered to the steps described by Charlick and colleagues and applied a completely inductive approach to the data analysis: reading and rereading transcripts (NS, ES, ME), initial noting of transcripts, by making descriptive and conceptual comments, including emotional expressions (memos are consulted in this step) (NS, ES), developing emergent themes (NS, ES), searching for connections across emergent themes (NS, ES), moving to the next case (NS, ES), and looking for patterns across cases (NS, ES)[28]. In this latter step, an analytical framework was built, including participants' narratives as columns and emergent themes as rows. Thus, it was possible to focus on the individual narratives before making interpretations at the group level. The last step included taking interpretations to deeper levels from multiple perspectives by discussing remarkable findings in a group meeting (all authors).

Results

Demographics

Eleven participants were included and interviewed during pregnancy: nine pregnant women and two male partners (one interviewed together with his partner and one interviewed separately from his partner). Of the eleven participants, six also participated in the postpartum interview (five women and one male partner interviewed together with his partner). The loss to follow-up of five interviewees was due to not having mind space to participate (n=1) or not responding to the invitation (n=3), and one woman explained that she had lost her pregnancy (n=1). None of the participants requested alterations to their narrative in the summary. Table 7.1 shows the demographic and psychosocial characteristics of the participants. Five women were born in the Netherlands, four in other countries (North America, Europe and South America) and two partners in the Netherlands.

Table 7.1 - Demographics of participants.

Participant	Age	Parity	Employed	Partner status	Self-reported psychiatric vulnerability	Self-reported childhood adverse experience(s)	Discovery pregnancy in trimester	First interview (GA)	Postpartum interview (weeks postpartum)
1	29	0	Yes	Living in	Bipolar disorder type I	Yes	1st	36 weeks	10 weeks
2	32	0	Yes	Living in	PTSD anxiety disorder	Yes	1st	34 weeks	8 weeks
3	39	0	Yes	Living in	Borderline personality disorder Depressive disorder	Yes	1st	24 weeks	-
4	33	0	Yes	Married	Depressive disorder Anxiety disorder	Yes	1st	35 weeks	16 weeks
5	39	0	Yes	Married	Anxiety disorder Panic disorder	Yes	1st	9 weeks	-
6	35	0	Yes	LAT	OCD	Yes	1st	27 weeks	24 weeks
7	24	0	Yes	Living in	Attention Deficit Hyperactivity Disorder	Yes	1st	23 weeks	14 weeks
8	28	2	Yes	Married	Anxiety disorder Depressive disorder	Yes	1st	13 weeks	-
9	32	0	Yes	Single	OCD, OCPD, PTSD	Yes	1st	20 weeks	-
Partner of participant 1	31	0	Yes	Living in	No self-reported psychiatric vulnerability	Yes	1st	38 weeks	-
Partner of participant 2	28	0	Yes	Living in	No self-reported psychiatric vulnerability	No	1st	34 weeks	8 weeks

* GA, gestational age; PTSD, posttraumatic stress disorder; OCD, obsessive compulsive disorder; OCPD, obsessive compulsive personality disorder; LAT, living apart together

From the IPA, four main themes were identified (see Figure 7.1). The order of the themes displays the chronological narrative approach of the two consecutive interviews during and after pregnancy. 'Ascribing meaning to the unintended pregnancy' describes the discovery of the pregnancy, the decision-making process and how the pregnancy became a reality. The 'Impact on mental health' theme displays how psychiatric symptoms evolved and changed because of the UP and how a desire for a safety net with pillars of support appeared. The 'Coping' theme follows with a description of the coping mechanisms that were adopted. The last theme, 'Parenthood', links the imaginations and expectations during pregnancy with the postpartum experiences. The subthemes offer further depth and interpretation of the data. The following paragraphs illustrate the findings with quotes from the participants and, when applicable, from the partners of participant 1 and participant 2.

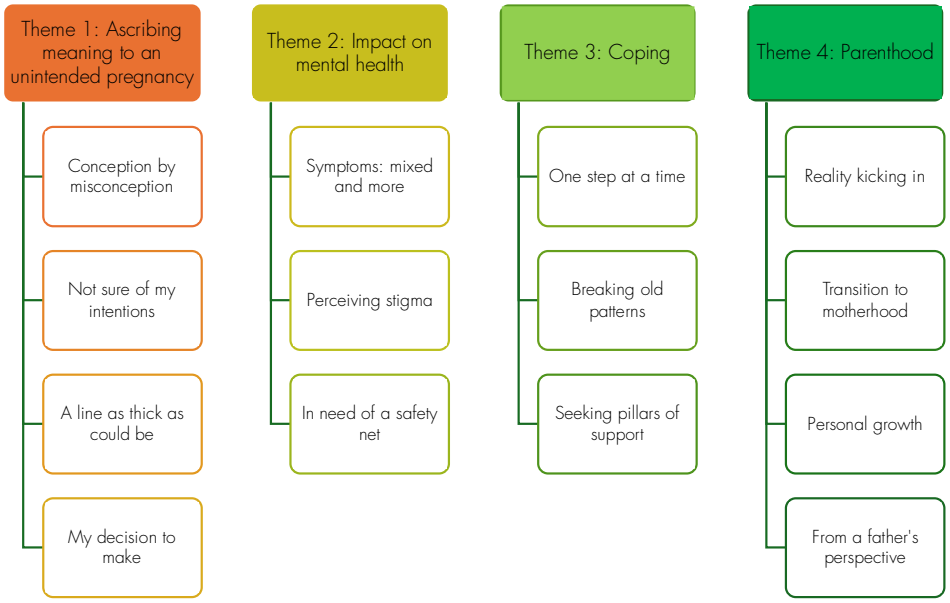


Figure 7.1 - Organization of themes and subthemes.

Ascribing meaning to an unintended pregnancy

The first theme delves into how participants attributed meaning to their UP. This process included perceptions about the risk of a pregnancy, the presence or absence of pregnancy intentions prior to the UP, the discovery of the pregnancy and the decision-making process thereof.

Conception by misconception

Several participants actively tried to avoid pregnancy and took precautionary measures by using contraception, while others who did not want to become pregnant did not use contraceptives or alternative methods.

For example, participant 7 used a copper intrauterine device for contraception to prevent pregnancy. Despite the use of this long-acting contraceptive, she became pregnant. Participant 8 used a birth control app that tracked her cycle using body temperature and predicted fertile days. She was under the assumption that this would help her avoid pregnancy.

"I was not on any hormonal type of birth control. After my second baby I was for some time on the pill. But I didn't like being on hormonal birth control, so I decided to try a, it's like a natural, it's, I think it's called [name application]. Which is like subscription-based hormone free tracking app where you track your basal body temperature every morning. Uhm, so I've been doing that in order to avoid fertile days. And I've been doing that successfully for a few months. But then my period was supposed to come and then a week went by and there was no period. And then I thought, uhm, maybe time to check? [speaks with sarcasm]. And uh, sure enough it was positive. So that's how I found out." (Participant 8)

Participant 2 commented that she considered herself to be less fertile due to her previous eating disorder. This misconception about her own fertility made her feel less at risk of becoming pregnant and resulted in her not using contraceptives.

"[…] with that eating disorder, I didn't know because I got my period so late, whether I was even fertile." (Participant 2)

No other participant indicated that her psychiatric vulnerability was (indirectly) related to the UP. Some participants assumed that they were using a form of contraceptive at the time of conception, such as participant 1, who explained that despite the use of condoms, she became pregnant. Her astonishment after she became pregnant illustrated how she was not aware of her risk of becoming pregnant.

"It's not like we had unsafe sex, we just used condoms in the meantime, but still, somehow, I got pregnant. We were on vacation in [country], and I was supposed to have my period that week, and I was a bit bloated, and then I thought; well, how is that possible?" (Participant 1)

Participant 5 explained how she assumed that due to her age, she would have difficulty conceiving. This led her to not use contraceptives and increased her risk of pregnancy.

"I was thinking because I also have a lot of friends and cousins, they are trying to have babies, like they are around 37, 38, and they cannot have, right. And then I was like, okay, now I'm 39, I will not have a baby. And then I stop being careful, that's what happened." (Participant 5)

Not sure of my intentions

The pregnancy intentions of several participants were ambivalent. This was illustrated by contradictory behavior toward preventing a pregnancy. Participant 2 and her partner both illustrated the ambivalence that she felt toward motherhood. She used folic acid but at the same time tried to prevent pregnancy.

"Yes, but when I think about it, it felt very surreal at the time as well, also because you think; I'm getting off that birth control, and we have those conversations, but it actually feels like it's not necessary because you think it's not going to happen or something." (Participant 2)

Then, her partner added:
"But I did laugh, you know, because we've often told people that it wasn't entirely planned. And then you said you were already taking folic acid, and people were really looking at us like: how can those two things coexist?" (Partner participant 2)

Participant 2 further commented that her pregnancy also caused relief. Now that she had conceived, she was positively fertile. Thus, the pregnancy had significance, as it prevented her from having to deal with the uncertainty of not conceiving in the future and/or dealing with the disappointment of not conceiving at the desired time.

"I'm also glad that it happened suddenly, indeed, because if I start thinking about actively stopping, you know, or actively trying, that also brings a lot of fear and tension. Because then you'll be disappointed every time. And each time you'll think, 'Oh, it's not happening." (Participant 2)

Although her pregnancy caused anxiety, she would have felt disappointed if she could not become pregnant right away. She explained that her fear of becoming a mother contributed to her ambivalence toward this decision.

Moreover, participant 2 described becoming pregnant as a passive act, as something that 'happened' (participant 2). More participants described the pregnancy as something happening to them, instead of an act in which they were involved.

"I was happy at the beginning, or so, because um, well, I've been doubting motherhood my whole life. […] So, I was happy because I thought; it's happening to me. And there's no better opportunity, because then I don't have to decide myself and then it's just very good." (Participant 3)

Out of fear of consciously considering motherhood, participants 3 and 7 were happy that the surprise of the UP itself had prevented them from making the decision and planning to have a child. It may be interpreted that making the decision to become a mother was something participant 3 did not want to do herself. From her narrative, it becomes clear that she feared being a mother. This might explain why she was relieved that she did not have to make the decision to have children herself.

"Yes, real panic. I dreamed, had nightmares about that list of things to get, and, and about breastfeeding not working out, and also about, yeah, not being fun at all, maybe as a mother or something. Those kinds of fears." (Participant 3)

Participant 7 echoed this experience by commenting that she did not want to make the decision to become a mother unless she was absolutely sure she would be a good mother. The UP had cleared the road for her on that account, as now she did not have to take on the responsibility of deciding.

"I think otherwise, maybe I would have thought that I always thought I have to be very sure that I'll be a good mother. And as long as I'm not very sure about that, I don't want it. And now. [it's already here…]" (Participant 7).

For two women, the pregnancy was not only mistimed but also unwanted. These women did not wish to become pregnant sooner or at any time. For participant 8, the pregnancy felt like a personal punishment from God for not being careful enough. She described that she felt a need to take responsibility for it herself and bear the consequences by herself.

"I had to just go through with it and that's you know, my cross to bear and it's my fault because I wasn't careful enough. And yeah, that just you know, God punishing me." (Participant 8)

Her repeated use of the first person, 'I', may be interpreted as her feeling lonely in the decision-making process and her fully taking responsibility for the situation herself.

For participant 5, pregnancy was mostly perceived as a threat that caused her anxiety. She foresaw a future in which she would become a mother through adoption, as she feared newborns. She had never considered carrying a pregnancy herself. When asked how she had experienced her pregnancy thus far, she expressed her fear of the changing life plan and prospects of pregnancy.

"Not good, ehh, because I was not planning to have a baby. I never wanted. And so, I was not feeling okay at all. Because I, you know, when you don't plan something, you have a plan. And then suddenly everything changed. So, it's a bit shocking. And the fact that I, I never wanted a kid, it's kind of really a bit, yeah, it drove me a bit anxious and, like, the not knowing what to do and what I want […]. It has not been easy. It's kind of hard for me." (Participant 5)

The words she used to verbalize her account of the situation seemed to undervalue the severity of her mental health symptoms, which became apparent during the interview.

A line as thick as could be

UPs evoked varying reactions from the participants at the time they were discovered; none of them were initially positive. The words the participants chose when verbalizing their discovery illustrated how they assigned meaning to them and expressed their shock and surprise.

Participant 5 realized she forgot to mention her pregnancy in the interviews' introduction, exemplifying the denial of her pregnancy.

Interviewer: *"Ehm, well and of course, we are interviewing you as well because you are pregnant."*

Participant 5: *"Yeah, yeah, ah yes, I'm pregnant. [Laughing] Oh, my gosh.*
"

The laughing may have implied that she was ashamed and in shock by how she forgot to mention the pregnancy in her introduction. In contrast to her verbal denial of pregnancy, she shared her bodily experiences. She explained that she could not sleep anymore, implying that there were things changing due to her pregnancy, but the pregnancy was not yet conscious.

"[…] The only thing is that I'm not sleeping anymore. I'm having troubles, sleeping. But I don't have anything [pregnancy symptoms] right. I just feel, I still didn't digest the idea that I'm pregnant. I think when I talk, I'm like, okay, if you see in the introduction, I even forgot about it, right? It's kind of for me, it's. Yeah. It's, ehh, it has been hard to admit that I'm pregnant. That's the truth." (Participant 5)

Participants used various words to verbalize the shock they were in after discovering the UP, which marked their experience.

"And the line was like as thick as it could be, it was like 'you are pregnant'. I was just like 'God dammit'." (Participant 4)

Her expression gave a negative tone to the discovery. Participant 6 started speaking quickly and repeating her words when sharing the discovery of the pregnancy. Her words mark astonishment but also acceptance.

"So ehm, so with my boyfriend, we actually met only like six weeks before we learned that we are pregnant. So that was like, we were like, oh my God. That's, that's way, that's way too soon, right? And it's like, and we, we didn't plan for it. We didn't expect it. It happened. It's, it happens." (Participant 6)

My decision to make

The decision to continue or terminate the pregnancy was dependent on intrinsic and extrinsic factors. The most important intrinsic factor was the presence or absence of a (latent) desire for children and of a future family. The following participants responded that they would want to have children in the future: *"We knew we wanted to have children" (participant 4) and "We always wanted to, we knew we wanted children."* (participant 2), *"And I was also very clear since the very beginning that I, I do want to have kids."* (participant 6). Aside from a desire for a family, women's age and fear of not conceiving in the future played a part in accepting UP.

"I turned 39 this year, I was 38, of course. I also thought; yeah, whatever comes now is wanted." (Participant 3)

Second, participants valued bringing a child into the world after having met certain conditions, such as having a paid job, housing and adult age.

"Just getting everything a bit sorted indeed, and basically, you know, we both have good jobs, and we can financially raise a child just fine, we have the space for it, so

yeah, if we both completely stand behind it, then there's actually nothing that, yeah, shouldn't go well now." (Participant 1)

Seven expectant mothers considered being in a stable relationship to be an important reason for pregnancy; the possibility of becoming a single mother was seen as very negative. The role of a supporting partner was specifically discussed by participants as an extrinsic factor that influenced the decision-making process.

"[…] I would never want to do this alone. Like if I was unexpectedly pregnant and I wasn't in a relationship. Yeah. with someone who I would feel confident having a child with, like I would have had an abortion, no question." (Participant 4)

The decision to maintain or abort the pregnancy was mostly made with the partner. This was illustrated by participant 7, who repeatedly used the 'we' form when discussing the decision.

"And then, um, yeah, then we had decided to keep it. Um, and we both stood behind that decision as well." (Participant 7)

This view was shared by participant 6. By her recurrent use of the 'we' form, she illustrates how the process of becoming pregnant was a process for which she took responsibility together with her partner.

"[…] So, it's 100% on us. It's like, […] we are adults, we are smart. We know what could have happened, right? So, it's like, so in this sense, it was no one's fault or like ehh, no one did anything by purpose or whatever. It's just, yeah, we just, we were just not careful enough." (Participant 6)

This was at odds with the experience of participant 8, who felt pressured in her decision to maintain pregnancy. Her partner's wish was to maintain pregnancy as the dominant argument in her decision-making process.

"My decision to keep it wasn't really my own. It was more, I think, fear, that if it ever did come out that would be something unforgivable to my husband." (Participant 8)

However, in a different manner, participant 7 joins in the impact of the partner's perspective. She would not want to force the pregnancy on her partner and could only pursue the pregnancy with his consent.

"But if he [partner] was very negative about it, then I would have found the choice harder because then I'd think, okay, but then I'm bringing a child into the world that he never sort of asked for. So, I found that to be a big factor, how he felt about it." (Participant 7)

Participant 9 also doubted that she should continue her pregnancy, as the biological father was not involved. After careful consideration together with her general practitioner, she understood that her cognitive approach to decision making was not helping her. She shared that, resulting from her youth trauma, she had difficulty verbalizing her feelings and emotions. Thus, when she found herself buying a toy, it was clear for her she wanted to become a mother. This experience was a turning point for her. When talking about it, she cried, indicating the significance of this turning point. In addition, in the last phrase, she verbalized how this turning point developed her from an individual with a dilemma to a team (she and her baby) with a new purpose:

"In the meantime, of course, there's a lot going on inside you. You start weighing all sorts of considerations and, um, yeah, then I bought a little cuddly toy. So that was actually the sign for me that I couldn't... [emotional]. […] And after all sorts of questions and answers, it was just clear: this is how it's going to be and, um. And we're just going to do it together. She and I together. Yes." (Participant 9)

Participant 1 and her partner shared similar thoughts on the difficulty of decision making. They pointed out how the woman is the one making the decision as she carries the pregnancy. This was a challenge for participant 1, as she wanted to maintain pregnancy.

"That my partner was really like, "oh shit, but we're not ready for this." Um, which made him more inclined towards abortion in the beginning, and I had a lot of difficulty with that because I thought; yes, you can't make that choice for me, and what if we can't come to an agreement on this together? Because, well, yeah, it's in my body, I immediately felt like I have to protect this, and of course, he doesn't have that feeling." (Participant 1)

For her partner, it was a challenge because he had doubts about continuing the pregnancy, but he agreed that she was in charge of the decision.

"Yes, initially she was of course a bit sad that I sort of hinted in my response that I wasn't actually ready yet, or something like that. While of course, the choice actually

always lies with the woman initially, right, when a woman is pregnant. So, um, yeah, that was a bit difficult, but well." (Partner participant 1)

Impact on mental health

For all women, UPs impacted their mental health during pregnancy. Moreover, UPs interfered with preexisting mental health symptoms or caused new-onset symptoms. The subthemes below describe what symptoms occurred, how they impacted women's journeys and how they fueled a desire for professional help.

Symptoms: mixed and more

A range of mental health symptoms, categorized into three groups, illustrated women's pregnancy journeys. The first group of symptoms was marked by childhood memories and fear of motherhood, as participants had negative parenting experiences during their own upbringing. For participant 2, her symptoms of posttraumatic stress disorder resurfaced during pregnancy. Her childhood flashbacks caused a burden during the first trimester of pregnancy.

"And that actually made me very bleak, and yeah, I felt really bleak all the time. Because I also kept having those flashbacks all the time. […] and that, I think, made it so heavy." (Participant 2)

Participant 9 had vivid dreams about her upbringing. She herself commented that the resurfacing of her youth trauma subconsciously occurred, as occurred in her dreams. She mentioned before that she has difficulty verbalizing her feelings due to her childhood traumatic experiences, but in her dreams, they reappear.

"I think that happens a bit subconsciously. Because I dream a lot about that [upbringing]." (Participant 9)

The second group of symptoms is related to the unexpectedness of the pregnancy, which had a profound impact on participants' mental health, especially during the first and second trimesters of the pregnancy. For participant 8, mixed emotions marked her pregnancy journey. She also expressed anger toward her partner and toward herself for letting this pregnancy happen. This anger was fueled by the fact that she had a previous UP. The words used by the participants mark these emotions.

"And at this point I'm blaming myself a lot more. You know like anybody can make a mistake once, but twice? Now I blame myself a lot. And I blame, you know, my husband." (Participant 8)

Participant 3 described the emotions related to the UP as 'grief coming over me'. This experience was linked to mourning her past life as an individual.

"The fear is totally focused on my own life. So, I really had to, really mourn, I thought. I really felt grief coming over me." (Participant 3)

Participant 4 also mentioned grief, which she related to the loss of autonomy over her body, as her body was in service of the baby.

"I still don't like being pregnant, I don't like it. I feel like my body is like, like I keep calling myself like 'the vessel'. I feel like my body is taking over not just physically but hormonally speaking and mentally. […] Like I miss feeling like me." (Participant 4)

For some pregnant women, these emotions resulted in a prolonged state of anxiety or depression.

"I just kind of feel resigned and defeated like… It's over, I give up. You know, stop having dreams. Because something will come along to dash it, so." (Participant 8)

Two participants described how the uncertainty of the situation led them to despair. They both felt so desperate that suicidal thoughts arose. Participant 1 felt like she was going crazy because pregnancy was something she absolutely did not want.

"I went to my doctor and then I said: I don't want to have a baby. I am going to get crazy. I'm going to kill myself because I don't want this. This cannot be happening." (Participant 5)

Participant 3 shared this view. She (at first) wanted to get rid of the pregnancy; she felt a strong urge to terminate the pregnancy.

"It was just a low point. I just wanted to get rid of it [pregnancy]. Besides being suicidal, I also just thought; get it out. I don't want this anymore." (Participant 3)

Finally, the third group of symptoms is inherent to the pregnancy itself, as pregnancy changed women's preexisting psychiatric symptoms and caused new symptoms, such as nausea, mood swings and irritability:

"And uh, that mainly has to do with the increase in uh, compulsive traits in my personality. So uh, that became bothersome at a certain point, and uh, probably also a combination of hormonal factors along with, uh, a certain psychiatric sensitivity, I call it that now. Uh, that kind of triggered each other a bit more and that came to the forefront again." (Participant 9)

For participant 1, symptoms that she previously experienced due to her bipolar disorder resurfaced.

"That I'm just very easily irritated now and more emotional." (Participant 1)

Her partner, in his own interview, agreed with participant 1 by indicating how he felt about the pregnancy impacting her mood.

"Um, she can occasionally react very sensitively and emotionally, and I think you see that during her pregnancy, influenced by hormones, a bit more strongly. But I don't really feel like there's also a psychiatric aspect that's very difficult to deal with." (Partner participant 1)

A conversation between participant 2 and her partner (who were interviewed together) echoed this experience, where pregnant women and their partner had similar thoughts on the hormonal impact during pregnancy.

Partner: *"That was really intense. It's tough that I... How? How can you turn this into a fight again?"*

Participant 2: "Well, I didn't like it either because I was really caught off guard by that. Yeah, and that was all too much."

Although the emotional lives of women with UPs were marked by mixed and often negative emotions, UPs had several positive effects on them. For participant 4, the UP meant that she had successfully conceived, which caused her relief.

"But I mean, I was talking like 'I'm healthy enough to get pregnant', and I can't believe like, in the back of my mind before I was like 'you know, I'll be sad if I can't

have a child naturally'. I won't be devastated, but like I would feel sad. And I was worried like maybe I'm infertile or something. And like 'no you are not', so there was like a small silver lining there." (Participant 4)

Perceiving stigma

Most participants had doubts about sharing that the pregnancy was unintended with their social circle due to fear of negative reactions and stigma. Participant 7 commented on how her mother tried to influence her decision-making regarding pregnancy.

"And then I called my mother to tell her. And then my mother did everything to try to convince me that I should have an abortion, while I had already made the decision not to do it and had stated that as well." (Participant 7)

Participant 8 shares this view. She did not share her story with her mother out of fear that she would judge her.

"I didn't tell my mom for a long time because she was very against the second unplanned pregnancy as well. […] It was, it was you know a lot of pressure on one side to keep it and be positive about it. And on the other side it was pure negative '[…], you've ruined your life', like, 'there's no way out of this'. So, not really support on either side." (Participant 8)

Aside from not feeling any support, these reactions from significant others created hardship for the participants.

Stigma was also related to mental health problems, introducing a double stigma: one of the UP and one of the mental health situations. This is illustrated by participant 3, who explains that she did not want to be open about her suicidal thoughts out of fear that child services would take her child away. She illustrated the fear of being perceived as a bad mother, which even made her suspicious.

"At the beginning I was also afraid. There was a constant focus on 'suicidal, suicidal'. I thought; oh yes, if I now state very strongly that I'm suicidal, then my child will be taken away from me later, or something, it creates a kind of suspicion." (Participant 3)

Participant 1 further elaborated on the stigma that she endured due to her mental health diagnosis. She feels that if something happens, others will attribute that to hearing a mental health diagnosis.

"It's still something that isn't discussed indeed, and I'm just afraid, […], if they know that there's something, and something happens at some point, that it will immediately be attributed to that [diagnosis of bipolar disorder]. […] Yeah, so that, I'm not even going to touch that with a ten-foot pole." (Participant 1)

Finally, some participants expressed the need for society to change its perspective on pregnancies and accommodate emotions other than happiness and content, as a pregnancy can be experienced very differently depending on the pregnant person. Participant 3 experienced that positive reactions are the norm to any pregnancy, despite the actual feelings of the expectant parent(s).

"Because then, yeah, I get a lot from many people: oh, congratulations! Oh, it's so fantastic! And then I reply: well, that doesn't apply to everyone. […] So, I do try to be more open about it, that not everyone is on cloud nine." (Participant 3)

Participant 5 agreed and showed how she felt supported by mental health professionals (MHPs) who shared with her the stories of other women with psychiatric vulnerability during pregnancy. The normalization of negative (or neutral) reactions to a pregnancy made her feel better about the situation.

"I think I created in my mind that every woman who gets pregnant is happy. And then the obstetric caregiver told me: well, it's not like this. […] There are a lot of women that suffer, that they have bad feelings, bad thoughts. And then I was like; okay, so at least I know that I am normal, let's say, right." (Participant 5)

In need of a safety net

All participants were actively seeking mental health care and other forms of support with preventive measures to avoid worsening of symptoms during pregnancy and after childbirth. There were different motivations to seek help: preventing relapse or transgenerational transmission, improving the baby's well-being, and preventing the worsening of psychiatric symptoms.

Participant 1 found it particularly relevant to prevent postpartum relapse of her bipolar disorder in depression.

"Because I do feel that I've done everything at least to prevent any depressions or issues." (Participant 1)

Participant 7 stressed the importance of prevention; she tried to prevent difficulties with postpartum mother–child bonding by seeking help beforehand. Her transcript was marked by her wish to not perpetuate intergenerational patterns or traumas.

"And seeking help or trying beforehand to do it as well as possible and seeking help in that process. I believe you have that responsibility as a parent." (Participant 7)

Both participants 1 and 7 showed responsibility and an urge for prevention, not only treatment. Participant 9 prioritized her child's wellbeing by addressing it as 'the most important thing' (participant 9). These words illustrated the significance of her child for her during pregnancy.

"The most important thing for me was to get to the perinatal psychiatry outpatient clinic because there's also a pediatrician involved, […] the most important thing is that the unborn child isn't harmed." (Participant 9)

Participant 3 echoed the view that taking care of your mental health situation is more crucial when a child is involved and has fueled her wish for help.

"[…] But it becomes dangerous when there's something, of course, growing inside you, something beyond yourself. So, I did actually, [..] immediately called again on Monday morning saying: I need help, otherwise it won't go well." (Participant 3)

Participant 5 asked for treatment when she realized that her symptoms worsened.

"I went to my doctor and then I said: I don't want to have a baby. I am going to get crazy. I'm going to kill myself because I don't want this. This cannot be happening. So, I was completely out of my mind and then I said: please, can you please help me with some… ehm, I need that mental health support." (Participant 5)

Although the participants expressed their own motivation to seek help, there were concerns regarding the availability of mental health care for women with perinatal mental health problems.

Participant 2 expressed that she lacked information about the effect of pregnancy on her psychiatric vulnerability and where she could find treatment and support, even though she had previously received psychiatric care.

"At least an information day or something. So that you know if you're struggling with things, you can go here or there. Even if it's at the perinatal psychiatry outpatient clinic or something. Just to have more information." (Participant 2)

She also shared that it would be even more valuable if the MHP before pregnancy had knowledge about the peripartum challenges instead of having to find a new MHP in the peripartum period.

"But I think if there would be more information [...] whether a psychologist or so could offer something like that, if you're already seeing a psychologist, that might be an even better step." (Participant 2)

Participant 3 hoped that healthcare professionals would, in general, pay more attention to mental health symptoms to ensure early treatment. She saw this opportunity for midwives.

"So, in addition to the physical questions, maybe you could ask more, like: oh yeah, and where are your concerns? Do you have a lot of worries? How is it going inside your brain? Yeah, do you wake up feeling okay in the morning?" (Participant 3)

Coping

After the discovery, the third theme exemplifies how women coped with UP and cooccurring mental health symptoms during pregnancy.

One step at a time

Women adopted different coping mechanisms to address the unexpectedness of the UP. Participant 5 illustrated how she concentrated on each day, without looking at the future. This prevented her from feeling overwhelmed. At the start of the interview, she denied her pregnancy. This coping mechanism of not thinking about the future could indicate another form of denial of the current stressful situation that is the result of UPs.

"I never wanted a kid, it's kind of really a bit, yeah, it drove me a bit anxious and, like, the not knowing what to do and what I want and ehm, but then. Well, I'm trying to, to concentrate on each day." (Participant 5)

For participant 8, comparable coping strategies seemed helpful. She describes how distraction is the way for her to feel better.

"I don't always want to sit there just like talk about my feelings because my feelings are very negative. So to feel positive, I need to look outward of myself. So that's why talking doesn't really help but uhm coping I think is better if I get to uhm kind of do things that I still enjoy and love doing. And stop thinking about all the bad." (Participant 8)

Additionally, participant 6 described it as *"just focusing on the positive".* She commented on another helpful aspect of any pregnancy: its duration. The passage of time helped her in accepting the pregnancy and adjusting to the new reality.

"I was super, super weak, he [her partner] was depressed and it was like, completely, you know, ups and downs all the time. So that was not very pleasant, to be honest. But that passed for both of us. And more or less since the second trimester started, it's like I started to feel better. He also started to feel better emotionally. And right now, we are looking forward to everything." (Participant 6)

Breaking old patterns

Pregnancies made participants reflect on their own childhood and their parents' parenting skills. As all participants and one partner spontaneously mentioned an unsafe upbringing, they were motivated to meet their babies with unconditional love, safety and healthy parenting skills and to break the chain of intergenerational trauma. Participant 1 comments on doing so differently.

"We both have this feeling that we just don't want to do it the way our own parents did, actually." (Participant 1)

For participant 2, the most difficult part was that she never experienced unconditional safety. She was aware of that and would love to provide it for her child. It frightened her that she has not had an example of this.

"I don't know how it feels to have, sort of unconditional safety, um, because I've never experienced that, and I know; I'll never feel that. Um, and in that aspect, that's something I would really want, so I'm working very hard on that. At the same time, it's very frightening that you don't know how that feels. So, planning to give something you don't know." (Participant 2)

Although women had often previously sought or received professional help for psychiatric symptoms, the current pregnancy acted as the instigator of help-seeking behavior. Participant 3 illustrates that for herself, she would be less motivated to seek

help because she has been dealing with her own mental health issues for her entire life. For her child, however, this perspective changes.

"… Like I said earlier: I don't feel like I would be doing it for myself, it's really for, for my child. Yes, definitely. Because for myself I think; oh well, I'll survive, I've known that for 38 years, you know. Um, yeah, for your child, you just don't want that after childbirth, yeah, that seems truly terrible, the bonding and if that doesn't happen, um, yeah, that." (Participant 3)

Seeking pillars of support

As illustrated in Theme 2, participants realized that they needed professional help for the mental health impact of UPs and that as a coping mechanism, they actively sought pillars of support. MHPs formed one pillar of support, which positively impacted the pregnancy process. Participants 3 and 4 both described how the help of an MHP is of additional value during their pregnancy, in addition to the help from family, friends and midwives.

"I feel heard, which is really great. Besides having your family, it's just really nice to have professional people who, um, think along with you and are willing to do everything they can to help you, and that's special. I feel very supported in that, especially from the midwife who took action so quickly. My doctor was also very prompt." (Participant 3)

"So, I feel very like, helped by them [MHPs]. And then if I have stuff that has come up, with mental health. Like I know the midwife maybe isn't the right person to help me, but I feel like I could contact them […]. Like, they would know how to point me in the right direction." (Participant 4)

Women also received support from other pillars of support such as friends (participant 4) or family (participant 7).

"We have like one couple of friends who has kids and then there's a couple that lives down the street that we've kind of made friends with who have kids. So, it's nice just having people who also have children." (Participant 4)

"[…] well, my father found it very nice, he was very enthusiastic when I called that I, uh, so that's nice. All my girlfriends were, uh, uh, quite supportive and they all found it, well, I also had a friend, you know, who was there when I did my pregnancy test." (Participant 7)

Participant 1 shared how her partner's mother had a role in the decision-making process regarding the pregnancy. Her support helped her partner accept UP.

"And at one point, I said to him: well, call your mother because I know he always listens to her, that he, well, can just have a good conversation with her. And after that phone call, he suddenly completely changed his mind, […] then suddenly he was like, well, 'then we'll just do this', and um, then I also thought; 'huh, so yeah, that was a bit strange', but it did help in that sense indeed to really talk to people about it […]." (Participant 1)

Parenthood

The fourth theme illustrates how parenting began during pregnancy, as women had bonding experiences with their unborn child. The theme further describes how participants experienced the first weeks to months of parenthood compared to their expectations during pregnancy. Looking back on their pregnancy journeys, participants experienced growth on an intrapersonal level, as well as interpersonal with their partners.

Reality kicking in

The bodily sensations that were related to pregnancy had different meanings, as derived from the transcripts. Participants felt as if the babies were 'real' when they experienced their movements. Feeling the baby also enhanced the growth of the bond between the mother and the baby. Additionally, fetal movements reassured the expectant mothers of the baby's health.

"And when I started feeling it more, then it becomes… real, you know. This is real, there is really something in your belly. And as you're getting closer to the end, I do feel it more to a greater extent. Uh, throughout the whole day, it's more, well, more realistic or something like that." (Participant 2)

"Because I actually found it mostly abstract. Only now, I'm starting to, I think that's why I'm calmer. He kicks all the time, so he's always busy." (Participant 3)

For participant 6, fetal movements had metaphorical significance. For her, the movements of her baby created imaginations of her future.

"Yeah, I'm also like laughing a bit like that because she's moving really a lot. So, I'm laughing a bit that she will be either a dancer or a kickboxer in the future." (Participant 6)

The reality of having a baby was also instilled by ultrasounds, which play an important role in visualizing the baby. This happened both literally and metaphorically. Participant 1 explained how she imagined her baby physically look like his father on ultrasound. Interestingly, she also comments on his character. As the baby is in a breech position, doing things differently from others. In this way, ultrasounds enhance fantasizing about the baby.

"Yeah, they really saw those long legs in one of the first ultrasounds, I thought; oh, that's really my boyfriend, and in the 3D ultrasound, you can really see his face in there, so, yeah, I'm curious. So far, he's doing everything in his own way, the fact that he's even being born is, of course, not initially a choice from us. And, yeah, I just think he's very stubborn, he was in breech position, so, yeah." (Participant 1)

Another meaning of fetal movements was the creation of a bond between expectant mothers and babies. Participant 4 described how she feels love toward her baby as she makes contact with her belly.

"And I feel tenderness towards him, I feel a lot of love towards him. Like last night, normally he is very active at night, he wasn't active last night, and I was like I can't fall asleep until I felt him move. Because I, I was like I need to make sure he's still alive." (Participant 4)

Contrary to the positive feelings and ideations that resulted from fetal movements or visualizations of the baby on ultrasounds, fears regarding the pregnancy were also metaphorically described. The interview guide specifically addressed any ideations or fears regarding the unborn child. Women gave substance to these fears by fantasizing about the baby.

"I think once I know that, that I can begin to kind of, again like personify or humanize it a little bit more. Because at this point it's just a thing, like this unmortise thing that is in me and wreaking havoc on my sanity." (Participant 8)

"I am really scared. About newborn babies. When I think about it, I, well it's... I don't know. I have a bad feeling about it. But I love a child. So, it's, it's interesting because I love child, but I love, I, when I see the child is like after, after they start walking. So, I

love them, but before that, I'm really scared. I never. Ehh, yeah. Usually, I don't like even to touch them." (Participant 5)

Transition to motherhood

As new parents, participants were surprised by the way in which bonding, love and protecting the baby could occur, even though not all participants had a healthy and safe parental example themselves. From the moment of birth, participants felt a shift in priorities. Love for the baby also prioritized their wellbeing over other aspects of life. Participant 2 illustrated this as being less willing to head back to work after her maternity leave.

"I really feel such a bonding. […] Then there's really this kind of protective feeling that you couldn't even imagine during pregnancy. Because I really couldn't imagine that it's really there now. Mmm, that's very special to experience and very different from what I thought." (Participant 2)

Participant 6 expressed her love for her baby through communication during the interview, which was marked by her talking to her baby, addressing her with positive nicknames and making nonverbal contact.

"[talks to baby] Oh, yeah. Pure joy [name baby]. Pure joy. Yeah. All right. All right. Baa! Baa! Baa! Baa! Are you happy, baby? Now, Are you happy, baby? Now? Yes." (Participant 6)

Participant 1 showed how she prioritized her baby by using superlatives.

"Yeah, he's truly the most important thing in my life, and I'd do anything for him. The most important thing for me is that everything goes well with him and that he becomes happy." (Participant 1)

Prioritizing the baby's wellbeing also had its downside. For participant 7, her focus on preventing trauma to her baby put considerable pressure on her. She experienced the responsibility of parenting as a challenge.

Participant 7: *"I find the responsibility sometimes a bit overwhelming, you know. Suddenly, with everything, you think, 'Okay, but what if I mess this up?' And I know it doesn't happen because of one thing, but sometimes I do think that."*

Interviewer: "*And what kind of things are those?*"

Participant 7: *"Well, first they said you should look at him all the time when you breastfeed him, and I just can't do that. […] I do find it occasionally quite difficult when I think, 'Oh, but what if he looks at me and I don't look back? Will it ruin him?"*

Personal growth

Looking back on their experiences as being pregnant unintendedly, personal growth was noted in terms of declining mental health symptoms, finding a purpose in life, experiencing love in new ways and finding better ways to communicate within (partner) relationships. Participant 2 explained that she felt an urge to continue with her life for her child, even though negative emotions were still part of her daily life.

"Also, that even if I am anxious or something, I still have to carry on. […] That I have to be there for her or something." (Participant 2)

Looking back on her pregnancy experiences encompasses her fear at the very beginning of the pregnancy journey.

"Yes, so about getting unintentionally pregnant indeed. And then I found it very scary and thought it's not the right moment. But now I really feel like I would never have wanted it any other way. I actually could have had children earlier because my body just knew it so naturally. We both feel like it has truly enriched us." (Participant 2)

Participant 4 expressed surprise with the way things turned out by saying '*it's funny*'. She never expected this unplanned pregnancy to turn into this amount of love for her child. By calling it 'magic', she marks the significance of this experience.

"I mean, it's, it's funny like, yeah, he was unplanned, but, like, I'm so happy that he's here. […] part of my heart is, like, now exists here and, and like, I love him so much. Like I never knew I could love this much and, like, feel this like, joy. I never felt anything like this before. Like, I really feel like I've, like, unlocked a new world of, like, internal joy and love and, like, magic that I never thought was possible." (Participant 4)

Participant 7 found a positive aspect of the growth of her relationship with her partner. Her child makes her feel a need to repair after conflict, whereas in the past, she wanted to leave in conflict.

"I think my relationship with [partner] has improved in that aspect. But more so, I think I've become better at it. In the sense that in the past, I had more of the feeling that I could always leave." (Participant 7)

For participant 1, the UP motivated her to set boundaries. Before her pregnancy, this was challenging for her. During pregnancy, her motivation was fueled by the protective feelings of the unborn child.

"I'm especially concerned that I don't want my child to deal with those kinds of things, with that irrationality and that he'll have to endure such things in his life. That's why I don't have any contact with my sister anymore, I've completely cut her off. I just don't want those kinds of people in his life." (Participant 1)

From a father's perspective

The following perspectives were derived from the two partners who participated in the interviews.

Participant 2 and her partner emphasized the positive impact of pregnancy on her mental health by providing purpose to her life.

Participant 2: *"Yes, oh yeah, that's something too. Yeah, that's... Maybe a very good reason. I also notice that I feel much better than even before the pregnancy because now I can't just lie in bed forever or something like that. [...] and I can still be scared, but for a shorter period or something. Mmm. So, I also feel much less lonely or something.*
"

Partner: *"That's funny. We've talked about whether we should still, because I didn't want a pet at that point. Or whether we should get a cat or something because that can actually have quite a positive influence. [...] But we always knew that. That something like that [a baby]. Because even when we looked after a dog for a week or so and you were just really, even though that wasn't actually such a good time for you, you felt uh much better when you were taking care of something."*

The perspective of the partner of participant 1 on her pregnancy journey emphasizes that UP can lead to personal growth for women with psychiatric vulnerability.

"Look, it's very good that there's obviously monitoring and follow-up for patients like [name participant 1], but I really think she's making a tremendous effort and that she's perfectly stable, and that she's just, you know, I, in the beginning of that pregnancy, I

did have a bit of a 'oh, crap' feeling. Like, it might just be all exacerbation or recurrence of something, you know, I, and she hasn't had any of that at all. […] What I'm actually trying to say is that it's good that those people [with psychiatric vulnerability] are being followed, you know, and monitored and that there is follow-up. But I think credit should also really go to those people who seem to be functioning better because of such a pregnancy. So, I'm happy about that and also proud." (Partner of participant 1)

Discussion

Main findings

This study aimed to understand how women with psychiatric vulnerability experience UPs. Four major themes were derived from narratives from nine pregnant women and two partners. The 'Ascribing meaning to an unintended pregnancy' theme described how UPs could occur in the context of women's situations and how a future desire for a family, partner support and having met certain life conditions shaped women's pregnancy intentions prior to pregnancy, which were often ambiguous. Fear of transgenerational transmission of trauma and psychiatric symptomatology impacted women's desire for a future family and instilled fear of inadequacy in parenting. The 'Impact on mental health' theme illustrated how UPs caused mental health symptoms related to childhood memories, the unexpectedness of the pregnancy and the pregnancy itself. Moreover, women had difficulty announcing their UP due to fear of negative reactions. Prolonged mental health symptoms during pregnancy, in addition to a fear of transmitting childhood traumatic experiences and being an inadequate parent, caused despair. It also caused determination and motivation to seek pillars of support (MHPs, family, friends) during pregnancy. In the 'Coping' theme, coping mechanisms such as focusing on the positive or on the future, seeking distraction and allowing support were discussed. The 'Parenthood' theme linked imaginations and expectations during pregnancy with postpartum experiences. Fetal movements and imaginations of the baby exemplified women's feelings toward their unborn child. These feelings were markers of prenatal bonding. In six postpartum narratives, awareness of psychiatric vulnerabilities gave rise to behavioral changes, such as creating safety nets (through access to/awareness of support options), setting boundaries and prioritizing their babies. The narratives illustrated how parent–child bonding could successfully develop after UPs in women with psychiatric vulnerability. For some women, mental health symptoms improved as the UP provided a new purpose in life. This perspective was underscored by two partners. Although UPs are

perceived as challenging pregnancies, we hypothesize that they can also provide a window of opportunity for personal growth in this subgroup of pregnant women.

Strengths and limitations

The main strength of this study is that to date, no other study has explored the unique experiences of UPs in women with psychiatric vulnerability using prospective qualitative data. The interview guide was developed following a panel discussion with experts with lived experience with UPs and psychiatric vulnerability, adding suitability and appropriateness. The small sample size is regarded as a strength, as it serves the IPA in prioritizing individual experiences[29]. Although the included women were homogenous in the presence of a psychiatric disorder, enhancing similarity, we included women with various psychiatric disorders, which provided a deeper understanding from a transdiagnostic viewpoint[38]. We invited involved partners because partner experiences are understudied in the context of UPs, especially among women with psychiatric vulnerability. Ad-verbatim transcribed interviews were analyzed for both semantic content and form: emotional responses, metaphors and nonverbal communication were used to attribute meaning to the transcripts. We further adhered to the phenomenological standpoint by including bodily experiences in the interpretation of findings such as feeling kicks of the baby[34]. By adhering to the seven-step analytical plan of Charlick et al., we increased procedural precision[28]. The analysis was performed by two independent researchers (NS, ES), and all discrepancies in interpretation were thoroughly discussed. Finally, the analysis was evaluated by the whole research team, including two experts with lived experience, who added credibility and increased the triangulation of perspectives in data interpretation. Having scheduled interviews both before and after childbirth with the same participants added further deeper understanding of changes over time in the experiences of the participants. We reached congruence with the research question, as the IPA enabled a thorough, narrative description of patients' lived experiences with UPs.

This study has several limitations. A disadvantage of this IPA study is that the results reflect the perceptions of individuals who resemble the purposively collected sample. Thus, our findings cannot be extrapolated to all expectant parents with mental health problems and UPs. In our sample, all women and men were employed, indicating a medium to high socioeconomic status, which might have influenced the possibility of accepting a pregnancy for financial reasons. All but one of the women were pregnant with their first child. This may indicate selection bias, as women with (multiple) children may not have time or space to participate in an interview. One of the inclusion criteria was that participants speak Dutch or English fluently, leaving out people who might

have different needs and experiences due to, for example, language or cultural barriers or discrimination in healthcare. This reflects the investigators' demographics, as the study group consisted of native Dutch women proficient in Dutch and English (only). This may have caused a threshold for women from other origins or demographic groups to join the study. The outpatient clinic is an advisory clinic, which indicates that all participants voluntarily consulted on their mental health, implying at least a certain degree of mental health awareness. Although we included participants from various countries of origin, there were no participants who moved to the Netherlands as refugees, limiting the transferability of our results to a larger audience. In addition to limitations resulting from the sampling strategy, there are certain challenges with the use of interviews. There is a possibility of response bias (socially acceptable responses), but we consider this bias limited because the participants' responses were diverse and captured a range of emotions and reactions. Several issues are related to the data collection. Diversity in the timing of the interview (weeks of gestation) might have increased recall bias. Pregnancy intentions are difficult to recollect after a pregnancy is accepted, especially as mothers' bonding can increase during pregnancy and change recollections[39]. Postpartum interviews were held with only six participants. Participants who did not join might have experienced pregnancy loss, complicated pregnancies or postpartum mental health problems. The postpartum perspectives may thus be marked by those with positive pregnancy and birth experiences. Finally, as all pregnant women and partners discovered UP in the first trimester of pregnancy, there was a possibility for legal abortion. This is relevant, as the women in our study opted to pursue their pregnancies and may have felt more positive about the pregnancy than women with UPs who did not have the option to abort.

Interpretation of findings

The results from our study show women's conflicting feelings toward UPs. A previous study demonstrated how incongruence between pregnancy desires and planning can cause internal or external conflicts, such as desiring a pregnancy but also experiencing financial worries[17]. In our sample, fear of motherhood but at the same time desire to create a family might explain the incongruence between pregnancy desires and pregnancy planning. Some women actively aimed to avoid pregnancy (through condom usage, long-acting hormonal contraceptive usage or periods of abstinence), while other women did not want to become pregnant but did not actively avoid pregnancy. Previous qualitative work has indicated that in addition to ambivalence, some women do not formulate any pregnancy intentions[40]. In our work, pregnancy intentions were indeed not always formulated by women prior to the UP, which may have influenced contraceptive adherence. Additionally, pregnancy

ambivalence is an independent risk factor for UPs[17]. Some participants in our study believed that they were sub fertile or infertile, as was found in the study by Borrero and colleagues[40]. Perceived in/subfertility and lack of pregnancy intentions could also explain the use of less reliable contraceptive methods. Previous data from this study group support the hypothesis that formulated pregnancy intentions may increase contraceptive adherence. Among persons with mental health problems who were sexually active but did not intend to become pregnant, 83.3% always used contraceptives[36]. In contrast to the previous literature, our data do not support the hypothesis that mental health symptoms such as lack of overview, depressed mood or hypersexuality make women susceptible to UPs. This is probably due to the limited sample size of the IPA, in addition to the absence of several important severe psychiatric disorders, such as florid psychotic or manic episodes.

Previous literature consistently shows that UPs evoke profound emotional responses[18-20,41]. This accords with the emotional burden illustrated in our sample of pregnant women with psychiatric vulnerability and their partners. These responses, summarized by some women as 'grief coming over me', resemble the five stages of grief that can be identified in persons who are mourning: denial, anger, bargaining, sadness, and acceptance[42]. Parents without psychiatric vulnerability also reported a profound emotional impact resulting from UPs, including mental health conditions, postpartum depression, suicide attempts or hospitalization[41]. Thus, we hypothesize that the impact of UPs on mental health is not specifically related to having psychiatric vulnerability. However, the notion of dreams about childhood, flashbacks to their childhood trauma and fear of transgenerational transmission of trauma and psychiatric symptomatology in our sample has not been previously described in relation to UPs. It is widely known that maternal representations, often present even before pregnancy, are derived from women's own upbringing and parental experiences[43]. Maternal representations of pregnancies and babies as scary, monstrous or negative, as in our sample, could be related to these past experiences. In turn, maternal representations about the baby might impact future mother–infant attachment[44]. As it is possible to improve attachment problems between mothers and their offspring[45], it is valuable to understand women's maternal representations and their origin. This might be even more relevant for women with childhood traumatic experiences. Ultrasounds and feeling the baby kick were important milestones in pregnancy acceptance as well as potential bonding experiences for pregnant women and their partners. These milestones consolidated the pregnancy and provided reassurance about the health of the baby. In interviews with women without psychiatric vulnerability, similar positive effects of ultrasounds were found in the first trimester[46]. These experiences could be points of reference in supporting women with UPs. Most participants in our sample had an intrinsic desire to

become mothers or fathers in the future, which was the main reason for continuing the pregnancy. Indeed, pregnancy acceptance is related to wanting to become a parent in the future and to having positive circumstances such as housing, a partner relationship and/or a support system, adult age and employment[41,47]. Previous qualitative research shows how parents are motivated by UPs to make lifestyle changes, as UPs give a renewed sense of purpose[41].

The most compelling finding in our study is that in women with psychiatric vulnerability, UPs can install a window of opportunity for personal growth by changing behaviors or receiving treatment as participants realize how their psychiatric vulnerability and/or adverse childhood experiences might impact future parenting. In a different domain, women tend to change their behavior toward romantic partners, family and employers by setting boundaries and overcoming conflict. Extending our results to larger settings is undesirable given the qualitative nature of our work; however, it should be noted that relationships can change after UPs, as presented by a quantitative study in which couples in UPs reported improved relationship functioning after birth compared with before birth[48]. Additionally, previous qualitative work has demonstrated how women who become mothers incorporate their children into themselves and into their self-boundaries[49]. Although intrinsic motivation to change transgenerational patterns was abundantly clear, external factors such as perceived stigma challenged how participants could cope with their (negative) feelings toward pregnancy. In an Iranian interview study on women with UPs conducted in a different social and cultural setting, feelings of shame, guilt and self-blame were also reported, suggesting that societal stigma may impact pregnancy journeys in various social settings[19]. Although pregnant women in our study experienced support from their partners, MHPs, friends and/or family, two women feared becoming a single mother. They emphasized that continuing the pregnancy was dependent on partner support, which is in accordance with the findings of a recent study that highlighted the importance of partner support for pregnant women's psychological wellbeing[50]. However, this finding may also reflect a lack of support and accommodation provided by contemporary society for single parents. Previous studies have reported conflicting evidence on how pregnant women and their partners may or may not run parallel in their feelings about continuing or terminating their pregnancy[27,51]. One study found great heterogeneity in how their role in the decision-making process was perceived[52]. In our study, the future fathers' feelings toward the pregnancy ultimately aligned with those of the women. Additionally, they perceived the pregnancy as positive for the mental health and personal development of their partner.

Implications for future research

To date, many studies have focused on the adverse outcomes of pregnancies in women with psychiatric vulnerabilities, and potentially positive effects may have been overlooked[9-11,53]. Future studies may investigate the positive effects of UPs and possibilities for relational growth, personal growth and improvement of mental health. Moreover, further qualitative research might explore the perceptions of women with mental health problems regarding pregnancy planning and UPs in different subgroups (such as single parents and women who consider abortions) and geographical regions. The current clinical interventions available for this subgroup of women with psychiatric vulnerability in relation to UPs are limited. However, a deeper understanding of women's needs could help policy makers develop tailored interventions to improve pregnancy decision making and, if desired, pregnancy acceptance and maternal-infant bonding[45,54,55]. For example, our findings suggest that ultrasounds may help these women increase awareness of being pregnant and increase bonding with the child during pregnancy. A scoping review on the transition to motherhood previously issued a warning that it would be a waste not to utilize the potential for growth during the transition to motherhood, a period in which existential questions are raised for expectant mothers[56]. Indeed, welcomed pregnancies could provide a window of opportunity to obtain appropriate psychiatric healthcare, tackle transgenerational patterns and assist in decreasing the impact of hereditary psychiatric disorders and trauma by improving the preconception and antenatal health of mothers. This will help to build healthy future generations.

Conclusions

This research reveals novel perspectives on how women with psychiatric vulnerability experience unintended ongoing pregnancies. Through a phenomenological lens, we delineated how UPs impacted pregnancy journeys in our sample and triggered reflections on childhood experiences. UP journeys differed among women with psychiatric vulnerability, and the decision to carry the pregnancy was made in a personal way. Despite the perception of UPs as challenging pregnancies, as also seen in other samples, for women with psychiatric vulnerability, UPs may help to create a momentum to engage in mental health treatment and might offer the potential for personal growth. The narratives from our work provide further understanding of women's experiences among MHPs and may help them to comprehensively support expectant parents with psychiatric vulnerabilities. Finally, society challenges pregnant women with psychiatric vulnerability and UPs by imposing stigma and expectations. MHPs could help decrease the pressure and stigma that impacts UPs by openly and

promptly discussing UPs without making judgments about their patients and listening to their needs.

Acknowledgments

We express our gratitude to all the participants who were willing to share their stories in this study. Additionally, we are appreciative of Hanna Salverda for her contribution to the interviews.

We thank H. Heller for her role as an independent consulting physician for the participants and M. Rexwinkel for her contribution to the interview guide.

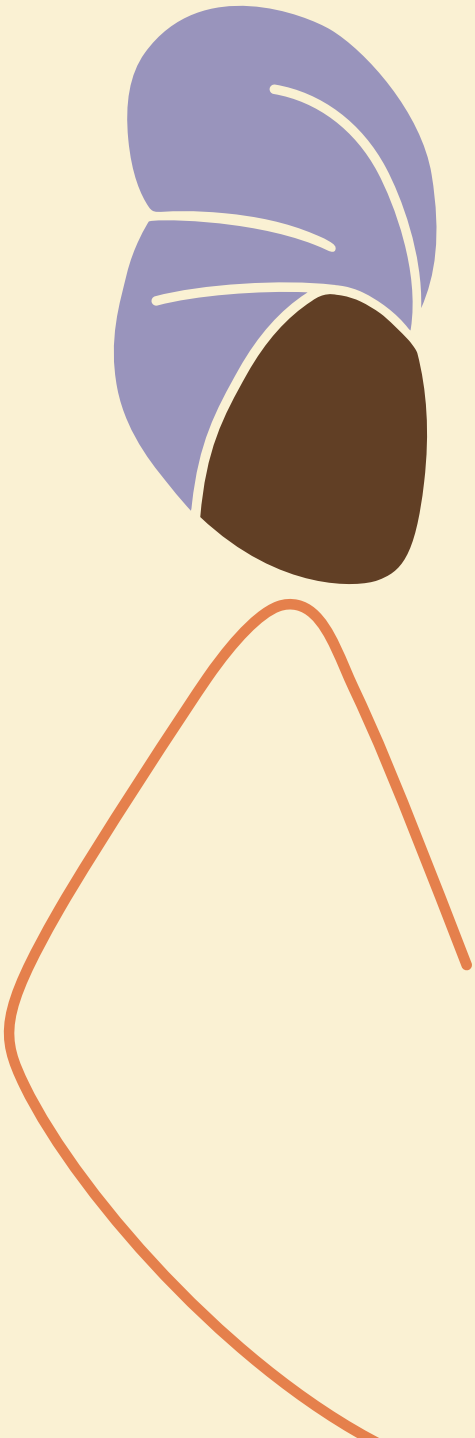
References

1. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.
2. McCrory, C. and S. McNally, The effect of pregnancy intention on maternal prenatal behaviours and parent and child health: results of an irish cohort study. Paediatr Perinat Epidemiol, 2013. 27(2): p. 208-215.
3. Nelson, J.A. and M. O'Brien, Does an Unplanned Pregnancy have Long-Term Implications for Mother-Child Relationships? J Fam Issues, 2012. 33(4): p. 506-526.
4. Muskens, L., et al., The association of unplanned pregnancy with perinatal depression: a longitudinal cohort study. Arch Womens Ment Health, 2022. 25(3): p. 611-620.
5. Hall, J., et al., Addressing reproductive health needs across the life course: an integrated, community-based model combining contraception and preconception care. Lancet Public Health, 2023. 8(1): p. e76-e84.
6. Schonewille, N.N., et al., Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis. BMC Pregnancy Childbirth, 2022. 22(1): p. 153.
7. Tozoglu Ozcan, E., et al., Unintended and Unwanted Pregnancies in Women with Major Psychiatric Disorders: A Cross-Sectional Comparative Study. Psychiatry and Clinical Psychopharmacology, 2020.
8. Enthoven, C.A., et al., Clustering of characteristics associated with unplanned pregnancies: the generation R study. BMC Public Health, 2022. 22(1): p. 1957.
9. Edvardsson, K., et al., Severe mental illness and pregnancy outcomes in Australia. A population-based study of 595 792 singleton births 2009-2016. PLoS One, 2022. 17(2): p. e0264512.
10. Etchecopar-Etchart, D., et al., Schizophrenia pregnancies should be given greater health priority in the global health agenda: results from a large-scale meta-analysis of 43,611 deliveries of women with schizophrenia and 40,948,272 controls. Mol Psychiatry, 2022. 27(8): p. 3294-3305.
11. Vlenterie, R., et al., Associations Between Maternal Depression, Antidepressant Use During Pregnancy, and Adverse Pregnancy Outcomes: An Individual Participant Data Meta-analysis. Obstet Gynecol, 2021. 138(4): p. 633-646.
12. Posada Correa, A.M., et al., Sexual and Reproductive Health in Patients with Schizophrenia and Bipolar Disorder. Rev Colomb Psiquiatr, 2020. 49(1): p. 15-22.
13. Hall, K.S., et al., The risk of unintended pregnancy among young women with mental health symptoms. Soc Sci Med, 2014. 100: p. 62-71.
14. Seeman, M.V. and R. Ross, Prescribing contraceptives for women with schizophrenia. J Psychiatr Pract, 2011. 17(4): p. 258-269.
15. Steinberg, J.R. and L.R. Rubin, Psychological Aspects of Contraception, Unintended Pregnancy, and Abortion. Policy Insights Behav Brain Sci, 2014. 1(1): p. 239-247.
16. Catalao, R., et al., The impact of depression at preconception on pregnancy planning and unmet need for contraception in the first postpartum year: a cohort study from rural Malawi. Reprod Health, 2023. 20(1): p. 36.
17. Cutler, A., et al., "I Just Don't Know": An Exploration of Women's Ambivalence about a New Pregnancy. Womens Health Issues, 2018. 28(1): p. 75-81.
18. Gray, J.B., "It has been a long journey from first knowing": narratives of unplanned pregnancy. J Health Commun, 2015. 20(6): p. 736-742.
19. Mohammadi, E., et al., Iranian women's experiences of dealing with the complexities of an unplanned pregnancy: A qualitative study. Midwifery, 2018. 62: p. 81-85.
20. Akbarzadeh, M., et al., The Women'S Perceptions About Unwanted Pregnancy: A Qualitative Study in Iran. Glob J Health Sci, 2015. 8(5): p. 189-196.
21. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
22. Lawley, M.E., et al., Barriers to Family Planning Among Women With Severe Mental Illness. 2022, Women's Reproductive Health.
23. Bornstein, M., et al., Perceptions of Pregnancy and Contraceptive Use: An In-Depth Study of Women in Los Angeles Methadone Clinics. Womens Health Issues, 2019. 29(2): p. 176-181.

24. Callegari, L.S., et al., Contraceptive adherence among women Veterans with mental illness and substance use disorder. Contraception, 2015. 91(5): p. 386-392.
25. Stevens, A.W.M.M., et al., Thoughts and Considerations of Women With Bipolar Disorder About Family Planning and Pregnancy: A Qualitative Study. J Am Psychiatr Nurses Assoc, 2018. 24(2): p. 118-126.
26. Zerihun, T., K. Sorsdahl, and C. Hanlon, Family planning for women with severe mental illness in rural Ethiopia: a qualitative study. Reprod Health, 2021. 18(1): p. 191.
27. Vandamme, J., et al., The decision to have an abortion from both partners' perspectives: a dyadic analysis. Eur J Contracept Reprod Health Care, 2017. 22(1): p. 30-37.
28. Charlick, S., et al., Making Sense of Participant Experiences: Interpretative Phenomenological Analysis in Midwifery Research. International Journal of Doctoral Studies, 2016. 11: p. 205-216.
29. Smith, J.A., Reflecting on the Development of Interpretative Phenomenological Analysis and Its Contribution to Qualitative Research in Psychology. Qualitative Research In Psychology Qualitative Research In Psychology Publishes research on approaches and analytic techniques to qualitative research in psychology, including their role, educational methods and training programs. Follow Find out more 2004.
30. Tuffour, I., A Critical Overview of Interpretative Phenomenological Analysis: A Contemporary Qualitative Research Approach. Journal of Healthcare Communications, 2017. 2.
31. Spencer, R.L., Research methodologies to investigate the experience of breastfeeding: a discussion paper. Int J Nurs Stud, 2008. 45(12): p. 1823-1830.
32. Larkin, M., S. Watts, and E. Clifton, Giving voice and making sense in interpretative phenomenological analysis. Qualitative Research in Psychology, 2008.
33. Levitt, H.M., et al., Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. Am Psychol, 2018. 73(1): p. 26-46.
34. Smith, J.A., P. Flower, and M. Larkin, Interpretative Phenomenological Analysis: Theory, Method & Research. 2009: London Sage.
35. Creswell, J., Qualitative Inquiry & Research Design: Choosing among Five Approaches. 3rd ed. ed. 2013, California: SAGE Publications.
36. Schonewille, N.N., et al., Experiences with Family Planning amongst Persons with Mental Health Problems: A Nationwide Patient Survey. Int J Environ Res Public Health, 2023. 20(4) p. 3070.
37. Green, J. and N. Thorogood, Qualitative Methods for Health Research. 4th ed. Introducing Qualitative Methods series. 2018: SAGE Publications Ltd.
38. Palinkas, L.A., et al., Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Adm Policy Ment Health, 2015. 42(5): p. 533-544.
39. Chamberlin, S., et al., Women's Life Experiences and Shifting Reports of Pregnancy Planning. Matern Child Health J, 2022. 26(8): p. 1719-1726.
40. Borrero, S., et al., "It just happens": a qualitative study exploring low-income women's perspectives on pregnancy intention and planning. Contraception, 2015. 91(2): p. 150-6.
41. Kavanaugh, M.L., et al., Parents' experience of unintended childbearing: A qualitative study of factors that mitigate or exacerbate effects. Soc Sci Med, 2017. 174: p. 133-141.
42. Kübler-Ross, E. and D. Kessler, On grief and grieving: Finding the meaning of grief through the five stages of loss . 2005, New York.: Scribner.
43. Hopkins, J., D. Clarke, and W. Cross, Inside stories: maternal representations of first time mothers from pre-pregnancy to early pregnancy. Women Birth, 2014. 27(1): p. 26-30.
44. Letourneau, N., et al., NARRATIVE AND META-ANALYTIC REVIEW OF INTERVENTIONS AIMING TO IMPROVE MATERNAL-CHILD ATTACHMENT SECURITY. Infant Ment Health J, 2015. 36(4): p. 366-387.
45. Rosenblum, K., et al., Improving Maternal Representations in High-Risk Mothers: A Randomized, Controlled Trial of the Mom Power Parenting Intervention. Child Psychiatry Hum Dev, 2018. 49(3): p. 372-384.
46. Lou, S., et al., Experiences and expectations in the first trimester of pregnancy: a qualitative study. Health Expect, 2017. 20(6): p. 1320-1329.
47. Spierling, T. and K.M. Shreffler Tough Decisions: Exploring Women's Decisions Following Unintended Pregnancies. 2018.

48. Bouchard, G., J. Boudreau, and R. Hébert, Transition to Parenthood and Conjugal Life Comparisons Between Planned and Unplanned Pregnancies. Journal of Family Issues, 2006. 27(11).
49. Laney, E.K., et al., Becoming a mother: The influence of motherhood on women's identity development. . Identity: An International Journal of Theory and Research, 2015. 15(2): p. 126–145.
50. Hoffmann, L., et al., Partner support and relationship quality as potential resources for childbirth and the transition to parenthood. BMC Pregnancy Childbirth, 2023. 23(1): p. 435.
51. Nguyen, B.T., et al., Supporting Women at the Time of Abortion: A Mixed-Methods Study of Male Partner Experiences and Perspectives. Perspect Sex Reprod Health, 2018. 50(2): p. 75-83.
52. Reich, J.A. and C.D. Brindis, Conceiving Risk and Responsibility: A Qualitative Examination of Men's Experiences of Unintended Pregnancy and Abortion. . International Journal of Men's Health, 2006. 5(2): p. 133–152.
53. Heun-Johnson, H., et al., Association between maternal serious mental illness and adverse birth outcomes. J Perinatol, 2019. 39(5): p. 737-745.
54. Rastad, Z., et al., Effects of positive psychology interventions on happiness in women with unintended pregnancy: randomized controlled trial. Heliyon, 2021. 7(8): p. e07789.
55. Ekrami, F., et al., Effect of counseling on maternal-fetal attachment in women with unplanned pregnancy: a randomized controlled trial. J Reprod Infant Psychol, 2020. 38(2): p. 151-165.
56. Prinds, C., et al., Making existential meaning in transition to motherhood–a scoping review. Midwifery, 2014. 30(6): p. 733-41.

.



CHAPTER 8

The conversation about Family Planning and Desire for Children in Mental Healthcare: Patients' Perspective versus Professionals' Perspective in a Mixed Methods Study

Noralie N. Schonewille, Monique J. M. van den Eijnden, Ruveyda Sahin, Nini H. Jonkman, Anne A.M.W. van Kempen, Maria G. van Pampus, Fedde Scheele, Odile A. van den Heuvel and Birit F.P. Broekman

Published in
Acta Psychiatrica Scandinavica, 2024
DOI: 10.1111/acps.13725

Abstract

Background

Reproductive health and mental health are intertwined, but studies investigating family planning needs and desire for children in mental healthcare are scarce.

Methods

We studied the experiences of (former) patients, those with close relationships with the (former) patients (close ones) and mental health professionals (MHP) on discussing family planning and desire for children in mental healthcare. We combined quantitative (two nationwide surveys) and qualitative data (four focus groups) in a mixed-methods approach with sequential analytical design.

Results

Combined data from focus groups (n=19 participants) and two surveys (n=139 MHPs and n=294 (former) patients and close ones) showed that a considerable group of MHPs (64.0%), patients (40.9%) and close ones (50.0%) found that family planning should be discussed by a psychiatrist. However, several obstacles impeded a conversation, such as fear of judgment, lack of time and knowledge and limited opportunity for in-depth exploration of life themes in therapeutic relationships.

Conclusions

To increase the autonomy of patients in discussing family planning, we suggest MHPs explore the desire to discuss family planning with all patients in the reproductive phase of life, prior to discussing contraceptive care. MHPs should receive education about psychiatric vulnerability in relation to family planning and desire for children, and patients and close ones should be empowered to initiate a conversation themselves.

Introduction

The unmet need of family planning (defined by the World Health Organization as the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births) is a global issue with major public health impact[1,2]. In the current study, the term 'family planning' includes both prevention of unwanted pregnancies and achievement of wanted pregnancies and can therefore include contraception but does not necessarily. The World Health Organization has recently called on countries to implement family planning strategies nationally. The Sustainable Development Goals demand countries by 2030 to 'ensure universal access to sexual and reproductive healthcare services, including family planning, information and education, and the integration of reproductive health into national strategies and programmes'[3]. Access to information about reproductive health might be specifically interesting to persons with mental health issues. Literature shows a high rate of co-occurrence between depression, anxiety and reproductive system disorders such as polycystic ovary syndrome and chronic pelvic pain[4]. Mental health issues interfere with reproductive health by posing risk for sexual violence[5], sexually transmitted diseases[6,7], and unintended pregnancies[8,9]. Unintended pregnancies in particular, comprising half of all pregnancies worldwide[2], have tremendous societal impact through adverse maternal and offspring outcomes[10-12]. Recent data shows that only a minority of patients with mental health problems had a conversation about the desire to have children. This is worrisome, as mental health does not only co-occur with reproductive problems but is also subject to change in various reproductive phases, such as the menstrual period[13], pregnancy and postpartum[14,15] and the perimenopause[16,17].

However, studies that investigate family planning needs in mental healthcare are scarce. In 2009, Becker and Krumm already noticed several shortcomings in this field. Studies lacked a patients' perspective and data regarding attitudes of mental health professionals (MHPs). Currently, there are still limited papers that have addressed these issues, specifically in countries other than the United States.

Qualitative studies on women with borderline personality and bipolar disorders showed that family planning and desire for children were important topics of conversation in treatment, particularly the offspring's health in relation to psychotropic medication usage and heritability of bipolar disorder[18,19]. As these topics are generally the expertise of MHPs, we hypothesize that MHPs should have a significant role in discussing family planning and desire for children. Several papers discussed that MHPs encounter obstacles, such as moral concerns regarding autonomy[20] and

lack of expertise when discussing family planning. Possibly, patients and close ones (those with close relationships with the patients) experience obstacles too. We argue that the perspective and needs of patients, close ones and MHPs should be included when studying family planning issues. This aligns with the contemporary mental healthcare perspective with emphasis on shared decision-making[21].

In this study, we investigated the need and experiences of patients, close ones and MHPs regarding discussing family planning in mental healthcare during the reproductive phase of life. We also inquired what, when and how MHPs should discuss family planning with patients. Knowledge about the content of a conversation about family planning and desire for children and the role of MHPs could nurture the necessity to implement family planning counseling in mental healthcare practices.

Materials and methods

Research design

We applied a mixed methods design, which enabled integration of qualitative and quantitative data[22]. This aligns with the post-positivistic approach that equally respects the value of subjective and objective data. The post-positivistic scientific paradigm originates from a realist ontology in which knowledge is a single, objective reality[23]. However, in this study, we acknowledge that scientific observations (lived experiences with family planning in mental healthcare) are not neutral, but subject to human interpretation. According to the post-positivistic paradigm, we aim to establish possible, not definite truths[24]. To gain a comprehensive understanding of healthcare needs regarding family planning of persons with mental health issues, close ones and MHPs, we collected experiences through a survey that was conducted prior to the current study[25] and through focus groups (as part of the current study). Subsequently, we identified a knowledge gap based on these experiences and explored it in new surveys in two different nationwide samples: one of MHPs and one of (former) patients and close ones. In a sequential analytical design, the qualitative findings from the focus groups and open questions in the surveys complemented the quantitative survey findings. Figure 8.1 displays the study design and data intersection.

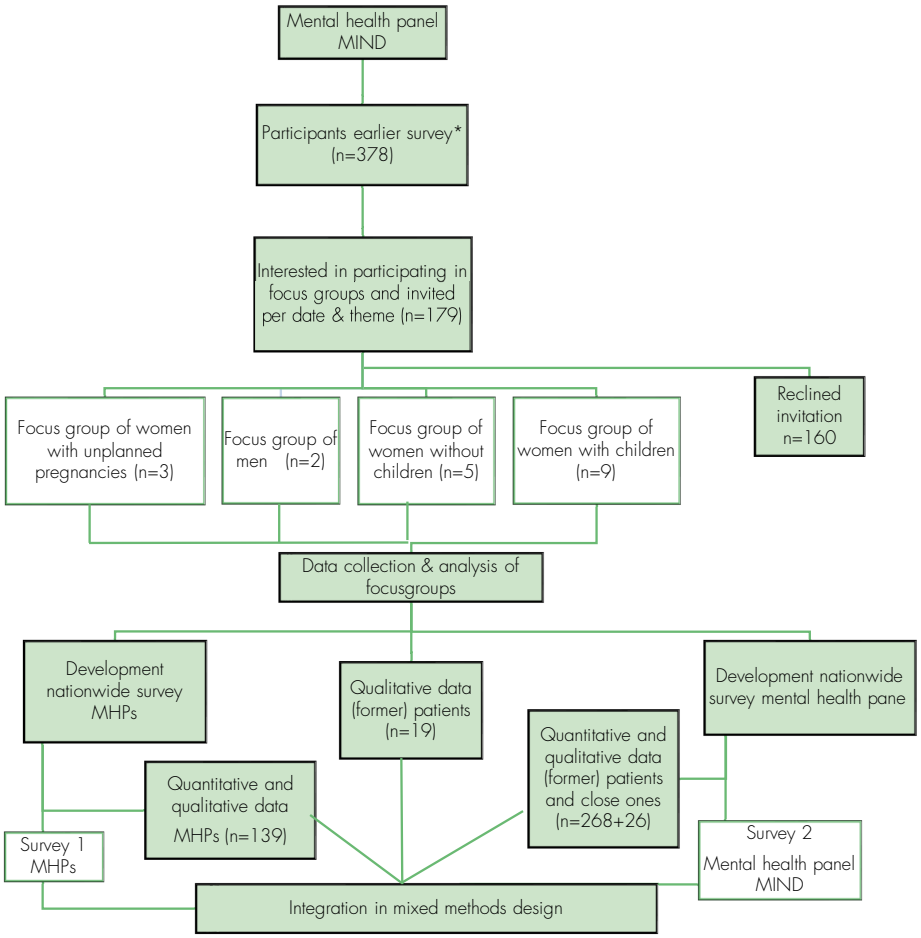


Figure 8.1 - Display of data collection and integration.

Participants

Focus group participants were recruited from a sample of survey respondents (n=378)[25] from a panel of the Dutch mental health umbrella organization MIND with approximately 4200 members (www.wijzijnmind.nl). Registration was open to all who wanted to participate as a person with lived experience (from now on called "patient") or as a person with a close relationship with a patient ("close one"). All 378 participants were invited to leave their email address to receive an invitation for a focus group, 117 participants left their email addresses. All patients were consequently invited to participate in one of four designated focus groups: women

with unintended pregnancies, men, women without children and women with intended pregnancies. Nineteen patients responded positively and were assigned to a designated focus group according to whether they had children or not. We included adult patients with lived experience (close ones were not included in the focus groups). This enabled a purposeful sample of motivated participants per group. The desired group size was 2-10 participants as interaction between participants is required in a focus group[26]. Eventually, a maximum of nine participants agreed to take place in each group. For the survey that investigated the MHPs' perspective (survey 1), we recruited MHPs at the annual conference of the Dutch Psychiatry Association. The panel survey was distributed in September 2022 amongst the same patient and close ones' panel from MIND, from which the focus group participants were recruited[25]. Participants were excluded if age ≤18 years.

Data collection

Four face-to-face focus groups were held in October and November 2021. The interview guides of each focus group consisted of two main research questions with several sub questions for all focus groups (including one group-specific question that did not relate to conversations about family planning). The main questions were (1) how does your (history of) mental health influences your desire for (more) children? and (2) what is your experience with discussing family planning or desire for children with your MHP? See Table S4 for the interview guides of all four focus groups. For the current paper, we analyzed data available from the second research question. A researcher with lived experience of perinatal mental health problems (ME) led the focus groups. Another researcher (NS) was present to observe and take field notes. The MHP survey was dispersed on May 11th, 12th, and 13th 2022 in Maastricht, the Netherlands. It consisted of 15 questions in Dutch language, with a mix of multiple choice and open questions (see Supplementary file 8.1). In total 2128 MHPs (mostly psychiatrists and residents in psychiatry) attended the conference and were approached in person to participate (online or on paper). The online survey was available up until 14 days after the conference. The panel survey was dispersed in September 2022 and available for 14 days. Panel members were invited through a pre-existent mailing list owned by a MIND employee. The survey consisted of 32 questions in Dutch language (see Supplementary file 8.2). Informed consent was obtained from participants of the focus groups (including a signed confidentiality statement for information shared in the discussions) and both surveys. Focus group participants received a reimbursement for their time investment (40 euros) and travel expenses (maximum of 50 euros). The study was declared as not part of the Human Acts Law and locally approved by the review committee of OLVG hospital and MIND.

Data analysis

We analyzed the qualitative data using thematic analysis[23]. The focus groups were audio-recorded and transcribed ad-verbatim. The transcripts were converted to ATLAS.ti v9 for data analysis.

The analysis included a process of familiarizing with the data (by reading and rereading transcripts), coding and interpretation. Transcripts were openly and interpretatively coded by five researchers with varying backgrounds (healthcare sciences, midwifery sciences, psychiatry and lived experience). Aspects that participants considered relevant in discussions about family planning and desire for children were identified in group meetings. With these aspects, we built a framework that underpinned the questions of both surveys.

Data of both surveys were collected with the software program Spidox (www.spidox.net) and shared anonymously with the research team. We subsequently imported the data in R studio (version 4.2.0) for data cleaning and analyses. Descriptive data were presented with means (standard deviations) for continuous outcomes and numbers (proportions) for categorical outcomes. Responses to five key survey questions were disaggregated for patients ≤45 years and patients >45 years to illustrate if responses differ for those for whom reproduction is a current issue. Psychiatric history was only retrieved for the patient group. Open text answers that elaborated on multiple choice answers ('if yes, why?') were collected and included in the results' section to explain and illustrate the numbers. Quotes from the focus groups illustrated quantitative findings in the results section.

Validity, reliability, and methodological Integrity

Researchers adhered to the APA guidelines to promote transparent reporting[27]. An interview guide was made for the focus groups, including sensitizing concepts. Field notes supported reflexivity. Investigator triangulation improved credibility[28], as multiple researchers with varying backgrounds analyzed data. Transparency about the sampling strategy supported transferability. Purposeful sampling increased homogeneity of focus group participants and benefitted the participants' knowledge and willingness to discuss topics[29]. Data triangulation facilitated that the focus group data underpinned the survey questions. The surveys were conducted to test hypotheses derived from the focus group conversations. Additionally, the focus group data illustrated and explained the survey's findings.

Results

From the explorative survey conducted before the current study[25], we identified a knowledge gap. Mental health problems impacted domains of reproductive health and fertility desires (reproductive history, decision making, parenting and sexuality) amongst the respondents, but insight in if, why, how and by whom discussions about family planning and desire for children should be held was lacking. As a next step in this mixed methods design, focus groups were held to initiate this exploration. From the thematic analysis from four focus groups, we derived the six most important aspects related to a conversation about family planning and desire for children: (1) experiences of patients and close ones, (2) obstacles and catalysts, (3) timing, (4) need and responsibility, (5) personalized content and (6) competencies of MHPs. Questions for the surveys for MHPs and patients were based on these six aspects of a conversation about family planning/desire for children with the purpose to test the perspectives from the focus group participants in a larger sample (see Supplementary Files 8.1 and 8.2 for all specific items). Paragraphs 3.1 -3.6 integrate the qualitative findings from the focus group data with quantitative survey outcomes. As some survey questions included open questions, the answers to these questions were used to explain the reasons behind the numbers. Table 8.1 demonstrates demographic features of focus group participants, Table 8.2 presents features of MHPs (n = 139), (former) patients (n=268) and close ones (n=26) who participated in the surveys. Table S9.1 demonstrates professional characteristics of MHPs. Table S8.2 shows all quantitative survey data. Amongst patients, 36.6% expressed a need to discuss family planning with an MHP. A considerable group of MHPs (64.0%), patients (40.9%) and close ones (50.0%) found that family planning should be discussed by a psychiatrist. Table S8.3 shows disaggregated survey responses for patients ≤45 years (n=125) and patients >45 years (n=141). There were differences between age groups. Younger patients more often (48.8%) reported a need to discuss family planning (48.8% vs. 24.8%) and contraceptive care (12.8% vs. 5.7%) with a health professional. There was no difference between younger and older patients with regards to having regular discussions in mental healthcare about the desire to have children or that a psychiatrist should discuss family planning and the wish to have children with every patient in the reproductive age.

Table 8.1 - Demographic features of focus group participants (n=19).

Demographic characteristic	Focus group				
		1 (n=3)	2 (n=5)	3 (n=2)	4 (n=9)
Age	20-30	0	2	0	0
	31-40	0	0	1	2
	41-50	0	1	0	1
	51-60	0	2	0	2
	61-70	2	0	1	3
	Missing	1	0	0	1
Gender	Women	3	5	0	9
	Men	0	0	2	0
History of pregnancy	Yes	3	0	0	9
	No	0	5	2	0
Parent	Yes	2	0	0	9
	No	1	5	2	0
Occupation	Employed	0	2	2	2
	Unemployed	0	1	0	0
	Declared unfit for employment	0	2	0	4
	Missing	3	0	0	3
(History of) psychiatric vulnerability, per category[1]	Anxiety disorders	1	0	0	5
	Mood disorders	2	4	2	4
	Psychotic disorders	0	0	1	1
	Eating disorders	0	0	0	0
	Personality disorders	1	0	0	1
	Autism	0	3	1	2
	Attention disorders	1	2	0	1
	Trauma related disorders	3	2	0	3

Table 8.1 provides numbers of participants who assign themselves to the given category. Information may not be available for all 19 participants, as noted by the 'missing' lines. [1]Multiple disorders per person are possible, all participants described ≥1 disorder.

1. Experiences of patients and close ones with discussing family planning or desire for children

Less than one in five patients (18.7%) and less than one in eight close ones (11.6%) had a positive experience with discussing desire for children with an MHP (see Table S8.2). Reasons for a positive experience, as derived from open questions from the patient survey, were: (1) the MHP actively thought along with the patient, (2) there was space for an open conversation, (3) the MHP expressed faith in the patient, (4) there was a trustful relationship, (5) the patient felt taken seriously by the MHP, (6) the MHP listened and the patient felt heard and (7) the MHP showed understanding for the patient's situation and thoughts on the topic. Reasons for a negative experience (11.6% of patients and 7.7% % of close ones) were MHPs making assumptions, MHPs ignoring the topic, lack of in-depth conversation, MHPs not listening to the patient or changing the topic, and patients not feeling understood or taken seriously (see Table S8.2).

2. Obstacles and catalysts

Obstacles and catalysts in discussing family planning were noted frequently (31.7%) (Table 8.3).

The obstacles addressed by the survey respondents aligned with experiences in the focus groups. Fear of being viewed as a bad mother was an important reason for reluctance toward discussing family planning with an MHP:

Table 8.2 - Demographic features of survey participants: mental health professionals, patients, and close ones.

Demographic characteristic	Category	MHPs n=139	Patients n=268	Close ones n=26
Age (range)		44.4 (26-74)	46.2 (21-81)	NA
Gender, n (%)	Women	95 (68.3)	226 (84.3)	22 (84.6)
	Men	44 (31.7)	37 (13.8)	4 (15.4)
	Other gender	0 (0)	5 (1.9)	0 (0)
Top 5 self-reported mental health issues (in history)[1], n (%)	Mood disorders	NA	166 (61.9)	NA
	PTSD, Trauma and Stress disorders		100 (37.3)	
	Anxiety disorders including OCD		72 (26.9)	
	Personality disorders		53 (19.8)	
	Autism		45 (16.8)	

Demographic characteristics of participants of the two surveys are presented. The age of close ones is not reported. History of mental health problems was only collected from patients.
MHPs, mental health professional; NA, not available; PTSD, posttraumatic stress disorder; OCD, obsessive compulsive disorder.
[1]Some participants reported (a history of) more than one mental health issue. The prevalence of all mental health issues is displayed here.

''I think in that time I would have said 'I cannot make it' [being a mother], even if I would have made it. Just because you are so insecure about yourself, because you always feel like you are doing it wrong. As being single, but also as being a mom.'' (Woman, age unknown).

Patients and close ones experienced that psychiatric treatment focuses on problem solving, efficiency and stabilizing patients. Contrarily, patients and close ones wished to explore relevant life themes, such as desire for children. There appeared to be a lack of time and capacity in mental healthcare to enable this, as explained by focus group participants:

''Yes, I see an ideal world with a more 'active' MHP that looks beyond. Nowadays, when you qualify for a treatment, your problems are quite severe. And then it is mostly about symptom relief and as soon as your symptoms have reduced enough then your

treatment is finished. This way you do not have time for [discussing] other things with an MHP." (Woman, 40).

And:

"Then, at least, they help you to get rid of your problems, but with that you have not learned how to live and inquiring desire for children and providing information is part of that." (Woman, 53).

The MHP survey showed that obstacles experienced by MHPs were lack of time, lack of expertise and simply forgetting this topic. MHPs feared that discussing family planning would negatively impact the therapeutic relationship. According to patients and close ones, who shared their preferred attitude of an MHP in a survey question (see Supplementary file 8.2), MHPs should be openminded, neutral, advising, accepting, understanding, engaged, curious, honest, realistic, equal, informative, listening, critical, cooperative, positive, supportive and/or attentive when discussing family planning and desire for children.

3. Timing matters in a conversation about family planning and desire for children

According to MHPs, MHPs initiated a conversation about family planning with some (55.4%) or many patients (26.6%) (see Table 8.2). According to patients and close ones, 23.1% had been invited by an MHP to talk about family planning at some point, and 30.6% had taken initiative to start a conversation about family planning themselves. Focus group participants clarified that the ability to initiate a conversation about family planning and desire for children depended on the severity of the mental health situation and stage of recovery. From their perspective, it was challenging to address this topic during a period of feeling mentally unwell:

''But because I was really very depressed and suicidal, I was in fact glad they were able to keep me alive. …So I was not used to be demanding at all too reflect on my needs …But that was not stimulated.'' (Woman, 62 years).

And:

''In psychiatric healthcare they say 'the sooner you ask for help the better'. And then I think, okay, apparently you, and those are people who work in psychiatric healthcare, have no idea how mentally healthy and strong you must be to get help at

all. And not think: 'well never mind, I don't even dare to, I am not going anymore.''' (Woman, 40 years).

Table 8.3 - Obstacles and catalysts appointed by patients and close ones.

Obstacles	
Patients	**Close ones**
Fear of judgement and condemnation by the MHP, fear of being seen as a bad parent/unable to raise a child or being rejected in therapy	Topic too sensitive
Feeling vulnerable talking about a topic so sensitive, which could lead to avoidance	No space/room for conversation offered by MHP
The topic of desire for children was associated with taboo and stigmatization	Feelings of shame
Feelings of shame to discuss desire for children as the conversation inevitably addresses vulnerabilities of the patient	
There was no room for discussion of this topic in treatment	
Catalysts	
Patients	**Close ones**
Initiative comes from MHP	Desire for children as a routine topic of discussion
Desire for children as a routine topic of discussion	Knowledge about desire for children in relation to psychiatric vulnerability is necessary
Conversation should be open with a safe space to speak freely	Professional and empathic attitude
Knowledge transfer about desire for children in relation to psychiatric vulnerability	
Normalisation of the topic and acceptance irrespective of which reaction patient gives	

MHP, mental health professional.

In case of prescriptions of medication, a desire for children was often not considered: 30.2% of the patients never talked about family planning when medication for psychiatric symptoms was prescribed (see Table S2). Focus groups illustrated that for patients, timing of the conversation about family planning and desire for children was important. For instance, patients felt it should be addressed briefly at every intake, it should be discussed more in-depth if relevant (when there was an actual desire for pregnancy), and a trustful relationship between the MHP and patient should first be established. Some patients argued that they should feel mentally stable (enough), and not in crisis. MHPs reported that discussing family planning depended on the age and life phase of the patient. It should only be discussed if relevant (patient was sexually active, had a life partner, it was relevant for the treatment). Different from the patient perspective, MHPs felt a need to address when they had concerns about the ability of

the patient to carry a pregnancy and become a parent. In other situations, MHPs valued the autonomy of patients in discussing family planning, or not.

When asked about the preferred timing, a focus group participant explained that by asking it regularly, patients' autonomy regarding when to have this conversation increases:

''Sure, you should ask for it, many people should. This way you can join in at all kinds of moments in your life or not. I mean, now they do this with the question: Do you ever think about ending your life? That is now a standard procedure in an intake.'' (Woman, 40 years).

In focus group conversations, participants explained that they had been occupied with merely surviving for so long, or with fighting symptoms, that they would only be ready to have the conversation after reaching a place of stability. Others were very decisive about not desiring children. They were not interested in having the conversation:

''No, it is not lacking, because for me it was a pretty done deal so… I had a very clear point of view [regarding desire for children], so there wasn't a lot of doubt or need to talk to someone about this. I had it all figured out myself.'' (Man, 37 years).

4. Need and responsibility

Mental health problems influenced the desire for children in most patients (67.5%). However, family planning and desire for children were also not regarded as topics most patients and close ones needed to discuss: 36.6% of the patients felt a need to discuss family planning with an MHP, and 44.8% did not (others opted not applicable).

A total of 40.9% of all patients agreed that psychiatrists should have a conversation about family planning with their patients in the reproductive phase of life, versus 64.0% of the MHPs. Table 8.4 presents reasons to agree or disagree with this statement according to MHPs, patients and close ones.

In the focus groups, knowledge about transgenerational transmission of psychiatric vulnerability and family trauma were reasons a psychiatrist should ask about desire for children:

''But I would, for all those reasons just mentioned, want it [desire for children] to be asked. Because there are too few people aware of how things are passed on trans-generationally. And then yes, a piece, a piece of knowledge in this area is very valuable.'' (Woman, 70 years).

Moreover, patients in focus groups expressed a need to talk about more than psychiatric symptoms in treatment. They expressed the need for a holistic approach:

''I am okay now, but I think what you also mean is that someone thinks along with you. And sees you as a human begin and thinks what could happen to you in the future. I have been very lucky in psychiatric healthcare regarding this, and they really think with me like, if we let you go now, what is going to cross your path. What are we going to talk about. I think that, not only regarding children, it is nice if someone takes initiative to have a real conversation.'' (Woman, 53 years).

Some people expressed the desire to receive validation from the MHP about their decision to not have children:

''I have a whole collection of baby clothes in the attic. And friends they say like: 'you will never have children, just get rid of it'. And that is of course true, I mean, I will be sixty coming winter. But my psychiatrist always says to me, 'you have taken care of your children very well. You have conserved them well.''' (Woman, 59 years).

Table 8.4 - Reasons to agree with the statement 'a psychiatrist should discuss family planning with all patients in the reproductive phase of life' according to mental health professionals, patients, and close ones.

Reasons for agreement		
MHPs	Patients	Close ones
Medication and desire for children/pregnancy influence on another	Medication and desire for children/pregnancy influence one another	Raising children whilst having a psychiatric vulnerability could affect offspring
A psychiatrist should discuss relevant life themes of which desire for children is one	By addressing this topic with all patients, psychiatrists enable a conversation	A psychiatrist should discuss relevant life themes of which desire for children is one
Pregnancy can influence the psychiatric problem of the patient and treatment thereof	A psychiatrist should discuss relevant life themes of which desire for children is one	Pregnancy can influence the psychiatric problem of the patient and treatment thereof
Psychiatrists are aware of transgenerational effects of psychiatry through heredity and parenting	Pregnancy can influence the psychiatric problem of the patient and treatment thereof	A psychiatrist should provide patients with information regarding pregnancy and psychiatry
A psychiatrist should provide patients with information regarding pregnancy and psychiatry	Heredity and transmission of psychiatric problems/trauma can affect offspring	Medication and desire for children/pregnancy influence one another

Table 8.4 – (continued)

Reasons for disagreement		
MHPs	Patients	Close ones
Not always judged as necessary, mostly related to (severity of) psychiatric vulnerability	Patient should take initiative in this conversation, not a psychiatrist	Should only be discussed if patient expresses desire to discuss this topic
Responsibility of other health professionals to discuss desire for children	Theme is not part of a psychiatrist's role	Theme is not relevant to patients
Patronization	Theme is not relevant to patients	Patient should take initiative in this conversation, not a psychiatrist
Endangers therapeutic relationship	Patronization	
Lack of time	Discussing desire for children can trigger traumatic experiences	

MHP, mental health professional.

5. Personalized content

In the survey, patients, close ones and MHPs addressed various subjects to discuss in a conversation about desire for children and family planning (Table 5). In focus groups, impact of pregnancy on mental health of parent (to be), psychological consequences for offspring, contraceptive usage, transmission of psychiatric disorders, maternity, and fear to become pregnant were considered important topics in a conversation about family planning. In addition, participants first wanted to be asked with whom they wished to have a conversation about family planning and desire for children, and what this discussion should entail. Other topics for discussion were the desired amount of support for future parents, strengths of the family system, the impact of mental health issues on close ones and what conditions need to be met before becoming a parent. Last, MHPs could help patients to generate trust to live one's life (with or without children). Most patients did not discuss contraceptive care with an MHP (86.6%) and had no desire to discuss it (84.0%), although a desire was more frequently reported by patients ≤45 years (12.8%) compared to patients >45 years (5.7%). This contradicts with MHPs who reported to discuss contraceptive care with patients in 58.3%. A fear of mandatory usage of contraceptive methods was clearly expressed in focus groups:

''But that is what they [MHPs] do and they do not listen. And they label you. And if you have that stigma then you feel that immediately. And if you hear these new political discussions about people mandatory this and mandatory that. Well then, I think be careful.'' (Woman, age unknown).

One participant considered it valuable if an MHP asked her about contraceptive usage, menstrual cycle and desire to have children. She added that she continued birth control to prevent monthly bleeding, as the hormonal changes were too confronting for her:

''And perhaps that is a reason why I continued it [birth control pills] since I was eighteen. I can barely manage it. So there has never been anyone who asked me, well, how does that feel? And do you still support this, would you like guidance?'' (Woman, 29 years).

The perceived taboo on discussing sexuality or sexual side effects of medication were also highlighted in focus groups:

''You are in a relationship which is already under pressure, yes and one of the most fun aspects of being in a relationship, sex and intimacy, yes intimacy not that much because that continues, but… The technical sexuality is gone. Right at the time you need something like that to keep things going on between each other. And I think it's not okay that that is not being discussed. Because the MHP should know the medicines you use and should know about the crucial side effects.'' (Man, 37 years).

Table 8.5 - Top-5 topics to discuss in a conversation about family planning according to mental health professionals and patients from survey data.

Topic	Mental health professionals	Patients
1	Effect of medication on pregnancy	Is there a desire for children, and if so, why (not)?
2	Impact of pregnancy on mental health of parent (to be)	Parenting in relation to psychiatric vulnerability
3	Is there a desire for children, and if so, why (not)?	Impact of pregnancy and parenting on own mental health
4	Impact of heredity	Impact of heredity
5	Contraceptive usage	(Grieving) not having children

6. Focus on competencies of MHPs

For patients and close ones, the MHP was the preferred person to discuss family planning with (53.0%) followed by close ones (49.6%), persons with lived experience (43.7%) and general practitioners (34.3%) (see Table S8.2).

The competency of psychiatrists to discuss family planning or desire for children was negatively reviewed by 28.4% of patients and doubtful by 60.8%. Only 21.6% of MHPs reported to be educated on family planning during residency, and only 10.8%

had protocols at their workplace. Although most MHPs reported to be competent to discuss family planning (59.0%), 64.0% expressed a desire for further education.

A focus group participant demonstrated her desire for MHPs to learn skills to discuss family planning:

"You can actually learn this, like 'how is that for you? How do you feel about this?' Without immediately judging." (Woman, 70 years).

Discussion

Key results

Qualitative findings from this mixed methods study suggest that amongst patients and close ones, there is a need to discuss family planning and desire for children in relation to mental health. Survey findings illustrate that a considerable group of MHPs (64.0%), patients (40.9%) and close ones (50.0%) found that this topic should be discussed by a psychiatrist. Various obstacles impede a conversation about family planning in mental healthcare, and contributing factors to overcome these obstacles were discovered. A conversation about family planning should be held after obtaining consent from the patient (or close one) in a safe environment: sufficient time, an open attitude and knowledgeable MHP are key elements. To enable this, MHPs should receive education about psychiatric vulnerability in relation to family planning and desire for children.

Interpretation of findings

Literature suggests that the prevention of unwanted childlessness and unwanted pregnancies starts with an explorative conversation about desire for children[1]. However, studies with surveys[30-32], interviews[33,34] and focus groups[20] amongst MHPs and residents in psychiatry demonstrate that this topic is not routinely discussed. Previous studies on patient experiences, including a recent study of our group, confirm this[25,35]. Lack of knowledge[30], experience of taboo[20], moral concerns[33], limited appointment time[31], and lack of confidence in expertise impede discussing family planning or desire for children with patients. This aligns with our data. Interestingly we found a discrepancy between the initiative to undertake a conversation as reported by MHPs and the perceived amount of attention that was given to it from the patient perspective. Possible factors that may relate to this discrepancy is that MHPs participating in this study were not the MHPs of the patients who participated in the

study. Also, MHPs probably reported about their current practices, while patients and close ones often recalled treatment episodes from their past may play a role.

Timing was key in making a conversation about family planning succeed or fail. Patients felt they could designate themselves the ideal moment to discuss family planning. According to patients, close ones and MHPs, heritability of (parental) psychiatric disorders, trauma, and offspring's mental health were reasons to discuss family planning. Since these topics are embedded within the profession of MHPs, patients and close ones felt that MHPs are the prime health professional to initiate a conversation.

MHPs were willing to initiate, but also showed reluctance to interfere in private matters and/or endanger the therapeutic relationship. In this study, we noticed that patients were occasionally looking for validation from MHPs in pressing life decisions. It is therefore crucial that MHPs are aware of the impact of their advises.

Patients in our study preferred to discuss family planning and desire for children with MHPs, prior to general practitioners or gynecologists. Notably, patients also wanted to discuss it with people with lived experience, which is consistent with previous literature on peer support[36]. Strikingly, most patients and close ones did not want to discuss contraceptive care with MHPs. We lack a clear explanation for this. Based on the focus group data, we hypothesize that fear of mandatory contraceptive methods in previous times might play a role. Disaggregated survey results also showed that younger patients did more frequently report a desire to discuss contraceptive methods (12.8% vs. 5.7%), which supports that hypothesis. Our survey shows contradictive results regarding how competent MHPs feel about discussing family planning and their need for extra education. The American National Task Force on Women's Reproductive Mental Health concluded that amongst residents in training to be a psychiatrist, education about reproductive health was inadequate and that all American psychiatrists should possess knowledge about the basics in reproductive psychiatry[37]. However, in the Netherlands this has not (yet) been implemented[38].

Strengths and limitations

The strength of this mixed methods study lies in the triangulation of quantitative and qualitative data from different perspectives. Patients and close ones of the MIND panel varied in age, history of mental health issues and family planning experiences. The sampling strategy of the focus group yielded motivated and knowledgeable patients. However, we also encountered several methodological limitations. First, there is a risk for recall bias as the age range of the patients and close ones was rather

wide. As mental healthcare evolves quickly recollections may vary between younger and older participants. Hence, recollections might not represent current healthcare practices. Furthermore, panel members might be a vocal group of patients and close ones and not represent patients who are unable to share or communicate their experiences. The non-response bias evoked from these patients might incorrectly under or overestimate results[39]. The same holds true for the MHPs, who agreed to respond to the survey about family planning. They might already have an interest in this topic, underscoring that improving knowledge about family planning amongst MHPs is even more urgent[30].

Recommendations for future research

It would be interesting to study how conversations about family planning can be implemented in mental healthcare and how patients and close ones experience this by making use of patient journeys.

An unsolved question remains why patients are unwilling to discuss contraceptive care with their MHP.

Conclusions

To enable the desired conversation about family planning in mental healthcare, MHPs should receive education about psychiatric vulnerability in relation to family planning. Based on our findings we advise MHPs to explore the desire to discuss family planning with all patients during the reproductive phase of life and empower them to initiate the conversation themselves within a trustful therapeutic relationship.

References

1. Hall J, Chawla M, Watson D, et al. Addressing reproductive health needs across the life course: an integrated, community-based model combining contraception and preconception care. Lancet Public Health. 2023; 8(1): e76-e84.
2. Bearak J, Popinchalk A, Ganatra B, et al. Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health. 2020; 8(9): e1152-e1161.
3. United Nations. Family planning and the 2030 Agenda for Sustainable Development: Data Booklet. United Nations Department of Economic and Social Affairs; 2019.
4. Zaks N, Batuure A, Lin E, et al. Association between mental health and reproductive system disorders in women: a systematic review and meta-analysis. JAMA Netw Open. 2023; 6(4):e238685.
5. Khalifeh H, Moran P, Borschmann R, et al. Domestic and sexual violence against patients with severe mental illness. Psychol Med. 2015; 45(4): 875-886.
6. Liang CS, Bai YM, Hsu JW, et al. The risk of sexually transmitted infections following first-episode schizophrenia among adolescents and young adults: a cohort study of 220 545 subjects. Schizophr Bull. 2020; 46(4): 795-803.
7. Stevens M, Ratheesh A, Watson A, Filia K, Donoghue BO, Cotton SM. Rates, types and associations of sexual risk behaviours and sexually transmitted infections in those with severe mental illness: a scoping review. Psychiatry Res. 2020; 290:112946.
8. Schonewille NN, Rijkers N, Berenschot A, Lijmer JG, van den Heuvel OA, Broekman BFP. Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis. BMC Pregnancy Childbirth. 2022; 22(1): 153.9.
9. T Tozoglu Ozcan E, Aydin N, Yalcin Uysal S, Kasali K. Unintended and unwanted pregnancies in women with major psychiatric disorders: a cross-sectional comparative study. Psychiatry and clinical. Psychopharmacology. 2020;30:230-240.
10. Nelson HD, Darney BG, Ahrens K, et al. Associations of unintended pregnancy with maternal and infant health outcomes: a systematic review and meta-analysis. Jama. 2022; 328(17): 1714-1729.
11. Abajobir AA, Maravilla JC, Alati R, Najman JM. A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. J Affect Disord. 2016; 192: 56-63.
12. Engstrand S, Kopp KH. Cost of unintended pregnancy in Sweden – a possibility to lower costs by increasing LARC usage. Contraception. 2018; 97(5): 445-450.
13. Gao M, Zhang H, Gao Z, et al. Global and regional prevalence and burden for premenstrual syndrome and premenstrual dysphoric disorder: a study protocol for systematic review and meta-analysis. Medicine. 2022; 101(1):e28528.
14. Viswasam K, Eslick GD, Starcevic V. Prevalence, onset and course of anxiety disorders during pregnancy: a systematic review and meta analysis. J Affect Disord. 2019; 255: 27-40.
15. Bauman BL, Ko JY, Cox S, et al. Vital signs: postpartum depressive symptoms and provider discussions about perinatal depression – United States, 2018. MMWR Morb Mortal Wkly Rep. 2020; 69(19): 575-581.
16. Deecher D, Andree TH, Sloan D, Schechter LE. From menarche to menopause: exploring the underlying biology of depression in women experiencing hormonal changes. Psychoneuroendocrinology. 2008; 33(1): 3-17.
17. Bromberger JT, Epperson CN. Depression during and after the perimenopause: impact of hormones, genetics, and environmental determinants of disease. Obstet Gynecol Clin North Am. 2018; 45(4): 663-678.
18. Geerling, I., R.M. Roberts, and A. Sved Williams, Impact of infant crying on mothers with a diagnosis of borderline personality disorder: A qualitative study. Infant Ment Health J, 2019. 40(3): p. 405-421.
19. Stevens AWMM, Daggenvoorde TH, van der Klis SMD, Kupka RW, Goossens PJJ. Thoughts and considerations of women with bipolar disorder about family planning and pregnancy: a qualitative study. J Am Psychiatr Nurses Assoc. 2018; 24(2): 118-126.

20. Krumm S, Checchia C, Badura-Lotter G, Kilian R, Becker T. The attitudes of mental health professionals towards patients' desire for children. BMC Med Ethics. 2014; 15: 18.
21. Slade M. Implementing shared decision making in routine mental health care. World Psychiatry. 2017; 16(2): 146-153.
22. Giddings LS, Grant BM. Mixed methods research for the novice researcher. Contemp Nurse. 2006; 23(1): 3-11.
23. Green J, Thorogood N. Qualitative Methods for Health Research. 4th ed. SAGE Publications Ltd; 2018.
24. Brown MEL, Dueñas AN. A medical science Educator's guide to selecting a research paradigm: building a basis for better research. Med Sci Educ. 2020; 30(1): 545-553.
25. Schonewille NN, van den Eijnden MJM, Jonkman NH, et al. Experiences with family planning amongst persons with mental health problems: a Nationwide patient survey. Int J Environ Res Public Health. 2023; 20(4):3070.
26. Tausch AP, Menold N. Methodological aspects of focus groups in Health Research: results of qualitative interviews with focus group moderators. Glob Qual Nurs Res. 2016; 3:2333393616630466.
27. Levitt HM, Bamberg M, Creswell JW, Frost DM, Josselson R, Suárez-Orozco C. Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: the APA publications and communications board task force report. Am Psychol. 2018; 73(1): 26-46.
28. Creswell J. Qualitative Inquiry & Research Design: Choosing among Five Approaches. 3rd ed. SAGE Publications; 2013.
29. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm Policy Ment Health. 2015; 42(5): 533-544.
30. Macaluso M, Zackula R, Bowman C, Bourne C, Sweet D. Residents perceive limited education on family planning and contraception for patients with severe and persistent mental illness. Acad Psychiatry. 2018; 42(2): 189-196.
31. Osborne LM, MacLean JV, Barzilay EM, Meltzer-Brody S, Miller L, Yang SN. Reproductive psychiatry residency training: a survey of psychiatric residency program directors. Acad Psychiatry. 2018; 42(2): 197-201.
32. McLennan JD, Ganguli R. Family planning and parenthood needs of women with severe mental illness: clinicians' perspective. Community Ment Health J. 1999; 35(4): 369-380.
33. Zatloff JP, von Esenwein SA, Philip Z, Ward MC. Navigating a complex health system: the perceptions of psychiatric residents in addressing sexual and reproductive health of women with severe mental illness. Acad Psychiatry. 2020; 44(4): 403-407.
34. Checchia C, Badura-Lotter G, Kilian R, Becker T, Krumm S. Mental health Professionals' perspectives towards desire for children and family planning among psychiatric patients - results of a qualitative study. Psychiatr Prax. 2016; 43(8): e9-e16.
35. Coverdale J, Falloon I, Turbott S. Sexually transmitted disease and family planning counselling of psychiatric patients in New Zealand. Aust N Z J Psychiatry. 1997; 31(2): 285-290.
36. Biggs LJ, McLachlan HL, Shafiei T, Small R, Forster DA. Peer supporters' experiences on an Australian perinatal mental health helpline. Health Promot Int. 2019; 34(3): 479-489.
37. Coverdale J, Balon R, Beresin EV, et al. Family planning and the scope of the "reproductive psychiatry" curriculum. Acad Psychiatry. 2018; 42(2): 183-188.
38. de Psychiatrie NV. Landelijk Opleidingsplan voor de geneeskundige vervolgopleiding, Psychiatrie. Nederlandse Vereniging voor Psychiatrie; 2020.
39. Cheung KL, Ten Klooster PM, Smit C, de Vries H, Pieterse ME. The impact of non-response bias due to sampling in public health studies: a comparison of voluntary versus mandatory recruitment in a Dutch national survey on adolescent health. BMC Public Health. 2017; 17(1): 276.

.

Supplementary Tables

Table S8.1 Professional characteristics of mental health professionals (survey 1, n=139).

Demographic characteristic	Category	N	% of group
Function MHP	Psychiatrist	92	66.2
	Resident psychiatry	39	28.1
	Doctor, other	2	1.4
	Psychologist	2	1.4
	Psychiatric nurse	1	0.7
	Physician assistant	2	1.4
Workplace	Psychiatric institution	103	74.1
	Hospital	25	18.0
	Forensic psychiatric clinic	3	2.2
	Private practice	5	3.6
	Outreaching team	1	0.7
	Care centre for mentally disabled persons	1	0.7
	Missing	1	0.7
Years of experience	< 5 years	38	27.3
	5-10 years	20	14.3
	10-20 years	40	28.8
	>20 years	40	28.8
	Missing	1	0.7

MHP, mental health professional. Characteristics are presented for all mental health professionals that populated the survey.

Table S8.2 - Combined results of surveys amongst mental health professionals and the patient panel.

		MHPs (n=139)		Patients (n=268)		Close ones (n=26)	
	Answer category	n	%	n	%	n	%
3.1 Experiences with discussing family planning of patients and close ones							
Have you felt that your mental health problems have influenced your desire to have or not have children in any way?	Yes			181	67.5	11	42.3
	I do not know			15	5.6	2	7.7
	No			54	20.2	7	26.9
	Not applicable			18	6.7	6	23.1
What is your experience with discussing desire for children or family planning with your mental health professional?	Positive			50	18.7	3	11.6
	Neutral			47	17.6	1	3.9
	Negative			31	11.6	2	7.7
	Not applicable			140	52.2	20	77.0
3.2 Obstacles and catalysts							
Do you feel a barrier to discussing family formation and desire to have children with a mental health professional?	Yes			85	31.7	7	26.9
	I do not know			30	11.2	7	26.9
	No			105	39.2	6	23.1
	Missing			48	17.9	6	23.1
3.3 Timing matters in a conversation about family planning and desire for children							
Have you ever initiated a discussion with your patients about desire for children or family planning?	With all patients	1	0.7				
	With many patients	37	26.6				
	With some patients	77	55.4				
	With no patients	20	14.4				
	I do not know	3	2.2				
	Missing	1	0.7				
Has a mental health professional ever initiated a discussion with you about desire for children or family planning?	Yes			62	23.1	4	15.4
	I do not remember			15	5.6	11	42.3
	No			191	191	11	42.3
Do you receive questions about family planning from your patients (and their significant others)?	From all patients	0	0.0				
	From many patients	19	13.7				
	From some patients	97	69.8				
	From no patients	20	14.4				
	I do not know	2	1.4				
	Missing	1	0.7				
Have you ever initiated a discussion with your mental health professional about desire for children or family planning?	Yes			82	30.6	4	15.4
	I do not remember			16	6.0	11	42.3
	No			170	63.4	11	42.3
Do you think the topic of family planning is sufficiently discussed by or with the mental health professional?	Yes			28	10.5	0	0.0
	I do not know			91	34.0	14	53.9
	No			101	37.7	6	23.1
	Not applicable			48	17.9	6	23.1
If you were prescribed medication in the past in mental health care, were you asked about any desire to have children in order to take this into account?	Yes			40	14.9	3	11.5
	I do not know			147	54.9	17	65.4
	No			81	30.2	6	23.1
The discussion about desire to have children should occur regularly in mental health care relationships.	Fully disagree			19	7.1	2	7.7
	Disagree			25	9.3	3	11.5
	Neutral			125	46.6	10	38.5
	Agree			74	27.6	8	30.8
	Fully agree			25	9.3	3	11.5
3.4 Need and responsibility							
Have you felt the need to discuss family planning with a health professional? Here we mean whether there is a (possible) desire to have children or expand your family.	Yes			98	36.6	3	11.5
	I do not know			23	13.7	8	30.8
	No			120	44.8	10	38.5
	Not applicable			27	10.1	5	19.2
The psychiatrist should discuss family planning with every patient and their significant other. (We are referring to patients of reproductive age, or their partner.)	Fully disagree	5	3.6	35	12.2	0	0.0
	Disagree	18	13.0	43	15.0	3	11.5
	Neutral	27	19.4	73	25.5	10	38.5
	Agree	66	47.5	77	26.9	8	30.8
	Fully agree	23	16.5	40	14.0	5	19.2

Table S8.2 – (continued)

3.5 Personalized content							
Have you felt the need to talk to your mental health professional about contraception?	Yes			24	9.0	5	19.2
	I do not know			17	6.3	10	38.5
	No			225	84.0	11	42.3
	Missing			1	0.7	0	0.0
Do you discuss contraception with your patients (and their significant others)/MHPs?	Yes	81	58.3	26	9.7	7	26.9
	No	47	33.8	232	86.6	14	53.9
	Not applicable	8	5.8	NR	NR	NR	NR
	I do not know	NR	NR	10	3.7	5	19.2
	Missing	3	2.1	0	0.0	0	0.0
3.6 Focus on competencies of MHPs							
With whom would you like to discuss your questions about desire for children and family planning? (Multiple options can be selected)	MHP			142	53.0	9	34.6
	Close ones			133	49.6	11	42.3
	Person with lived experience			117	43.7	5	19.2
	General practitioner			92	34.3	6	23.1
	Social worker			42	17.2	2	7.7
	Gynaecologist			32	11.9	3	11.5
	Spiritual counsellor			27	10.1	1	3.9
	Life(coach)			24	9.0	2	7.7
	Midwife			18	6.7	0	0.0
Would you like your close ones to be involved in the discussion about desire for children or family planning?	Yes			64	23.9	13	50.0
	I do not know			67	25.0	4	15.4
	No			90	33.6	3	11.5
	Not applicable			47	17.5	NR	NR
	Other			NR	NR	6	23.1
Do you feel competent enough to discuss family planning in relation to psychiatric vulnerability with patients (and their significant others)?	Yes	82	59.0	29	10.8	3	11.5
	I do not know	NR	NR	163	60.8	17	65.4
	I am not sure	49	35.3	NR	NR	NR	35.3
(for patients/close ones) Do you think psychiatrists have enough knowledge about family planning and its combination with mental health issues?	No	7	5.0	76	28.4	6	23.1
	Missing	1	0.6	0	0.0	0	0.0
Did you receive education on family planning in relation to psychiatric vulnerability during your training as a mental healthcare professional?	Yes	30	21.6				
	No	91	65.5				
	I do not remember	16	11.5				
	Missing	2	1.4				
Are there protocols or instructions in the organization where you work regarding discussing family planning?	Yes	15	10.8				
	No	119	85.6				
	Missing	5	3.6				
Do you feel the need for further education/training on the topic of family planning in relation to psychiatric vulnerability?	Yes	89	64.0				
	No	48	34.5				
	Missing	2	1.4				
Desire to have children and family planning can only be discussed when there is trust between patient and clinician.	Fully disagree			15	5.6	1	3.9
	Disagree			17	6.3	4	15.4
	Neutral			44	16.4	3	11.5
	Agree			100	37.3	9	34.6
	Fully agree			92	34.3	9	34.6
I am aware that I can go to a perinatal psychiatric clinic (POP-poli) for advice on medication, pregnancy, and mental health issues (POP stands for Psychiatry, Obstetrics, and Pediatrics).	Yes			80	29.8	3	11.5
	No			188	70.2	23	88.5
Referral to a perinatal psychiatric clinic (POP-poli) is deterred due to the stigma associated with the psychiatric component.	Fully disagree			25	9.3	2	7.7
	Disagree			148	17.9	4	15.4
	Neutral			145	54.1	15	57.7
	Agree			41	15.3	5	19.2
	Fully agree			9	3.4	0	0.0

Answers per category are presented per question from the two surveys. The order of the questions was applied according to paragraph in the results section (paragraph 3.1-3.6). MHP, mental health professional; NR, not reported.

If 'NR' is reported, this given category in the column was not available for this survey question.

Table S8.3 - Disaggregated survey responses of patients ≤45 years (n=125) and >45 years (n=141).

		All patients (n=266)		Age ≤45 years (n= 125)		Age >45 years (n=141)	
Survey question	Answer category	n	%	n	%	n	%
3.3 Timing matters in a conversation about family planning and desire for children							
Do you think the topic of fertility desires is sufficiently discussed by or with the mental health professional?	Yes	27	10.2	21	16.8	6	4.3
	No	100	37.6	54	43.2	46	32.6
	I do not know	91	34.2	36	28.8	55	39.0
	NA	48	18.0	14	11.2	34	24.1
The discussion about desire to have children should occur regularly in mental health care relationships.	Fully disagree	19	7.1	7	5.6	12	8.5
	Disagree	25	9.4	11	8.8	14	9.9
	Neutral	124	46.6	57	45.6	67	47.5
	Agree	73	27.4	39	31.2	34	24.1
	Fully agree	25	9.4	11	8.8	14	9.9
Have you felt the need to discuss fertility desires with a health professional? Here we mean whether there is a (possible) desire to have children or expand your family.	Yes	96	36.1	61	48.8	35	24.8
	No	120	45.1	45	36.0	75	53.2
	I do not know	23	8.6	14	11.2	9	6.4
	NA	27	10.2	5	4.0	22	15.6
3.4 Need and responsibility							
The psychiatrist should discuss fertility desires with every patient and their significant other. (We are referring to patients of reproductive age, or their partner.)	Fully disagree	35	13.2	14	11.2	21	14.9
	Disagree	43	16.2	26	20.8	17	12.1
	Neutral	72	27.1	36	28.8	36	25.5
	Agree	76	28.6	35	28.0	41	29.1
	Fully agree	40	15.0	14	11.2	26	18.4
3.5 Personalized content							
Have you felt the need to talk to your mental health professional about contraception?	Yes	24	9.0	16	12.8	8	5.7
	No	223	83.8	99	79.2	124	87.9
	I do not know	17	6.4	9	7.2	8	5.7
	NA	2	0.8	1	0.8	1	0.7

Results of 267 patients are included in this table, two patients did not report their age.

Table S8.4 - Interview guide for individual focus groups

Focus group → / Topic ↓	1: Women with unintended pregnancies	2: Women without children	3: Men	4: Women with intended pregnancies
Introduction	Can you introduce yourself? Why are you participating in this focus group?	Can you introduce yourself? Why are you participating in this focus group?	Can you introduce yourself? Why are you participating in this focus group?	Can you introduce yourself? Why are you participating in this focus group?
Relation between symptoms and the topic	(How) have your symptoms contributed to an unintended pregnancy? (planning, physical aspects, sexual aspects)	(How) have your symptoms contributed to the fact that you did not have children? Was this decision your own?	(How) have your symptoms affected family planning or desire for children?	(How) have your symptoms contributed to an intended pregnancy? (planning, physical aspects, sexual aspects)
Challenges	Which factors have made the process of fertility, childlessness, and family planning challenging?	Which factors have made the process of fertility, childlessness, and family planning challenging?	Which factors have made the process of fertility, childlessness, and family planning challenging?	Which factors have made the process of fertility, childlessness, and family planning challenging?
Support	Did you wish for support in this, how, and from whom?	Did you wish for support in this, how, and from whom?	Did you wish for support in this, how, and from whom?	Did you wish for support in this, how, and from whom?
Group specific questions	Which coping mechanisms have/had helped you (especially during pregnancy)? Do you have suggestions how to turn an unintended pregnancy into an intended pregnancy?	Do you experience societal stigma regarding childlessness and mental health issues? If yes, how do you deal with those?	Is there a need for support of men in relation to family planning and desire for children? What is your perspective on that?	Which coping mechanisms have/had helped you (during pregnancy and after your baby was born)?
Needs	What support do women with an unintended pregnancy need? What is the role of the psychiatrist, nurse, general practitioner or environment?	What support do women need in the decision to not have children? What is the role of the psychiatrist, nurse, general practitioner or environment?	How can men with mental health issues and young parenthood be supported? If applicable: what made you feel supported as a young father and what coping mechanisms are helpful for you? What is the role of the psychiatrist, nurse, general practitioner or environment?	How can women with mental health issues and a desire to have be supported? What is the role of the psychiatrist, nurse, general practitioner or environment?
Control	Do you experience that you have control over your desire for children and desire for a pregnancy?	Do you experience that you have control over your desire for children and desire for a pregnancy?	Do you experience that you have control over your desire for children and desire for a pregnancy?	Do you experience that you have control over your desire for children and desire for a pregnancy?
Conversation with mental health professionals	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?	Do you have a recommendation for healthcare providers on how to (optimally) conduct the conversation about family planning?
Key recommendations				

Supplementary File 8.1: survey MHPs

Survey for mental health professionals.
Version 1, 22-01-2022

In this questionnaire, the term 'patient' is used, you can also read 'client' instead.

1. What is your role in mental healthcare?
   - Junior doctor
   - Resident doctor
   - Psychiatrist
   - Psychologist
   - (Psychiatric) nurse
   - Administrator
   - Other, namely:

2. Where do you work in mental healthcare?
   - Mental healthcare institution
   - Hospital
   - Private practice
   - Other, namely…

3. How long have you been working in mental healthcare?
   - <5 years
   - 5-10 years
   - 10-20 years
   - >20 years

4. What is your age?
   Numeric input

5. What is your gender?
   - Female
   - Male
   - Other
   - Prefer not to disclose

6. Statement: The psychiatrist should discuss family planning/formation with every patient (and their significant other) of reproductive age. We mean whether there is a desire for children or expansion of the family. You can explain your answer.
   - Strongly disagree, because…
   - Disagree, because…
   - Neutral, because…
   - Agree, because…
   - Strongly agree, because…

7. Do you discuss contraception with your patients (and their significant others)?
   - Yes
   - No
   - Not applicable

8. Have you ever initiated a discussion with your patients about desire for children or family planning? We mean the desire for children or expansion of the family in patients of reproductive age.
   - With no patient/significant other
   - With some patients/significant others
   - I don't know
   - With many patients/significant others
   - With all patients/significant others

9. Do you receive questions about family planning from your patients (and their significant others)?
   - From no patient/significant other
   - From some patients/significant others
   - I don't know
   - From many patients/significant others
   - From all patients/significant others

10. If yes to question 8 and/or 9, what topics do you discuss?
    Open field for input

11. What are your reasons for discussing or not discussing this topic?
    Open field for input

12. Do you feel competent enough to discuss family planning in relation to psychiatric vulnerability with patients (and their significant others)?
    - Yes, what is the reason for this?...
    - I find it difficult to say if I feel competent enough.
    - No, what is the reason for this?...

13. Did you receive education on family planning in relation to psychiatric vulnerability during your training as a mental healthcare professional?
    - Yes
    - I don't remember.
    - No

14. Do you feel the need for further education/training on the topic of family planning in relation to psychiatric vulnerability?
    - Yes
    - No

15. Are there protocols or instructions in the organization where you work regarding discussing family planning?
    - Yes
    - No

16. Is there anything else you would like to share with us on this topic?
    Open field for input

Thank you very much for your participation.

Supplementary File 8.2: survey MHPs

Survey for MIND panel of (former) patients and close ones
Version 1, 08-07-2022

PART ONE: In the first part, some general questions are asked to get an understanding of the members of the panel who are completing this survey.

1. Are you completing the survey for yourself or as a close one (for a person with mental health problems)?
   - I am completing the survey for myself
   - I am completing the survey as a close one

If completing for a close one, please proceed to question 33.

2. What is your age?

3. What is your gender?
   - Male
   - Female
   - Other

4. What mental health problems have you (currently or previously) experienced?
   Free text

5. Have you ever experienced an unintended pregnancy (by unintended pregnancy, we mean a pregnancy that was not planned or not planned at that time)? Men can also answer "yes" if you are the father in the case of an unintended pregnancy.
   - Yes
   - No
   - Not applicable, because

6. If yes, was this unintended pregnancy unplanned but later desired?
   - Yes
   - Partially
   - No
   - Other, namely

PART TWO: These questions are about discussions regarding desire for children.

7. Have you felt that your mental health problems have influenced your desire to have or not have children in any way?
   - Yes
   - No
   - I don't know
   - Not applicable, because

8. Have you felt the need to discuss family planning with a health professional? Here we mean whether there is a (possible) desire to have children or expand your family.
   - Yes
   - I don't know
   - No
   - Not applicable, because

9. With whom would you like to discuss your questions about desire for children and family planning? (Multiple options can be selected)
   - People in my immediate environment, family, friends, close ones
   - My general practitioner
   - A gynecologist
   - A midwife
   - A mental health professional
   - A social worker
   - A spiritual counselor
   - A (life) coach
   - People with lived experience / peers
   - Other, namely…

10. Has a mental health professional ever initiated a discussion with you about desire for children or family planning?
    - Yes, what kind of health professional was this? You can enter, for example: social psychiatric nurse (SPN), psychologist, psychotherapist, psychiatrist, creative therapist, person with lived experience, POH-GGZ: …(open-ended response field)
    - I don't remember
    - No

11. Have you ever initiated a discussion with your mental health professional about desire for children or family planning?
    - Yes, what kind of health professional was this? You can enter, for example: social psychiatric nurse (SPN), psychologist, psychotherapist, psychiatrist, creative therapist, person with lived experience, POH-GGZ: ...(open-ended response field)
    - I don't remember
    - No

12. What is your experience with discussing desire for children or family planning with your mental health professional?
    - Positive, because:
    - Neutral, because:
    - Negative, because:
    - Not applicable, because:

This question may be skipped by people who answered "no" to both previous questions.

13. Would you like your close ones to be involved in the discussion about desire for children or family planning?
    - Yes
    - I don't know
    - No
    - Not applicable

14. Do you think the topic of family planning is sufficiently discussed by or with the mental health professional?
    - Yes
    - I don't know
    - No

15. If not, what do you think are the reasons that family planning is not being discussed?
    Free text

16. Do you feel a barrier to discussing family planning and desire to have children with a mental health professional?
    - Yes
    - I don't know
    - No

17. If yes, what do you think is the reason for this barrier?

18. If yes, what would make it easier to discuss family planning with a mental health professional?

19. What topics would you like to be addressed when it comes to family planning?
    Free text

20. What would be a good time for you to have a conversation about family planning with your mental health professional?
    Free text

21. What attitude do you think the mental health professional should adopt in the conversation about family planning, according to you?
    Free text

22. Have you ever discussed with your mental health professional the choice of using contraception or not?
    - Yes
    - I don't know
    - No

23. Have you felt the need to talk to your mental health professional about contraception?
    - Yes
    - I don't know
    - No

PART THREE: In this part, a number of questions will be asked specifically about psychiatrists.

24. Statement: The psychiatrist should discuss family planning with every patient and their significant other. (We are referring to patients of reproductive age, or their partner.)
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

25. Do you think psychiatrists have enough knowledge about family planning and its combination with mental health issues?
    - Yes
    - I don't know
    - No

26. If you were prescribed medication in the past in mental health care, were you asked about any desire to have children in order to take this into account?
    - Yes
    - I don't know
    - No

PART FOUR: After the MIND panel survey from last year, we were able to have in-depth conversations with members of the panel. From this, among other things, the previous statements follow, which we would like to present to you.

27. Statement: Desire to have children and family planning can only be discussed when there is trust between patient and clinician.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

28. Statement: I am aware that I can go to a perinatal psychiatric clinic (POP-poli) for advice on medication, pregnancy, and mental health issues (POP stands for Psychiatry, Obstetrics, and Pediatrics).
    - Yes
    - No

29. Statement: Referral to a perinatal psychiatric clinic (POP-poli) is deterred due to the stigma associated with the psychiatric component.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

30. Statement: The discussion about desire to have children should occur regularly in mental health care relationships.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

31. Is there anything else you would like to add on this topic? You can write it here.
    Free text.

Thank you for completing the survey!

If you have any further questions regarding this survey or the research, you can contact the MIND team and the researchers via Noralie Schonewille: n.n.schonewille@olvg.nl. For psychological support, you can contact MIND Korrelatie.

33. What is your age?

34. What is the age of your close one?

35. What is your gender?
    - Man
    - Woman
    - Other

36. What is the gender of your close one?
    - Man
    - Woman
    - Other

37. What psychological complaints has your close one (currently or previously) experienced?
    Free text

38. Has your close one ever experienced an unintended pregnancy (by unintended pregnancy we mean: a pregnancy that was not planned, or not planned at that time)? If the close one is a man, this question can also be answered "yes" if he was the father in the unintended pregnancy.
    - Yes
    - No
    - N/A, because

39. If yes, was this unintended pregnancy unplanned but desired (later)?
    - Yes
    - Partially
    - No
    - I don't know
    - Other, namely...

PART TWO: These questions are about the conversation about the desire to have children.

40. Have you felt that the psychological complaints of your close one have in any way influenced his/her desire to have or not have children?
    - Yes
    - No
    - I don't know
    - N/A, because

41. Has your close one felt the need to talk about family planning with a health professional? By this, we mean whether there is a (potential) desire to have children or expand the family.
    - Yes
    - I don't know
    - No
    - N/A, because

42. Who would your close one want to talk to about questions regarding desire to have children and family planning? (Multiple options possible)
    - People in my immediate environment, family, friends, close ones
    - My general practitioner
    - A gynaecologist
    - A midwife
    - A mental health professional
    - A social worker
    - A spiritual counsellor
    - A (life) coach
    - Peers/experience experts
    - Other, namely...

43. Has a mental health professional ever initiated a conversation with your close one about desire to have children or family planning?
    - Yes, what kind of health professional was this? You can fill in, for example: social-psychiatric nurse (SPN), psychologist, psychotherapist, psychiatrist, art therapist, experience expert, mental health care practitioner: .... (open answer field)
    - I don't know
    - No

44. Has your close one ever initiated a conversation with a mental health professional about desire to have children or family planning?
    - Yes, what kind of health professional was this? You can fill in, for example: social-psychiatric nurse (SPN), psychologist, psychotherapist, psychiatrist, art therapist, experience expert, mental health care practitioner: .... (open answer field)
    - I don't know
    - No

45. What is your close one's experience with discussing desire to have children or family planning with a mental health professional?
    - Positive, because:
    - Neutral, because:
    - Negative, because:
    - N/A, because:

46. Would you like family members to be involved in the conversation about desire to have children or family planning?
    - Yes
    - I don't know
    - No
    - Other, namely…

47. Do you think the topic of family planning is adequately discussed by the mental health professional (or with the mental health professional)?
    - Yes
    - I don't know
    - No

48. If not, what do you think are the reasons why family planning is not discussed?
    Free text

49. Did your close one feel a barrier to talking about family planning and desire to have children with a mental health professional?

50. Do you feel any barriers for your close one to talk about family planning and desire to have children with a mental health professional?
    - Yes
    - I don't know
    - No

51. If yes, what do you think is the reason for this barrier?

52. If yes, what would make it easier to talk about family planning with a mental health professional?

53. What topics would your close one like to discuss when it comes to family planning?
Free text

54. What would be a good time for your close one to discuss family planning with a mental health professional?
Free text

55. What attitude should the mental health professional adopt during the conversation about family planning, according to you?
Free text

56. Has your close one ever talked to a mental health professional about the choice to use contraception or not?
- Yes
- I don't know
- No

57. Has your close one felt the need to talk to their mental health professional about contraception?
- Yes
- I don't know
- No

PART THREE: In this part, there are some questions specifically about psychiatrists.

58. Statement: Psychiatrists should discuss family planning with every patient and their close one. (We are referring to patients of reproductive age, or their partners.)
- Strongly disagree, because:
- Disagree, because:
- Neutral, because:
- Agree, because:
- Strongly agree, because:

59. Do you think psychiatrists have enough knowledge about family planning and its combination with mental health issues?
    - Yes
    - I don't know
    - No

60. If your close one has been prescribed medication in the past in mental health care, were they asked about their desire to have children to take this into consideration?
    - Yes
    - I don't know
    - No

PART FOUR: After the MIND panel survey last year, we were able to conduct some in-depth interviews with panel members. The previous statements are based on these interviews, and we would like to present them to you.

61. Statement: Family planning and desire to have children can only be discussed when there is trust between patient and provider.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

62. Statement: I am aware that I (or my close one) can seek advice on medication, pregnancy, and mental health issues at a POP (Psychiatry, Obstetrics, and Pediatrics) clinic.
    - Yes
    - No

63. Statement: Referral to a POP clinic is discouraging because of the stigma associated with psychiatry.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

64. Statement: The conversation about desire to have children should be a regular part of mental health care relationships.
    - Strongly disagree, because:
    - Disagree, because:
    - Neutral, because:
    - Agree, because:
    - Strongly agree, because:

65. Do you have anything else you would like to share on this topic? You can write it here.
    Free text

Thank you for completing the survey!

If you have any further questions regarding this survey or the research, you can contact the MIND team and the researchers through Noralie Schonewille: n.n.schonewille@olvg.nl.

CHAPTER 9

General discussion and future directions

We employed a mixed methods approach by integrating quantitative (parts I and II) and qualitative (part III) research designs. In **Part I**, we estimated the prevalence of UPs amongst women with and without psychiatric vulnerability in a systematic review and meta-analysis. Data from a nationwide survey exemplified the impact of psychiatric vulnerability on various domains of family planning. In **Part II**, we collected quantitative data on the prevalence of UPs amongst women with psychiatric vulnerability, in addition to obstetric and neonatal outcomes after UPs. Next, we specifically focused on obstetric and neonatal outcomes in infants born to women with bipolar disorders. In **Part III**, we explored perceptions on family planning decision-making amongst individuals with lived experience with psychiatric vulnerability. Moreover, we captured experiences from women with UPs and psychiatric vulnerability and their partners on pregnancy journeys. Last, experiences with discussing family planning in psychiatric healthcare were gathered from MHPs and from individuals with lived experiences with psychiatric vulnerability.

This final chapter provides summaries and an integrative discussion of all key findings in addition to directions for future research and clinical implications.

Summary of key findings

Part I Psychiatric vulnerability, unintended pregnancies and desire for children

Chapter 2 presents the results of a systematic review and meta-analysis on the prevalence of UPs in women with (n=2.650) versus without (n=16.031) psychiatric vulnerability. Results suggest that UPs are more prevalent amongst women with psychiatric vulnerability versus women without psychiatric vulnerability (IOR 1.34, CI 1.08–1.67). The overall weighed prevalence of UPs among women with psychiatric vulnerability is 65% (CI 0.43–0.82, n=3881).

Chapter 3 provides results of a semi-quantitative survey that captured experiences with family planning amongst individuals with (prior) mental health issues. The study gives valuable insights in the broad impact of psychiatric vulnerability on four domains. Reproductive history is impacted as UPs are common in this sample (21.7% ever had a UP and of the persons who were ever pregnant, 45.4% ever had a UP). Decisions about family planning are impacted by psychiatric vulnerability, as half of the sample relates their childlessness to (prior) mental health issues. Third, more than half of the sample experiences taboo around sexuality, indicating impact on sexual

wellbeing. Fourth, more than half of the participants feels impaired as a parent due to mental health problems.

Part II Psychiatric vulnerability and birth outcomes

Chapter 4 reports findings from a retrospective cohort study on the occurrence of UPs in women with current or past psychiatric diagnoses, and the impact of UPs on maternal and neonatal outcomes. Results show that UPs are more common in women with current or past psychiatric diagnoses (39.0% vs. 29.6%, OR 1.56, CI 1.23–2.00, $p<0.001$), specifically those with depressive, personality and substance-related disorders. The presence of UPs does not create clinically relevant changes in maternal or neonatal outcomes such as mode of delivery, preterm birth and low Apgar score.

In Chapter 5, the results of a retrsopective cohort of women with bipolar disorders are presented. Neonatal (re)admission rates and other obstetric outcomes are comparable for neonates exposed versus not exposed to lithium. However, women with bipolar disorders, regardless of lithium exposure, have relatively high rates of obstetric complications such as caesarean sections (29.1%), gestational diabetes (12.8%) and hypertensive disorders of pregnancy (8.5%) compared to women without bipolar disorders in comparable samples. The findings from this chapter underscore the vulnerability of some women with bipolar disorders for pregnancy complications.

Part III Psychiatric vulnerability and lived experiences with family planning

Chapter 6 illustrates the intricacies of family planning decisions among women with psychiatric vulnerability in a qualitative study with focus groups. Together, four major themes illustrate how family planning decisions are shaped by (prior) psychiatric vulnerability, holding space for the complexity and ambiguity of the interaction between psychiatric vulnerability and family planning decisions. The 'Shadows of the past' theme is marked by childhood trauma, adverse events, and inadequate parenting. The 'Shadow of the present' theme addresses awareness of psychiatric disorders and emotions toward psychiatric stability. The 'Shadow of the future' theme describes how social influences, stigma, and concerns about transmitting psychiatric disorders shape future imaginaries towards desire for children and decision-making regarding having children. Last, the retrospective design of the focus groups provides room for reflection on previous decision-making. Women's narratives are interspersed with emotions such as regret, grief, and relief. The 'Reflections' theme illustrates how women's current emotional lives are impacted by their former decision-making.

In Chapter 7, a qualitative study is presented that explored pregnancy journeys of women with UPs and psychiatric vulnerability. The narratives yield four primary themes. Firstly, the theme 'Ascribing meaning to an unintended pregnancy' describes how unintended pregnancies occurred, what shaped pregnancy intentions, and the discovery and decision-making process of maintaining the pregnancy. The 'Impact on mental health' theme follows with a description of how psychiatric symptoms evolved and changed because of the unintended pregnancy. The 'Coping' theme illustrates what coping mechanisms were adopted and how a wish for a safety net emerged. The 'Parenthood' theme links the imaginations and expectations during pregnancy with the postpartum experiences. This chapter illustrates how ongoing UPs in women with psychiatric vulnerability could prompt personal growth through behavioral changes, while also highlighting the initial shock and emotional complexities associated with UPs.

Finally, Chapter 8 demonstrates results from a mixed-methods study on how discussions about family planning and a desire for children can be held within mental healthcare. Findings reveal novel perspectives on how family planning conversations could be facilitated in psychiatric healthcare. Obstacles that hinder successful conversations are fear of judgment and time constraints, which limits the opportunity for in-depth exploration of important life themes. The study suggests that mental health professionals proactively engage patients in family planning conversations during their reproductive years and prioritize these talks before contraceptive care. Contraceptive care should be discussed according to patients but should be preceded by discussing the desire to have children, the effect of medication on pregnancy, the impact of pregnancy on mental health of parents, the impact of heredity, and the (grief over) not having children and not becoming parents.

Discussion of key findings

Estimating UP rates: are we comparing apples and oranges?

It is safe to say that UPs are prevalent amongst both women with and without psychiatric vulnerability (Chapter 2, Chapter 3, Chapter 4,[1]). Amongst women with psychiatric vulnerability, UPs mark on average 65% of the pregnancies, according to our meta-analysis (Chapter 2). It is more difficult to ascertain if UPs are more prevalent amongst women with psychiatric vulnerability compared to controls. Three main concerns with regards to measurements of UPs are discussed below.

First, it is important to compare UP rates between populations from similar geographical regions. Most studies on UPs are employed in samples of young women, mostly from low- or middle-income countries and/or where limited access to safe abortion care is the norm[1] and these studies may not be comparable to Dutch studies. Data from a Rotterdam obstetric cohort reported a prevalence of UPs of 25.7% in women without previous depression among women living in an urban setting, versus 36.5% unplanned pregnancies in women with a history of depression[2]. This concords with the prevalence of 29% in the MoMentUM dataset from Amsterdam (Chapter 4) among women without psychiatric vulnerability and other studies on UPs in Northern-Europe[3]. The comparable estimates of UPs amongst different groups of women with and without psychiatric vulnerability increases the credibility of our findings. Another strength of the MoMentUM study is that we adjusted for variables that were previously related to UPs, such as ethnicity, employment status, age and parity in estimating the odds of UPs between women with versus without psychiatric vulnerability.

A second precaution in the measurement of UPs is the distinguishment between various samples from which to measure UPs. UPs can be measured as 1) the lifetime prevalence within all people (with and without children), 2) the lifetime prevalence within people with children, 3) the proportion within all (live) births in a group, 4) the proportion within all pregnancies within a group (including abortions and births) and 5) the proportion of all pregnancies within one person. Many studies present data from prospective and retrospective birth cohorts[3]. It is worth considering the possibility of missing data on the proportion of the UPs that ended in (involuntary) abortion, which would then skew the interpretation of UP rates of continued pregnancies. The complexity of estimating UP rates is demonstrated in two of our own samples, in which we found a lifetime UP prevalence of 21.7% in individuals with psychiatric vulnerability (Chapter 3) similar to data based on a sample that represents the general Dutch population (20% UPs)[4]. However, from retrospective cohort data, 39% of the continued pregnancies was unintended amongst women with psychiatric vulnerability. This is 10% more, a significant difference, compared to women without psychiatric vulnerability (29%) (Chapter 4,[2]). The large sample size of the MoMentUM study increased statistical power of these analyses and facilitated the inclusion of several relevant variables in the adjusted regression analyses. Moreover, 45.4% of the persons with children in a nationwide sample of individuals with psychiatric vulnerability (men and women) ever experienced a UP or fathered a child after a UP (Chapter 3). From these findings we might derive a trend wherein women with psychiatric vulnerability have more UPs compared to women without psychiatric vulnerability, compared to their geographical counterparts.

Third, several possible biases are related to measuring UPs. Most studies on the lifetime prevalence of UPs are limited by the possible presence of reporting bias due to their retrospective character. As pregnancy intention may be perceived as a sensitive subject that MHPs or pregnant women prefer not to address during a pregnancy intake, leading to potential underreporting of UPs versus intended pregnancies, which was an important limitation in Chapter 4. Recall bias, although inherent to changing pregnancy intentions over time, limited the trustworthiness of the findings in the MoMentUM study[5]. Previous literature even refers to stable fertility preferences as an 'illusion'[6]. Thus, the reliability of measuring pregnancy intentions at one point in time, even with validated instruments such as the "London measurement of Unplanned Pregnancy" is questionable. Besides, it is known that pregnant women may report more positively about a continued pregnancy than it was initially anticipated[7]. Another source of insecurity is ambivalence, which illustrates a conflict between ideations about a pregnancy versus pregnancy-planning behavior that is (not) in line with those ideations (Chapter 6, Chapter 7,[8-14]). Presence of ambivalence may challenge the ability to capture pregnancy intentions with measurements. However, as ambivalence puts women at risk for UPs, the measurement of ambivalence may also increase understanding of who is at risk for UPs and why[12,15]. A final bias in capturing pregnancy intentions, is the variety in definitions of UPs[16]. In Chapter 4, we captured pregnancy intentions through searching medical records in a retrospective cohort. Retrospective assessment enabled including a large cohort and performance of analysis with sufficient power to support hypotheses. Making the distinction between planned, unplanned, wanted and unwanted pregnancies in the MoMentUm study, after including all pregnancies with unsure pregnancy intention, aided in comparing our findings to findings in other studies. However, a binary measurement of UPs does not do justice to the complexities of defining the intention of a pregnancy. Several qualitative studies showed the importance of ambivalence towards pregnancy intentions (Chapter 6, Chapter 7,[17]).

In conclusion, various methodological considerations stress the need for careful interpreting of UP rates. Nevertheless, as UPs rates amongst women with psychiatric vulnerability are substantial (up to 65%), and differs from controls (Chapter 4), we can conclude that UPs are more prevalent amongst women with psychiatric vulnerability.

Maternal and neonatal outcomes after UPs: are they really that bad?

Strikingly, the outcomes from the retrospective MoMentUM cohort oppose previous studies in which adverse short- and long-term maternal and neonatal outcomes in women with UPs and in women with psychiatric vulnerability were demonstrated (Chapter 4). UPs did not significantly alter maternal or neonatal outcomes for women

with psychiatric vulnerability, except for a slightly longer gestational age at delivery in women with UPs in addition to psychiatric vulnerability versus UPs without psychiatric vulnerability without clinical relevance. Our results are supported by another study performed in a comparable obstetric setting (Northern-European)[3]. Severe birth outcomes were comparable between women with and without UPs, irrespective of psychiatric history. Several factors could explain the inconsistency between these studies and previous research on outcomes after UPs.

First, the access to free and high-level healthcare could mitigate outcomes after UPs[3].

Second, women in the MoMentUm study delivered at the OLVG hospital, indicating they finally opted to continue their pregnancies to birth. It is likely that pregnancies that are unplanned but welcomed have better maternal outcomes compared to unplanned and unwanted pregnancies[18]. If this also applies to birth and neonatal outcomes is unsure, although previous research did relate low birth weight specifically to ambivalent pregnancies (versus mistimed), and preterm birth to unwanted pregnancies (versus mistimed)[19]. The findings in Chapter 4 are based on a large retrospective dataset with reliable birth outcomes from patient files. Although we were certain about the presence of a psychiatric vulnerability at the time of conception, the study is limited by an uncertainty about the psychiatric symptoms of women during pregnancy. As adverse birth outcomes are related to more severe psychiatric symptoms and/or disorders, this could have impacted birth outcomes[20,21].

Third, the geographical region in which studies have been conducted greatly impacts outcomes, varying from severe stunting in children born after UPs in low-income countries to no severe outcomes in settings with free abortion and high level, freely available health care[3,22]. It is likely that the socioeconomic impact of UPs is less profound in high-income countries and most parents can financially support their children during the first years of life, which results in comparable growth and developmental outcomes in children born after pregnancies that were intended or unintended.

Another remarkable finding is that birth outcomes were not different between women with and without a psychiatric vulnerability (Chapter 4). Nelson and colleagues found comparable neonatal outcomes in women with UPs, with consideration of a history of depression[23]. Although these findings support the results from the MoMentUM cohort, in which a history of psychiatric vulnerability did not alter birth outcomes, low birth weight and premature birth were related to UPs in this meta-analysis which is predominantly based on data from the US or in comparable settings. The positive

impact of other caretakers besides mothers on the development of offspring born to women with psychiatric vulnerability should not be overlooked. This holds specific relevance to long-term outcomes after UPs in women with psychiatric vulnerability but could also impact perinatal mental health of mothers and hereby outcomes in offspring. Postpartum follow-up interviews suggested a positive impact of partner support during pregnancy on women's mental health status, the partner relationship and her bonding with the baby (**Chapter 7**). In general, birth outcomes are specifically more adverse in women with severe psychiatric vulnerability such as bipolar disorders[24-26]. Our retrospective cohort study confirmed that women with bipolar disorders have a high-risk obstetric profile in both study groups (with and without lithium exposure during pregnancy) (**Chapter 5**). In **Chapter 5**, no specific concerns were raised due to the use of lithium for the prevention of relapse of bipolar episodes. However, most patients in our cohort received antenatal care at a specialized perinatal psychiatric outpatient clinic which manages the use of lithium during pregnancy with caution, as suggested by previous authors[27,28]. As congenital anomalies are linked to lithium exposure in the first trimester of pregnancy it is of utmost important that toxic lithium levels are prevented, stressing the need for enrolment in specialized perinatal psychiatric healthcare early in pregnancy[26]. Noteworthy limitations of **Chapter 5** relate to the retrospective nature of the study (with missing data on symptom severity of mothers) and skewing of results by use of other psychotropic mediations than lithium. Last, it should be noted that in this cohort (with partial overlap with the MoMentUM study in years of inclusion at the POP-clinic at OLVG hospital), pregnancies were planned in only 60% of all women with bipolar disorder. This illustrates the necessity for discussing family planning with the goal to optimally prepare the expectant parents for pregnancies, including the management of psychoactive medication in this group of women with severe psychiatric vulnerability.

It is interesting that the research field currently lacks explorations of positive outcomes after UPs, as resilience and post-traumatic growth were linked to becoming a mother in uncertain circumstances before[29]. Indeed, our qualitative data showed that for some women with psychiatric vulnerability and/or experiences of childhood trauma, UPs were perceived as a window of opportunity for breaking the cycle of transgenerational transmission, for personal growth and behavioral change (**Chapter 5, Chapter 6, Chapter 7**). We found that for some women, having a child increased the ability to feel love, set personal boundaries and motivate the initiation of treatment for past trauma and/or psychiatric vulnerability. Previous research indicated that the transition to motherhood is not only perceived as life-changing, but also raises existential questions about the meaning of life[30]. As such, the transition to motherhood in women with psychiatric vulnerability may not only be utilized as a window of

opportunity to break transgenerational patterns, but also offer a change for finding meaning in life and diving into existential questions. Future qualitative work should further explore these opportunities for women with psychiatric vulnerability.

Unintended pregnancies and psychiatric disorders: is there evidence for a causal relationship?

In the following section three hypotheses regarding the potential link between psychiatric vulnerability and UPs are given.

Hypothesis 1: there is a causal relationship between psychiatric vulnerability and UPs

First, psychiatric symptoms could directly influence behavior that is related to prevention of unwanted pregnancies. Figure 9.1 summarizes the possible pathway through which psychiatric vulnerability attribute to the risk of UPs. We specifically found that women with personality disorders, substance use- and related disorders and depressive disorders have an increased risk of UPs compared to controls without psychiatric vulnerability prior to the pregnancy (Chapter 4). Previous literature on these psychiatric disorders consolidates these findings, especially in young women[31-33]. We could not find evidence for an increased risk of UPs amongst women with severe psychiatric vulnerability such as schizophrenia, psychotic and related disorders or bipolar disorders, contrary to earlier research[34,35]. The analyses conducted within these relatively small groups of women may have lacked sufficient power to detect associations (Chapter 4). Survey respondents highlighted the inability to protect against UPs, through cases of involuntary intercourse, forced non-use of contraceptive methods, and interactions between contraceptive methods and other medications (Chapter 3). Earlier research indicates a link between UPs and 1) limited sexual autonomy, 2) engagement in violent relationships, 3) insufficient knowledge about UPs, or 4) challenges in accessing or using contraceptives[36,37]. Intimate partner violence and low self-esteem are interconnected with both reproductive decision-making and psychiatric vulnerability[38,39]. It is possible that psychiatric symptoms cause behavior that is related to sexual risk taking, resulting in UPs. Contrary to this hypothesis, we found little evidence of a direct link between psychiatric vulnerability (symptoms) and UPs in our (semi-)qualitative work (Chapter 3, Chapter 6, Chapter 7, Chapter 8). One focus group participant illustrated how she forgot taking her oral contraceptive pills, which she related to having attention deficit hyperactivity disorder (Chapter 6). Also, alcohol abuse led to inability to adhere to contraceptive methods (Chapter 3). Interviews yielded a fear of infertility or reduced fertility, which

participants related to prior eating disorders and their age. This presumption about fertility posed risk for UPs through the misunderstanding that using contraceptives was still needed to prevent UPs (Chapter 7). Although these cases support the first hypothesis, we conclude a lack of examples wherein common psychiatric symptoms such as depressed mood, apathy, hypersexuality, loss of overview, confusion, memory loss and delusions relate to problems with contraceptive adherence or reproductive control in addition to data from larger (quantitative) samples in which this link is investigated. This relates to several important limitations of Chapter 6 and Chapter 7. First, interviewees were employed women who could verbalize their stories well. We potentially lacked inclusion of women with low literacy, difficulty with expressing their needs or taking charge of their mental health situation. Women with florid psychotic episodes were excluded for ethical considerations. However, inclusion of this relatively stable group of women with psychiatric vulnerability, narrows the spectrum of women for which our findings are representative. In Chapter 6, we lack insights of women from other cultural and ethnic background than Dutch, as the focus groups were held in Dutch language and a prerequisite was sufficient knowledge thereof.

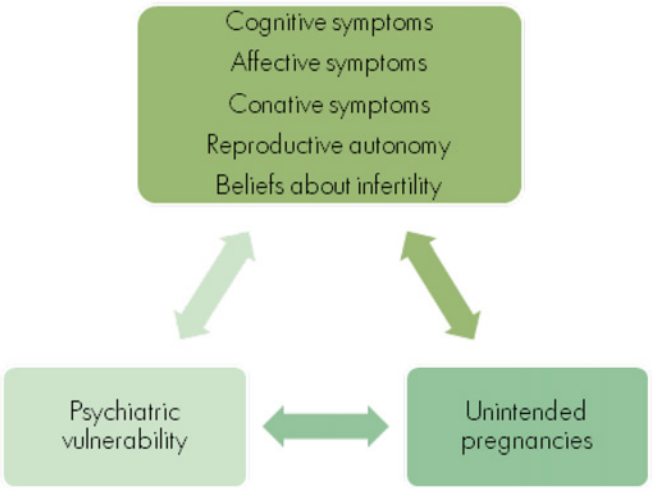


Figure 9.1 - Hypothesis 1: there is a causal relationship between psychiatric vulnerability and UPs

Hypothesis 2: there is overlap between social and psychiatric risk factors

An overlap between social and psychiatric risk factors could also predict UPs in women with psychiatric vulnerability. UPs are linked to low socioeconomic status, young age, unmarried status, low income, low educational level, lack of insurance and of social support[40-44]. In studies on UPs amongst women with psychiatric

vulnerability that include women with social risk factors, UP rates may be attributed (partially) to those factors. In prospective cohort data, it was shown that social and psychiatric risk factors clustered in the prediction of UPs, supporting the hypothesis that UPs occur in women with psychiatric vulnerability who also present with social risk factors[2]. Contrary to this hypothesis, the results from the retrospective MoMentUM dataset show a robust association between psychiatric vulnerability and UPs even after adjustment for social factors such as employment status, age, parity and ethnical background (Chapter 4).

Figure 9.2 - Hypothesis 2: there is overlap between social and psychiatric risk factors.

Hypothesis 3: Adverse childhood experiences indirectly attribute to risk of UPs through psychiatric vulnerability

Based on qualitative findings from this thesis we pose a third hypothesis. In women with psychiatric vulnerability, the adverse childhood experiences (ACE) predominantly impacted pregnancy decision-making by installing ambivalence towards motherhood, as opposed to the psychiatric symptoms as posed in hypothesis 1. A body of evidence confirms that ACE are related to sexual risk behavior, resulting in teenage birth, rapid repeat pregnancies and unwanted pregnancies in samples of women without mentioned psychiatric history[45-48]. Moreover, one study suggests a 'dose-response' relationship between exposure to childhood adverse events such as abuse and household dysfunction, and subsequent UPs[49]. Aside from ACE, varying types of adverse life events (e.g. forms of violence, economic hardship, death (by suicide), and disrupted family/social networks) put women at risk for UPs by imposing stress[50].

Possibly, women with psychiatric vulnerability have higher occurrences of ACE and adverse life events. From cross-sectional data it was shown that lifetime exposure to violence, symptoms of posttraumatic stress disorder and symptoms of anxiety and depressive disorder were common amongst women who opted for pregnancy terminations[39]. Studies on veteran women with various psychiatric vulnerabilities showed a high prevalence of UPs[33,51]. As veteran women had high rates of posttraumatic stress disorder, sexual trauma and homelessness, there may be an interaction between psychiatric symptoms, social factors and history of ACE/traumatic experiences in this subgroup. Results from interviews (Chapter 7) and focus groups (Chapter 6) showed that women with psychiatric vulnerability often experienced ACE and other types of (sexual) trauma during life. The possibility of transmitting trauma or hereditary psychiatric vulnerability to their offspring, in addition to fear of being an inadequate parent gave rise to doubts about motherhood. Ambivalence towards pregnancy intentions can put women at risk for both unwanted children, but also unwanted childlessness ([12], Chapter 6). Figure 3 shows the pathway through which ACE could directly and indirectly (via psychiatric vulnerability) attribute to the risk of UPs and unwanted childlessness.

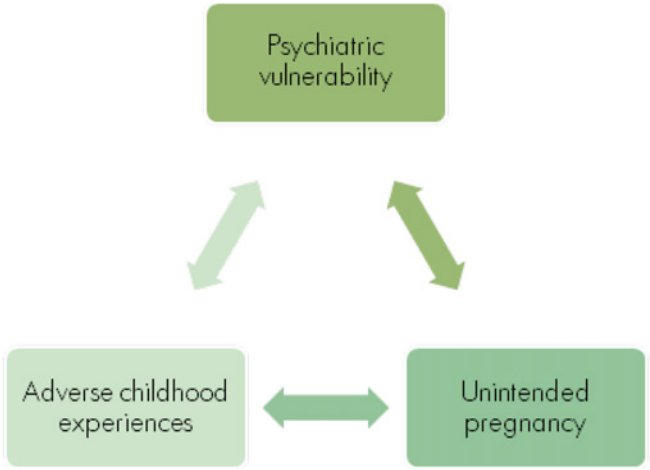


Figure 9.3 - Hypothesis 3: UPs indirectly resulting from adverse childhood experiences.

A further qualitative exploration of family planning decision-making in women with psychiatric vulnerability (Chapter 6) exemplified how past experiences (among which childhood trauma, adverse life events and inadequate parenting), present circumstances and future ideations influenced the prospect of motherhood (see Figure 9.4). An important limitation of Chapter 6 is the retrospective nature of the data. On the one hand, the data illustrate the profound emotional impact of past decision-

making in this heterogenous sample of women with psychiatric vulnerability. On the other hand, recall bias may play a role and memories about childhood trauma, reproductive history and past decisions may be difficult to recollect.

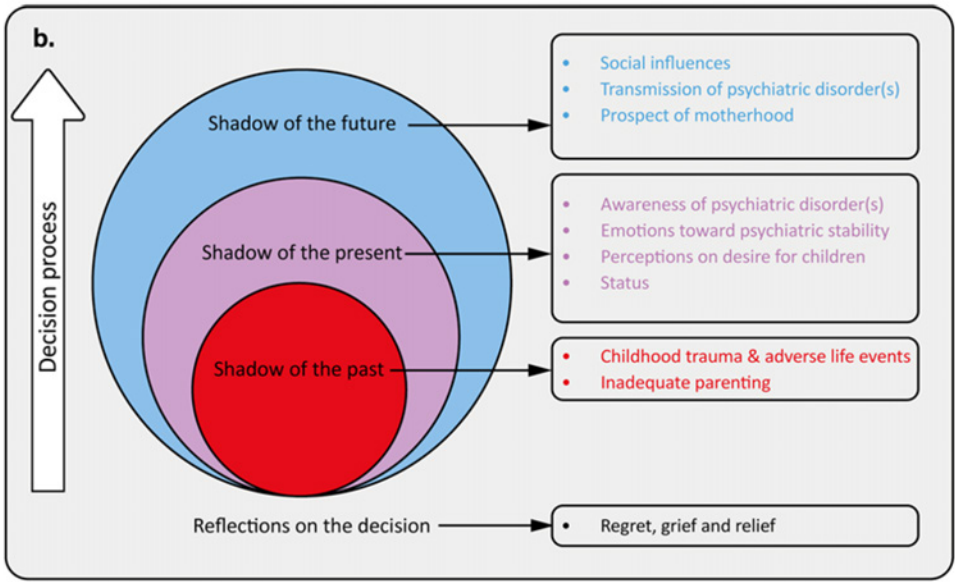


Figure 9.4 - Framework on the 'Shadows of Impact' of psychiatric vulnerability on family planning decision-making.
Adjusted from Chapter 6

There is a noteworthy ambiguity in the influence of ACE on pregnancy decision-making. ACE (indirectly) attribute to the risk of UPs, as shown in quantitative work. On the other side, ACE are also related to not having children, as shown in our qualitative studies (Chapter 6, Chapter 7). Fear of motherhood or transmitting trauma and psychiatric vulnerability motivated women to remain childless. In Chapter 3, we found that childlessness was related to having mental health symptoms in cross-sectional data. Although the direction of this association is unsure, which marks an important limitation of this study, it is remarkable that childlessness is poorly studied in relation to psychiatric vulnerability, given the possible negative impact on women's mental health for those who experience childlessness with regret[52].

In conclusion, it is most likely that the occurrence of UPs among women with psychiatric vulnerability is an interplay of all three hypotheses: a causal effect of

psychiatric symptoms (1), overlap between social and psychiatric risk factors (2) and an indirect effect of ACE through psychiatric vulnerability (3).

Discussions about family planning, desire for children and childlessness: should MHPs embark?

The existing literature suggests that the prevention of UPs and/or involuntary childlessness begins with engaging in open conversations about desire for children and family planning[53]. However, surveys (**Chapter 8,**[54-56]), interviews[57,58], and focus groups[59] with MHPs (among which residents in psychiatry) reveals that the topic of family planning is not regularly broached in psychiatric healthcare. This contradicts the willingness of MHPs to discuss reproductive health matters (**Chapter 8**). This is probably due to insufficient knowledge on reproductive health matters (**Chapter 8,**[54]), the perception of this topic as a taboo (**Chapter 4, 8,**[60]), moral concerns (**Chapter 8**,[57]), limited time for appointments and lack of confidence[55]. By conducting a qualitative inquiry in the relation between family planning, desire for children and mental health, our thesis illustrates that family planning encompasses a spectrum of wishes, imaginaries and fears (**Chapter 6, Chapter 7, Chapter 8**). These aspects related to family planning provide insight in the many considerations that women with psychiatric vulnerability encounter and illustrates the need to have discussions in psychiatric healthcare. Aside from acknowledging the urge, qualitative inquiries also shed light on the topics to discuss (see Table 9.1).

Table 9.1 - Top-5 topics to discuss in a conversation about family planning according to mental health professionals and patients from survey data.

Topic	Mental health professionals	Patients
1	Effect of medication on pregnancy	Is there a desire for children, and if so, why (not)?
2	Impact of pregnancy on mental health of parent (to be)	Parenting in relation to psychiatric vulnerability
3	Is there a desire for children, and if so, why (not)?	Impact of pregnancy and parenting on own mental health
4	Impact of heredity	Impact of heredity
5	Contraceptive usage	(Grieving) not having children

Adopted from **Chapter 8**

According to MHPs and patients, family planning counseling included the consequences of pregnancy for patients themselves (e.g. mental health effect of pregnancy, childbirth and the postpartum period), as well as consequences for their offspring (e.g. parenting with psychiatric vulnerability, passing of genetic disorders) (**Chapter 8**). The 'jar' model is an exemplary model in which the impact of hereditary disorders is combined with environmental aspects such as vulnerability or resilience,

visualized in a jar[61]. Moreover, patients specifically addressed the importance of discussing (grief after) childlessness (Chapter 3, Chapter 6, Chapter 8). From studies on failed fertility treatment, we learned that grief reactions are a common reaction in couples who experience involuntary childlessness[62]. Although studies on childlessness amongst women with psychiatric vulnerability are currently lacking, our results imply that similar reactions occur in this group as compared to women who experience unwanted childlessness (Chapter 6). Although the findings were derived from two surveys populated by the MIND panel, the use of panel data is limited by some factors. Most panel members are elderly, higher educated and native Dutch (Chapter 3, Chapter 8). Our findings might represent this group of persons with (past) psychiatric vulnerability, but do not give insight in the experiences of those younger, with lower education, unemployment and other backgrounds than native Dutch. This is important as the MIND panel may not adequately represent the patients in general Dutch psychiatric healthcare. Our knowledge on the impact of psychiatric vulnerability on reproductive health matters as family planning and childlessness should thus be gathered from other samples, too.

Finally, efforts should be made to understand the contradiction between the high prevalence of UPs amongst women with psychiatric vulnerability on the one hand (Chapter 2,3,4), and the reluctance to discuss contraceptive care on the other hand (86.6 % did not want to discuss contraception use) (Chapter 8). Although most survey respondents used contraceptives when at risk for a pregnancy (75.3%,), they also provided reasons to not use contraceptives. Diminished reproductive control (having an involuntary sexual relationship or being influenced by a partner to not use contraceptive methods), problems with using contraceptives (lacking therapeutic alliance, not tolerating hormonal contraceptives, interaction between other medication and contraceptives) and perceptions about being infertile due to psychiatric vulnerability made participants abstain from using contraceptives (Chapter 3). These reasons suggest that patients lack information about effectiveness of contraceptives, (in)fertility and psychiatric vulnerability, while simultaneously raising concerns about the presence of reproductive control in this group of patients. As aforementioned aspects of contraceptive use like therapeutic alliance, medication interactions and perceptions about fertility due to psychiatric disorders could fit the expertise of MHPs, it is unfortunate that patients with psychiatric vulnerability (both men and women) were reluctant to discuss contraceptive methods with MHPs (Chapter 8). We hypothesize this topic may be sensitive, as previous generations of (in)patients with psychiatric vulnerability received contraceptives against their will[63]. Future efforts should be made to understand the reluctance of patients to discuss contraceptive methods, given the risk of UPs in women with psychiatric vulnerability.

Future directions

Research recommendations

Although this thesis has provided some valuable insights in the prevalence of UPs amongst women with psychiatric vulnerability, there are several gaps in current literature. We suggest incorporating the presence of adverse childhood experiences and/or past trauma in addition to social variables in studies on the prevalence of UPs amongst women with psychiatric vulnerability, to distinguish between the many possible predictors (Chapter 3, Chapter 4). Identifying predictors has purpose in developing targeted interventions for women at risk for UPs. Given the discrepancy between previous studies on birth outcomes after UPs and our findings (Chapter 4), future studies on outcomes in women with psychiatric vulnerability (with and without UPs) may adhere to a prospective setting with assessment of pregnancy intentions with a validated tool, such as the London Measure of Unplanned Pregnancy[7]. A growing body of evidence assesses long-term outcomes after UPs, and it would be interesting to consider (a history of) psychiatric vulnerability in future studies[64,65]. Additional qualitative work could be employed that investigates why women with psychiatric vulnerability have difficulties achieving their desired family size. Also, additional research is needed amongst women with severe mental illnesses, women who are unemployed, women from migrant backgrounds, women who do not have a partner relationship and women with psychiatric vulnerability who chose to terminate their pregnancies. Childlessness in women with psychiatric vulnerability is an important issue for future research, as this thesis shows that childlessness was related to mental health problems. Another fascinating avenue would be assessing the implementation of family planning conversations in psychiatric healthcare to better understand how such conversations can be personalized and optimized. It is of specific relevance to understand why persons with psychiatric vulnerability are reluctant to discuss contraceptive care with their MHP. As our qualitative findings are limited to selective samples of mostly native Dutch or English-speaking patients, higher educated and/or employed, we advise future researchers to make an additional effort in including patients from other backgrounds. It would be a shame to base current reproductive health practices in psychiatry on a subgroup of patients only. Finally, there is abundant room for studying positive outcomes or positive influencers on outcomes after UPs, regarding parent relationships, infant attachment and transition to motherhood[46,66]. Besides doing justice to the variation in lived experiences with UPs, positive scientific attention for this topic may aid in decreasing societal stigma.

Clinical implications

In understanding the clinical implications of our work, we must first come to terms with one key question: should UPs be perceived as a problem for women with psychiatric vulnerability? We argue that the evidence provided in this thesis, supported by previous literature on UP rates amongst various populations, supports the hypothesis that the impact of UPs should not be overlooked. Certainly, the impact of UPs in the Netherlands might be limited to a certain extent, as abortion care is safe and widely accessible and obstetric healthcare free and available to all. Birth and neonatal outcomes were not disadvantaged in children born after UPs compared to intended pregnancies (Chapter 4). However, our studies have also shown the personal narratives of women with UPs, which ranged from positive experiences with UPs to stories of women with unwanted pregnancies who were forced to continue their pregnancies (Chapter 6,7). These narratives demonstrate how UPs profoundly impact lives of expectant parents, also in the Netherlands. Moreover, women with psychiatric vulnerability encountered challenges with family planning, pregnancy journeys and parenting in case they had UPs, but also if pregnancies were intended of if they remained (involuntarily) childless. As such, family planning may be perceived as a challenge for many women with psychiatric vulnerability and should be better addressed in clinical practice.

In this chapter, we will outline several clinical implications that are derived from our findings.

Discussions about family planning and desire for children should take place in psychiatric healthcare

We make several practical suggestions to facilitate conversations about family planning in psychiatric healthcare (Chapter 3,6,7,8):

- Customized family planning for individuals dealing with psychiatric vulnerability ought to specifically tackle concerns related to involuntary childlessness, uncertainties surrounding the prospect of (potential) parenthood (Chapter 6,7,8), and the impact of mental health on sexuality (Chapter 3).
- We recommend MHPs to proactively address family planning with all patients during their reproductive life stage and encourage patients to initiate these discussions within a trusting therapeutic relationship (Chapter 8).
- Information about (in)fertility in relation to psychiatric vulnerability should be provided to patients in these conversations, as this fear emerged in focus group conversations (Chapter 6), surveys (Chapter 3) and interviews (Chapter 7).

- It is important to take note of the reluctance to discuss contraceptive methods by patients with psychiatric vulnerability (Chapter 8).
- A specific role should be put in place for prevention. Discussing pregnancy intentions could lead to better preparation for a future pregnancy. There is a growing interest in methods to improve the reproductive health of psychiatric inpatients, especially for persons with serious mental illness who might perceive loss of capacity to make reproductive decisions during disease episodes[67].
- MHPs fear that patients experience a loss of autonomy and mentioned this fear as a reason not to address family planning with their patients (Chapter 8). However, we hypothesize that supporting patients in articulating their preferences regarding reproduction and pregnancy may increase their autonomy in family planning decision-making, as it can only be reached when patients are informed about their options (Chapter 6).

Based on findings from this thesis (Chapter 3,6,7,8), a discussion tool was designed that includes relevant aspects to the conversation about family planning and desire for children in psychiatric healthcare (see Figure 9.5). Attention should also be paid to the fact that patients often encounter taboos when discussing sexuality and mental health in general. By normalizing a conversation about family planning, stigma on having psychiatric disorders and parenting (Chapter 3,6,7,8) can be reduced.

The psychiatric curriculum: reproductive health matters!

In the United States, The National Task Force on Women's Reproductive Mental Health has directed that all psychiatrists should acquire essential knowledge and skills in reproductive psychiatry[68]. The Task Force also identified that among psychiatry residents, education on reproductive health was insufficient. In their perception, all psychiatrists should have basic knowledge in reproductive psychiatry[69]. Indeed, literature is conclusive that preconception care, pregnancy and the postpartum period, perimenopause and menstrual disorders in relation to psychiatric vulnerability should be basic knowledge for psychiatrists[70]. Unfortunately, up to date, similar goals have not yet been set in the Netherlands (Opleidingsplan Psychiatrie). To facilitate optimal preparation for pregnancy for women with psychiatric vulnerability, it is important to integrate education in which psychiatrists and gynecologists (in training) work together[71]. Patients and MHPs both underscored that psychiatrists should receive training in how to counsel women with psychiatric vulnerability on reproductive health matters (Chapter 8). Training of psychiatrists could be achieved by including reproductive health matters in the psychiatric curriculum for residents. Moreover, research also indicates that midwives could benefit from education on discussing perinatal mental health[72]. Like psychiatrists, they lack confidence, training and

knowledge to address these matters. Participants of the MIND-panel also indicated that general practitioners, psychiatric nurses and persons with lived experiences were eligible to have conversations about family planning with (Chapter 3). Ideally, students in their psychiatry clerkship are routinely educated on the relevance of perinatal mental health for patients and future generations[73].

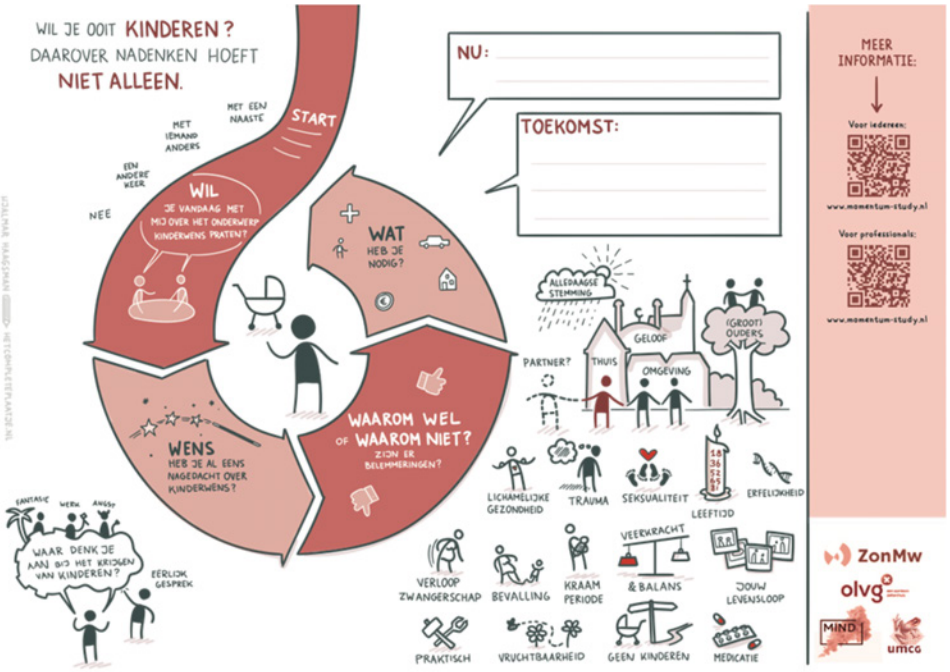


Figure 9.5 - Discussion tool.

This ensures that all Dutch physicians, psychiatrists as well as general practitioners, gynecologists and pediatricians are educated on women's mental health in relation to psychiatric vulnerability. Although not all psychiatrists treat women (or men) of reproductive age, this topic of conversation may fit any psychiatrist. As shown in Figure 9.6, all life stages are represented in the cycle of transgenerational transmission of psychiatric disorders and trauma, stressing the need to include this topic in general psychiatric residency programs. As the Dutch psychiatry residency program has a specific focus on lifespan psychiatry, reproductive health makes a perfect fit (Opleidingsplan Psychiatrie).

The abovementioned interventions would be in line with the Sustainable Development Goals as proposed by the World Health Organization. These goals direct countries, by 2030, to ensure that family planning is available for all citizens, including education and information about sexual and reproductive health. As women with psychiatric vulnerability are dependent on, amongst others, their MHPs to provide information, there is a responsibility for the medical curriculum here.

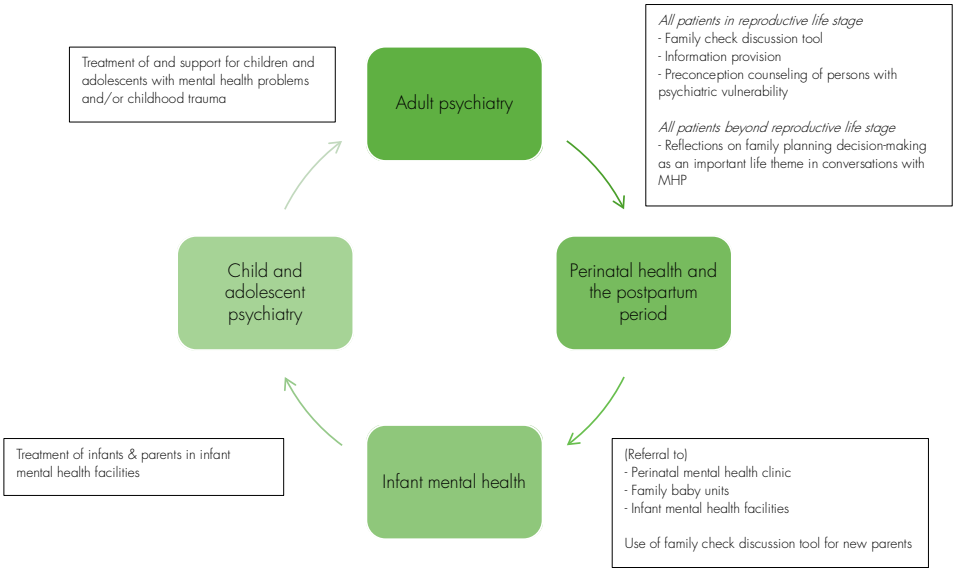


Figure 9.6 - Cycle of transgenerational transmission of psychiatric disorders and trauma.

Tailored interventions to support (pregnant) women with psychiatric vulnerability and/or UPs

In this paragraph, I propose tailored interventions for women with psychiatric vulnerability that can be employed at the level of individual patients, their significant others, MHPs and society (see Figure 9.7). Individuals with psychiatric vulnerability should receive information about the option to visit perinatal outpatient clinics before, during and after pregnancy. These multidisciplinary clinics in which pediatricians, obstetricians and psychiatrists cooperate, exemplify the vision of shared care between MHPs, obstetricians and pediatricians for women with psychiatric vulnerability and their offspring, however, many patients are not yet familiar with the nationwide availability of this care facility (**Chapter 6, Chapter 7, Chapter 8**).

Support in exploring one's own ideations about possible parenthood can be found with peers. We issued a booklet with lived experiences from people with psychiatric vulnerability about family planning decision-making, pregnancy journeys, parenting and sexuality (https://mindplatform.nl/projecten/kinderwens-en-ouderschap). Contact with others who experienced childhood trauma provided support in pregnancy journeys (**Chapter 7**). For both expectant mothers and fathers, unexpected pregnancies give rise to questions and uncertainties. Stories from those with lived experience could provide support (**Chapter 7**, https://mindplatform.nl/projecten/kinderwens-en-ouderschap). The presence of a significant other during conversations about family planning was wanted by persons with psychiatric vulnerability (**Chapter 3**). The discussion tool (Figure 9.5) could facilitate a conversation about family planning with a person with psychiatric vulnerability and can help to overcome barriers. Women with UPs and their partners can be supported by understanding the different stages of mental health impact during pregnancy and the postpartum (**Chapter 7**). Uncertainties regarding mother infant bonding were raised by pregnant women with psychiatric vulnerability (with and without UPs) (**Chapter 3,6,7,8**). Thus we advise to offer women with psychiatric vulnerability a referral to facilities that offer attachment based interventions like Infant Mental Health organizations[74]. In addition, maternal role training[75] has proven beneficial in preparation for motherhood. We are unaware of support groups for women with UPs who choose to continue their pregnancies. However, positive psychological interventions may positively impact antenatal mental health and pregnancy acceptance[76]. We suggest that, while specific precautions concerning lithium use may be extensive, it is advisable to implement combined observation of mothers with bipolar vulnerability and their infants in a nursery setting (level 1 care) to enhance mother-infant attachment (**Chapter 5**). As ultrasounds aided in pregnancy acceptance and attachment to the (unborn) child, women who choose to maintain their UPs could benefit from seeing the fetus on ultrasounds (**Chapter 7**). Finally, there is an urgency for society to change its attitude towards pregnancies that are not greeted with happiness, as pregnancies can be experienced very differently by persons and the acceptance of the pregnancy can change over time (**Chapter 7**). The stigma that is related to parenting in persons with psychiatric vulnerability could be diminished by discussing reproductive health matters openly and without judgement for all individuals (**Chapter 6, Chapter 8**). There are examples of promising stigma reducing programs regarding abortion and reproductive health[77]. In their report on the neglected crisis of UPs, the United Nations vouch for comprehensive sexuality education, which entails "a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality, aiming to equip children and young people with knowledge, skills, attitudes and values that will empower them to realize their health, well-being

and dignity; develop respectful social and sexual relationships; consider how their choices affect their own well-being and that of others; and understand and ensure the protection of their rights throughout their lives''[78].

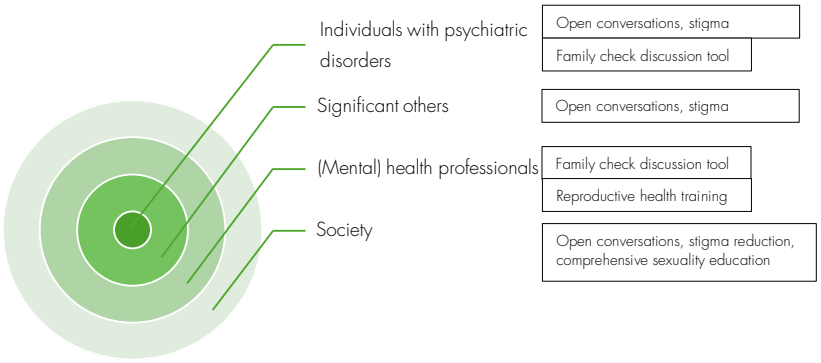


Figure 9.7 - Tailored interventions per level.

Conclusion

This thesis illustrates that the impact of psychiatric vulnerability on family planning matters, not only through the high prevalence of UPs in comparison to women without psychiatric vulnerability, but also through the profound impact of psychiatric vulnerability on lived experiences with family planning and desire for children. From the previous quantitative chapters, it is shown that psychiatric vulnerability challenges reproductive decision-making, creates insecurities regarding parenting, negatively impacts sexual enjoyment and gives risk for UPs. From qualitative chapters, we learned how women with psychiatric vulnerability make sense of experiencing an unexpected pregnancy and what MHPs and patients expect from conversations about family planning in psychiatric healthcare. This thesis gives also valuable insights in the opportunity of UPs to install growth and behavioral change. Ultimately, women's concerns for the transgenerational transmission of trauma and hereditary psychiatric vulnerability greatly impact their family planning behavior ideations and behavior. Future studies could further explore the possibilities that arise from continued pregnancies. Women with psychiatric vulnerability deserve reproductive health counseling tailored to their needs and require support in this area, most definitely when expecting the unexpected!

References

1. Bearak, J., et al., Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. Lancet Glob Health, 2020. 8(9): p. e1152-e1161.
2. Enthoven, C.A., et al., Clustering of characteristics associated with unplanned pregnancies: the generation R study. BMC Public Health, 2022. 22(1): p. 1957.
3. Carlander, A., et al., Unplanned pregnancy and the association with maternal health and pregnancy outcomes: A Swedish cohort study. PLoS One, 2023. 18(5): p. e0286052.
4. Picavet, C., Zwangerschap en anticonceptie in Nederland. Tijdschrift voor Seksuologie, 2012. 36-2: p. 121-128.
5. Chamberlin, S., et al., Women's Life Experiences and Shifting Reports of Pregnancy Planning. Matern Child Health J, 2022. 26(8): p. 1719-1726.
6. Müller, M.W., et al., The illusion of stable fertility preferences. Popul Stud (Camb), 2022. 76(2): p. 169-189.
7. Barrett, G., S.C. Smith, and K. Wellings, Conceptualisation, development, and evaluation of a measure of unplanned pregnancy. J Epidemiol Community Health, 2004. 58(5): p. 426-433.
8. Sennott, C. and S. Yeatman, Conceptualizing Childbearing Ambivalence: A Social and Dynamic Perspective. J Marriage Fam, 2018. 80(4): p. 888-901.
9. Cutler, A., et al., "I Just Don't Know": An Exploration of Women's Ambivalence about a New Pregnancy. Womens Health Issues, 2018. 28(1): p. 75-81.
10. Aiken, A.R., C. Dillaway, and N. Mevs-Korff, A blessing I can't afford: factors underlying the paradox of happiness about unintended pregnancy. Soc Sci Med, 2015. 132: p. 149-155.
11. Askelson, N.M., et al., "Baby? Baby Not?": Exploring Women's Narratives About Ambivalence Towards an Unintended Pregnancy. Women Health, 2015. 55(7): p. 842-858.
12. Yoo, S.H., K.B. Guzzo, and S.R. Hayford, Understanding the complexity of ambivalence toward pregnancy: does it predict inconsistent use of contraception? Biodemography Soc Biol, 2014. 60(1): p. 49-66.
13. Aiken, A.R. and J.E. Potter, Are Latina women ambivalent about pregnancies they are trying to prevent? Evidence from the Border Contraceptive Access Study. Perspect Sex Reprod Health, 2013. 45(4): p. 196-203.
14. Schwartz, A., et al., Defining new categories of pregnancy intention in African-American women. Womens Health Issues, 2010. 20(6): p. 371-379.
15. Miller, W.B., J.S. Barber, and H.H. Gatny, The effects of ambivalent fertility desires on pregnancy risk in young women in the USA. Popul Stud (Camb), 2013. 67(1): p. 25-38.
16. McQuillan, J., A.L. Greil, and K.M. Shreffler, Pregnancy intentions among women who do not try: focusing on women who are okay either way. Matern Child Health J, 2011. 15(2): p. 178-187.
17. Arteaga, S., L. Caton, and A.M. Gomez, Planned, unplanned and in-between: the meaning and context of pregnancy planning for young people. Contraception, 2019. 99(1): p. 16-21.
18. Moreau, C., et al., Pregnancy planning and acceptance and maternal psychological distress during pregnancy: results from the National Perinatal Survey, France, 2016. BMC Pregnancy Childbirth, 2022. 22(1): p. 162.
19. Mohllajee, A.P., et al., Pregnancy intention and its relationship to birth and maternal outcomes. Obstet Gynecol, 2007. 109(3): p. 678-686.
20. Miller, E.S., et al., Trajectories of antenatal depression and adverse pregnancy outcomes. Am J Obstet Gynecol, 2021.
21. Edvardsson, K., et al., Severe mental illness and pregnancy outcomes in Australia. A population-based study of 595 792 singleton births 2009-2016. PLoS One, 2022. 17(2): p. e0264512.
22. Upadhyay, A.K. and S. Srivastava, Effect of pregnancy intention, postnatal depressive symptoms and social support on early childhood stunting: findings from India. BMC Pregnancy Childbirth, 2016. 16: p. 107.
23. Nelson, H.D., et al., Associations of Unintended Pregnancy With Maternal and Infant Health Outcomes: A Systematic Review and Meta-analysis. JAMA, 2022. 328(17): p. 1714-1729.

24. Rusner, M., M. Berg, and C. Begley, Bipolar disorder in pregnancy and childbirth: a systematic review of outcomes. BMC Pregnancy Childbirth, 2016. 16(1): p. 331.
25. Frayne, J., et al., Lithium exposure during pregnancy: outcomes for women who attended a specialist antenatal clinic. J Psychosom Obstet Gynaecol, 2018. 39(3): p. 211-219.
26. Hastie, R., et al., Maternal lithium use and the risk of adverse pregnancy and neonatal outcomes: a Swedish population-based cohort study. BMC Med, 2021. 19(1): p. 291.
27. Munk-Olsen, T., et al., Maternal and infant outcomes associated with lithium use in pregnancy: an international collaborative meta-analysis of six cohort studies. Lancet Psychiatry, 2018. 5(8): p. 644-652.
28. Molenaar, N.M., et al., Management of lithium dosing around delivery: An observational study. Bipolar Disord, 2021. 23(1): p. 49-54.
29. Thomson, G., et al., Resilience and post-traumatic growth in the transition to motherhood during the COVID-19 pandemic: A qualitative exploratory study. Scand J Caring Sci, 2022. 36(4): p.1143-1155.
30. Prinds, C., et al., Making existential meaning in transition to motherhood–a scoping review. Midwifery, 2014. 30(6): p. 733-741.
31. MacAfee, L.K., et al., Sexual and Reproductive Health Characteristics of Women in Substance Use Treatment in Michigan. Obstet Gynecol, 2020. 135(2): p. 361-369.
32. De Genna, N.M., et al., Pregnancies, abortions, and births among women with and without borderline personality disorder. Womens Health Issues, 2012. 22(4): p. e371-377.
33. Judge-Golden, C.P., et al., The Association between Mental Health Disorders and History of Unintended Pregnancy among Women Veterans. J Gen Intern Med, 2018. 33(12): p. 2092-2099.
34. Posada Correa, A.M., et al., Sexual and Reproductive Health in Patients with Schizophrenia and Bipolar Disorder. Rev Colomb Psiquiatr, 2020. 49(1): p. 15-22.
35. Green, L., et al., An audit of pregnant women with severe mental illness referred during the first 2 years of a new perinatal mental health service. Arch Womens Ment Health, 2008. 11(2): p. 149-158.
36. Bagadia, A., et al., Factors influencing decision-making around pregnancy among women with severe mental illness (SMI): A qualitative study. Int J Soc Psychiatry, 2020. 66(8): p. 792-798.
37. Ajayi, A.I. and H.C. Ezegbe, Association between sexual violence and unintended pregnancy among adolescent girls and young women in South Africa. BMC Public Health, 2020. 20(1): p. 1370.
38. Moyano, N., et al., Self-Esteem, Attitudes toward Love, and Sexual Assertiveness among Pregnant Adolescents. Int J Environ Res Public Health, 2021. 18(3: p 1270).
39. Tinglöf, S., et al., Exposure to violence among women with unwanted pregnancies and the association with post-traumatic stress disorder, symptoms of anxiety and depression. Sex Reprod Healthc, 2015. 6(2): p. 50-53.
40. Miller, E. and J.G. Silverman, Reproductive coercion and partner violence: implications for clinical assessment of unintended pregnancy. Expert Rev Obstet Gynecol, 2010. 5(5): p. 511-515.
41. Goossens, J., et al., The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. Hum Reprod, 2016. 31(12): p. 2821-2833.
42. Iseyemi, A., et al., Socioeconomic Status As a Risk Factor for Unintended Pregnancy in the Contraceptive CHOICE Project. Obstet Gynecol, 2017. 130(3): p. 609-615.
43. Beck, L.F., et al., Prevalence of selected maternal behaviors and experiences, Pregnancy Risk Assessment Monitoring System (PRAMS), 1999. MMWR Surveill Summ, 2002. 51(2): p. 1-27.
44. Besculides, M. and F. Laraque, Unintended pregnancy among the urban poor. J Urban Health, 2004. 81(3): p. 340-348.
45. Young-Wolff, K.C., et al., Adverse Childhood Experiences and Pregnancy Intentions among Pregnant Women Seeking Prenatal Care. Womens Health Issues, 2021. 31(2): p. 100-106.
46. Feld, H.C., et al., Unintended pregnancy and childhood maltreatment: The protective effect of positive relationships. Public Health Nurs, 2023. 40(1): p. 28-35.
47. Ding, W., et al., Childhood adversity and accelerated reproductive events: a systematic review and meta-analysis. Am J Obstet Gynecol, 2024. 230(3): p. 315-329.e31.
48. Thomas, J.L., et al., Associations between Adverse Childhood Experiences and Sexual Risk among Postpartum Women. Int J Environ Res Public Health, 2021. 18(7): p. 3848.

49. Dietz, P.M., et al., Unintended pregnancy among adult women exposed to abuse or household dysfunction during their childhood. JAMA, 1999. 282(14): p. 1359-1364.
50. Hall, K.S., et al., Adverse life experiences and risk of unintended pregnancy in adolescence and early adulthood: Implications for toxic stress and reproductive health. SSM Popul Health, 2019. 7: p. 100344.
51. Callegari, L.S., et al., Contraceptive adherence among women Veterans with mental illness and substance use disorder. Contraception, 2015. 91(5): p. 386-392.
52. Fieldsend, M. and J.A. Smith, 'Either stay grieving, or deal with it': the psychological impact of involuntary childlessness for women living in midlife. Hum Reprod, 2020. 35(4): p. 876-885.
53. Hall, J., et al., Addressing reproductive health needs across the life course: an integrated, community-based model combining contraception and preconception care. Lancet Public Health, 2023. 8(1): p. e76-e84.
54. Macaluso, M., et al., Residents Perceive Limited Education on Family Planning and Contraception for Patients with Severe and Persistent Mental Illness. Acad Psychiatry, 2018. 42(2): p. 189-196.
55. Osborne, L.M., et al., Reproductive Psychiatry Residency Training: A Survey of Psychiatric Residency Program Directors. Acad Psychiatry, 2018. 42(2): p. 197-201.
56. McLennan, J.D. and R. Ganguli, Family planning and parenthood needs of women with severe mental illness: clinicians' perspective. Community Ment Health J, 1999. 35(4): p. 369-380.
57. Zatloff, J.P., et al., Navigating a Complex Health System: the Perceptions of Psychiatric Residents in Addressing Sexual and Reproductive Health of Women with Severe Mental Illness. Acad Psychiatry, 2020. 44(4): p. 403-407.
58. Checchia, C., et al., [Mental Health Professionals' Perspectives Towards Desire for Children and Family Planning Among Psychiatric Patients - Results of a Qualitative Study]. Psychiatr Prax, 2016. 43(8): p. e9-e16.
59. Krumm, S., et al., The attitudes of mental health professionals towards patients' desire for children. BMC Med Ethics, 2014. 15: p. 18.
60. Becker, P.T. and S. Krumm, Research on family planning issues in women with mental disorders. Journal of Mental Health, 2009.
61. Peay H and A. J., How to talk with families about genetics and psychiatric illness . . 2011, W.W. Norton, New York. .
62. Gameiro, S. and A. Finnigan, Long-term adjustment to unmet parenthood goals following ART: a systematic review and meta-analysis. Hum Reprod Update, 2017. 23(3): p. 322-337.
63. Reilly, P.R., Eugenics and Involuntary Sterilization: 1907-2015. Annu Rev Genomics Hum Genet, 2015. 16: p. 351-368.
64. McCrory, C. and S. McNally, The effect of pregnancy intention on maternal prenatal behaviours and parent and child health: results of an irish cohort study. Paediatr Perinat Epidemiol, 2013. 27(2): p. 208-215.
65. Beumer, W.Y., et al., Carrying an unintended pregnancy to term and long-term maternal psychological distress: Findings from the Dutch prospective Amsterdam Born Children and their Development study. Womens Health (Lond), 2023. 19: p. 17455057231213737.
66. Bouchard, G., J. Boudreau, and R. Hébert, Transition to Parenthood and Conjugal Life Comparisons Between Planned and Unplanned Pregnancies. Journal of Family Issues, 2006. 27(11).
67. Dossett, E.C., et al., Reproductive psychiatric advance directives: promoting autonomy for perinatal people with serious mental illness diagnoses. Arch Womens Ment Health, 2023.
68. Osborne, L.M., et al., Reproductive Psychiatry: The Gap Between Clinical Need and Education. Am J Psychiatry, 2015. 172(10): p. 946-948.
69. Coverdale, J., et al., Family Planning and the Scope of the "Reproductive Psychiatry" Curriculum. Acad Psychiatry, 2018. 42(2): p. 183-188.
70. Gold, L.H. and S.A. Epstein, Formal training in women's issues in psychiatry: a survey of psychiatry residency training directors. Acad Psychiatry, 2006. 30(5): p. 403-409.
71. Coverdale, J., et al., Pedagogical Implications of Partnerships Between Psychiatry and Obstetrics-Gynecology in Caring for Patients with Major Mental Disorders. Acad Psychiatry, 2015. 39(4): p. 430-436.

72. Coates, D. and M. Foureur, The role and competence of midwives in supporting women with mental health concerns during the perinatal period: A scoping review. Health Soc Care Community, 2019. 27(4): p. e389-e405.
73. Horan, A., C. Kondas, and V. Dinsell, Integrating Peripartum Mental Health Education into the Psychiatry Clerkship: a Multimodal Approach. Acad Psychiatry, 2022. 46(2): p. 175-179.
74. Myors, K.A., et al., 'Modelling a Secure-Base' for Women with Complex Needs: Attachment-Based Interventions Used by Perinatal and Infant Mental Health Clinicians. Issues Ment Health Nurs, 2018. 39(3): p. 226-232.
75. Kordi, M., et al., The effect of maternal role training program on role attainment and maternal role satisfaction in nulliparous women with unplanned pregnancy. J Educ Health Promot, 2017. 6: p. 61.
76. Rastad, Z., et al., Effects of positive psychology interventions on happiness in women with unintended pregnancy: randomized controlled trial. Heliyon, 2021. 7(8): p. e07789.
77. Makenzius, M., et al., A stigma-reduction intervention targeting abortion and contraceptive use among adolescents in Kisumu County, Kenya: a quasi-experimental study. Sex Reprod Health Matters, 2023. 31(1): p. 1881208.
78. McFarlane, I., Seeing the Unseen. The case for action in theneglected crisis of unintended pregnancy. 2022, United Nations Population Fund.

APPENDIX

English summary
Nederlandse samenvatting
Publications
Author contribution statement
PhD Portfolio
Dankwoord
Curriculum vitae

English summary

This project utilized both quantitative and qualitative research approaches to achieve the following objectives (1) understand the frequency of unintended pregnancies (UPs) in women with psychiatric vulnerability in the Netherlands, (2) explore the experiences of current and former mental health patients regarding family and pregnancy planning, (3) investigate the experiences of patients during UPs, and (4) examine the perspectives of patients and mental health professionals (MHPs) on discussing family planning in Dutch mental healthcare settings. Results from a systematic review and meta-analysis demonstrated that women with psychiatric vulnerability face a higher likelihood of UPs compared to those without psychiatric vulnerability. A retrospective cohort study was conducted on 2312 women who delivered at OLVG, the largest maternity hospital in Amsterdam, between 2015 and 2020. Maternal and neonatal outcomes were also compared between planned and unplanned pregnancies, with an exploration of the mediating effect of psychiatric vulnerability. High rates of UPs amongst women with psychiatric vulnerability were shown (39% versus 29% in women without psychiatric vulnerability). We found comparable outcomes in all four groups for all clinically relevant maternal and neonatal outcomes like hypertensive disorders, gestational diabetes, mode of delivery, low birth weight, premature birth, Apgar score after birth and admission to a neonatal ward. An exploratory survey with members of the MIND mental health care panel showed that mental health issues significantly influenced family planning, pregnancy, sexuality, and parenthood for patients and their relatives. Focus groups, including women with psychiatric vulnerability illustrated how shadows of the past (childhood trauma and inadequate parenting), present (the burden and awareness of psychiatric vulnerability) and future (fear of motherhood and insecurity) impacted (past) family planning decisions. Interviews with women with psychiatric vulnerability who experienced UPs, as well as their partners, showed that UPs had a substantial impact on women and partners, but they adapted to the new situation, and appropriate support during pregnancy gave rise to behavioral change and installed a window of opportunity to break the chain of transgenerational trauma. Two additional surveys were conducted among the MIND panel and mental healthcare providers, specifically addressing family planning and pregnancy in mental healthcare. Despite a strong desire for discussions on family planning in mental healthcare, only one in five patients had the opportunity to engage in such conversations. We unveiled existing barriers to discussing family planning, including the fear of broaching the topic, lack of knowledge, and time constraints. The implementation of the "family check-tool" aims to facilitate more effective conversations between healthcare providers and patients on these crucial topics. Training opportunities will be facilitated for MHPs to implement the family check-tool. Also,

continued affords are made to incorporate the topic of reproductive health related to psychiatry in various educational programs in the Netherlands, such as the school of medicine, psychiatry residency programs and other relevant mental health studies such as psychiatric nursing. By acknowledging the significance of the reproductive health themes of family planning, childlessness and UPs for individuals with psychiatric vulnerability, this thesis underscores the importance of addressing reproductive matters in psychiatric healthcare and literature.

Nederlandse samenvatting

Dit proefschrift is gebaseerd op artikelen met zowel kwantitatieve als kwalitatieve onderzoeksmethoden om de volgende doelstellingen te onderzoeken: het schatten van de frequentie van ongeplande zwangerschappen (OZ) bij vrouwen met een psychiatrische kwetsbaarheid, het verkennen van de ervaringen van huidige en voormalige patiënten in de ggz met betrekking tot gezinsplanning en kinderwens, het onderzoeken van de ervaringen van patiënten tijdens OZ, en het onderzoeken van de perspectieven van patiënten en ggz-professionals over het bespreken van gezinsplanning in de Nederlandse ggz. Resultaten van een systematische review en meta-analyse toonden aan dat vrouwen met psychiatrische kwetsbaarheid een hogere kans hebben op OZ vergeleken met vrouwen zonder psychiatrische kwetsbaarheid. Een retrospectieve cohortstudie werd uitgevoerd onder vrouwen die zijn bevallen in het OLVG, Amsterdam. Maternale en neonatale resultaten werden vergeleken tussen geplande en ongeplande zwangerschappen, met daarin meegenomen het effect van psychiatrische kwetsbaarheid. Hoge percentages OZ werden aangetoond bij vrouwen met psychiatrische kwetsbaarheid (39% versus 29% bij vrouwen zonder psychiatrische kwetsbaarheid). We vonden vergelijkbare resultaten in alle vier de groepen voor alle klinisch relevante maternale en neonatale uitkomsten zoals hypertensieve aandoeningen, zwangerschapsdiabetes, modus partus, laag geboortegewicht, vroeggeboorte, Apgar-score na de geboorte en opname op een neonatale afdeling. Een exploratieve enquête onder leden van het MIND-ggz panel toonde aan dat mentale klachten een grote invloed hadden op gezinsplanning, zwangerschappen, seksualiteit en ouderschap voor patiënten en naasten. Focusgroepen, bij vrouwen met psychiatrische kwetsbaarheid illustreerden hoe 'schaduwen' uit het verleden (kindertrauma en onvoldoende ouderschap), heden (de last en het bewustzijn van psychiatrische kwetsbaarheid) en toekomst (angst voor moederschap en onzekerheid) van invloed waren op (vroegere) beslissingen over gezinsplanning. Interviews met vrouwen met psychiatrische kwetsbaarheid die OZ hebben ervaren, evenals hun partners, toonden aan dat OZ een aanzienlijke impact hadden op vrouwen en partners. Echter, vrouwen waren in staat zich aan te passen aan de OZ, en met passende ondersteuning tijdens de zwangerschap werd er een gedragsverandering gezien, waarbij de kans ontstond om de keten van transgenerationeel trauma te doorbreken. Twee aanvullende enquêtes werden uitgevoerd onder het MIND-ggz panel en ggz-professionals, met vragen over gezinsplanning en zwangerschap in de ggz. Ondanks een sterke wens om te praten over gezinsplanning in de ggz, had slechts één op de vijf patiënten de gelegenheid gehad om in deze gesprekken te participeren. We beschreven hoe barrières voor het bespreken van gezinsplanning, waaronder de angst om het onderwerp aan te

snijden, gebrek aan kennis en tijdsbeperkingen van invloed waren. Met de implementatie van de "family check" hopen we effectievere gesprekken tussen zorgverleners en patiënten te faciliteren, zodat een gesprek over deze relevante onderwerpen mogelijk wordt in de ggz. Ook zullen er trainingen worden aangeboden voor zorgprofessionals in de ggz om de family check in te kunnen zetten. Op eenzelfde manier wordt er aandacht gevraagd voor reproductieve gezondheid in relatie tot psychiatrische aandoeningen binnen de opleidingen geneeskunde, specialistenopleiding psychiatrie en binnen andere relevante opleidingen in de ggz zoals psychiatrisch verpleegkundige en verpleegkundig specialist. Door het belang van de thema's reproductieve gezondheid, gezinsplanning, kinderloosheid en OZ voor mensen met psychiatrische kwetsbaarheid te erkennen, onderstreept dit proefschrift het belang van het bespreken van reproductieve gezondheid in de psychiatrische praktijk en literatuur.

Publications

Schonewille, N.N., de Boer, M.A., Abheiden, C. N. H. (2019) 'Laag-moleculair-gewicht-heparine ter voorkoming van een recidief abruptio placentae', *Tijdschrift voor Obstetrie en Gynaecologie, 132*.

Huisman, B. A. A., Geijteman, E. C. T., Dees, M. K., **Schonewille, N. N.,** Wieles, M., van Zuylen, L., Szadek, K. M. and van der Heide, A. (2020) 'Role of nurses in medication management at the end of life: a qualitative interview study', *BMC Palliat Care,* 19(1), 68.

Schonewille, N. N., Abheiden, C. N. H., Bokslag, A., Thijs, A., De Groot, C. J. M., De Vries, J. I. P. and De Boer, M. A. (2020) 'Cardiovascular risk after hypertensive disorders of pregnancy in women with and without inheritable Thrombophilia', *Hypertens Pregnancy,* 39(2), 203-210.

Schonewille, N. N., Rijkers, N., Berenschot, A., Lijmer, J. G., van den Heuvel, O. A. and Broekman, B. F. P. (2022) 'Psychiatric vulnerability and the risk for unintended pregnancies, a systematic review and meta-analysis', *BMC Pregnancy Childbirth,* 22(1), 153.

Schonewille, N. N., van den Eijnden, M. J. M., Jonkman, N. H., van Kempen, A. A. M. W., van Pampus, M. G., Goedhart, F. G., van den Heuvel, O. A. and Broekman, B. F. P. (2023) 'Experiences with Family Planning amongst Persons with Mental Health Problems: A Nationwide Patient Survey', *Int J Environ Res Public Health,* 20(4).

Schonewille, N. N., Terpstra, P. A., van den Heuvel, M. E. N., Van Pampus, M. G., van den Heuvel, O. A. and Broekman, B. F. P. (2023) 'Neonatal admission after lithium use in pregnant women with bipolar disorders: a retrospective cohort study', *Int J Bipolar Disord,* 11(1), 24.

Schonewille, N. N., Jonkman, N. H., van Kempen, A. A. M. W., van Pampus, M. G., van den Heuvel, O. A. and Broekman, B. F. P. (2023) 'Pregnancy intention in relation to maternal and neonatal outcomes in women with versus without psychiatric diagnoses', *Acta Psychiatr Scand*, 149(2), 110–123.

Ahmad, S. A. I. H., Holtrop, J., van den Eijnden, M. J. M., Jonkman, N. H., van Pampus, M. G., van den Heuvel, O. A., Broekman, B. F. P. and **Schonewille, N. N.** (2024) 'Family planning decision-making in relation to psychiatric disorders in women: a qualitative focus group study', *Reprod Health,* 21(1), 96.

Schonewille, N. N., van den Eijnden, M. J. M., Sahin, R., Jonkman, N. H., van Kempen, A. A. M. W., van Pampus, M. G., Scheele, F., van den Heuvel, O. A. and Broekman, B. F. P. (2024) 'The conversation about family planning and desire for children in mental healthcare: Patients' perspective versus Professionals' perspective in a mixed methods study', *Acta Psychiatr Scand*, [epub ahead of print]

Zilver, S., Rietveld, A., **Schonewille, N.,** Bakker, P., Broekman, B., van Leeuwen, E., de Groot, C. (2024) 'Pregnant individuals perspectives towards receiving COVID-19 vaccination during their pregnancy: an in-depth qualitative study', *Front. Public Health*, [provisionally accepted]

Author contribution statements

Chapter 2

Noralie N. Schonewille: Performed article screening, Article selection, Analysis of data, Wrote the first draft of the manuscript with input from all other authors. Nadine Rijkers: Performed article screening, Article selection, Analysis of data and contributed to the final manuscript. Albertus Berenschot: Performed electronic searches, Helped design the study methods, Contributed to the final manuscript. Jeroen G. Lijmer: Performed analyses of the data and Contributed to the final manuscript. Odile A. van den Heuvel: Contributed to the final manuscript. Birit F.P. Broekman: Contributed to the final manuscript.

Chapter 3

Noralie N. Schonewille: Conceptualization, Methodology, Software, Validation, Formal analysis, Writing—original draft preparation, Writing—review and editing, Visualization, Project administration, Funding acquisition. Monique J. M. van den Eijnden: Conceptualization, Methodology, Investigation, Resources, Writing—review and editing, Project administration, Funding acquisition. Nini H. Jonkman: Conceptualization, Methodology, Data curation, Writing—review and editing, Visualization, Funding acquisition. Anne A.M.W. van Kempen: Conceptualization, Writing—review and editing, Funding acquisition. Maria G. van Pampus: Conceptualization, Writing—review and editing, Funding acquisition. Francisca G. Goedhart: Conceptualization, Methodology, Resources, Writing—review and editing, Supervision, Funding acquisition. Odile A. van den Heuvel: Conceptualization, writing—review and editing, Supervision. Birit F.P. Broekman: Conceptualization, writing—review and editing, Supervision, Funding acquisition.

Chapter 4

Noralie N. Schonewille: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing—original draft preparation, Visualization, Project administration, Funding acquisition. Nini H. Jonkman: Conceptualization, Methodology, Validation, Writing—review and editing, Visualization, Supervision. Anne A.M.W. van Kempen: Conceptualization, Writing—review and editing. Maria G. van Pampus: Conceptualization, Writing—review and editing. Odile A. van den Heuvel: Conceptualization, Writing—review and editing, Supervision. Birit F.P. Broekman: Conceptualization, Writing—review and editing, Supervision, Funding acquisition.

Chapter 5

Noralie N. Schonewille: Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing—original draft preparation, Writing—review and editing, Visualization, Project administration. Pleun A. Terpstra: Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, writing—review and editing, Visualization, Visualization. Maria E.N. van den Heuvel: Conceptualization, Validation, Visualization, Supervision. Maria G. van Pampus: Conceptualization, Visualization, Supervision. Odile A. van den Heuvel: Conceptualization, Visualization, Supervision. Birit F.P. Broekman: Conceptualization, Visualization, Supervision, Funding acquisition.

Chapter 6

Shahenda Ahmad: Formal analysis, Original draft preparation, Review and editing, Visualization

Jorina Holtrop: Formal analysis, Original draft preparation, Review and editing

Monique J. M. van den Eijnden: Conceptualization, Funding, Design, Methodology, Focus group discussions, Formal analysis, Review and editing. Nini H. Jonkman: Study and analytic design advice, Formal analysis, Review and editing. Maria G. van Pampus: Formal analysis, Review and editing. Odile A. van den Heuvel: Formal analysis, Review and editing. Birit F.P. Broekman: Conceptualization, Funding, Design, Methodology, Formal Analysis, Review and editing, Supervision. Noralie N. Schonewille: Conceptualization, Funding, Design, Methodology, Focus group discussions, Formal analysis, Review and editing, Supervision.

Chapter 7

Noralie N. Schonewille: Conceptualization, Methodology, Formal analysis and investigation, Writing - original draft preparation, Funding acquisition. Elena Soldati: Conceptualization, Methodology, Formal analysis and investigation, Writing - original draft preparation. Monique J. M. van den Eijnden: Conceptualization, Formal analysis and investigation, Writing - review and editing, Funding acquisition. Nini H. Jonkman: Conceptualization, Methodology, Writing - review and editing, Funding acquisition. Maria G. van Pampus: Conceptualization, Methodology, Writing - review and editing, Funding acquisition. Odile A. van den Heuvel: Conceptualization, Methodology, Writing - review and editing. Birit F.P. Broekman: Conceptualization, Methodology, Writing - review and editing, Funding acquisition, Supervision.

Chapter 8

Noralie N. Schonewille: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing—original draft preparation, Writing—review and editing, Visualization, Project administration, Funding acquisition. Monique J. M. van den Eijnden: Conceptualization, Validation, Formal analysis, Investigation, Resources, Writing—original draft preparation, Writing—review and editing, Funding acquisition. Ruveyda Sahin: Conceptualization, Methodology, Validation, Formal analysis, Writing—original draft preparation. Nini H. Jonkman: Methodology, Writing—review and editing, Funding acquisition. Anne A.M.W. van Kempen: Writing—review and editing, Funding acquisition. Maria G. van Pampus: Writing—review and editing, Funding acquisition. Fedde Scheele: Writing—review and editing, Supervision. Odile A. van den Heuvel: Writing—review and editing, Supervision. Birit F.P. Broekman: Methodology, Writing—review and editing, Supervision, Funding acquisition.

Portfolio

1. Courses

Missing data	January 2021	0.64 ECs
Regression techniques	May 2021	5.0 ECs
Statistical analyes with R	June 2021	2.0 ECs
BROK course	September 2021	1.5 ECs
Qualitative research (K78: beginner course)	December 2021	2.0 ECs
Effectively communicating your research	February 2022	0.43 ECs
Writing a scientific article	May 2022	3.0 ECs
Scientific integrity course	November 2023	2.0 ECs
Qualitatieve research (R79: advanced course)	December 2023	5.0 ECs

2. Supervision internships

	November 2020
Nadine Rijkers – *masterstage geneeskunde*	December 2020
Dasha Hageman- *masterstage geneeskunde*	February 2021
Pleun Terpstra- *masterstage geneeskunde*	June 2021
Margaux Pons- *bachelorstage klinische psychologie*	August 2021
Noa Roumimper- *bachelorstage psychobiologie*	September 2021
Mei Yi de Jong – *masterstage klinische psychologie*	September 2021
Sabine Westinga – *masterstage geneeskunde*	September 2021
Bianca Weel – *masterstage klinische psychologie*	October 2021
Lisa Staghouwer – *masterstage geneeskunde*	January 2022
Yunus Erkan – *masterstage klinische psychologie*	February 2022
Yente Dubbeldam – *masterstage gezondheidswetenschappen*	March 2022
Hanna Salverda – *masterstage gezondheidswetenschappen*	March 2022
Ruveyda Sahin – *masterstage geneeskunde*	August 2022
Marion de Ruijter – *masterstage geneeskunde*	September 2022
Githa Panman – *masterstage klinische psychologie*	September 2023
Shahenda Ahmad – *masterstage geneeskunde*	

3. Teaching

	Fall 2023
Teacher course Qualitative Research (R79: advanced)	

4. Academic activities

Conference with talk: Jubileumdag NVvP	November 2021	
Conference with talk: NVvP Voorjaarscongres 2022	April 2022	
Conference with talk: NVvP Voorjaarscongres 2023	April 2023	1.0 ECs
Conference with talk: EMAS conference	May 2023	2.0 ECs
Participation in department research meetings	April 2021-april 2024	1.0 ECs
Talks in various expert meetings & seminars	March 2021-april 2024	2.14 ECs

5. Grants

Co-recipient ZonMw grant 'Psychiatric vulnerability and unintended pregnancies' (200.000 euro)	2021
Recipient Nu Niet Zwanger grant, GGD GHOR Nederland (15.000 euro)	2022
Co-recipient ZonMw grant 'Symposium Onbedoelde Zwangerschap' (10.000 euro)	2023
Co-recipient ZonMw grant 'Het gesprek over kinderwens met mensen in kwetsbare omstandigheden versterkt: samenwerking tussen het psychiatrische-, het LVB- en het ervaringsdeskundige domein' (10.000 euro)	2023

6. Other activities

Member of the Junior Council Mental Health Program, Amsterdam Public Health research program	2022- 2024
Author PsychAbstract	2023- current

Dankwoord

Het eerste en meest belangrijke woord van dank gaat uit naar alle deelnemers aan de studies die dit boek hebben gevormd. Het boek is door en voor jullie gemaakt. Bedankt voor de bereidwilligheid jullie verhaal zo open en eerlijk te delen. Zonder jullie was het niet mogelijk geweest dit proefschrift op deze manier te schrijven. Geen enkel perspectief had gemist kunnen worden.

Prof. dr. Broekman, lieve Birit, onze samenwerking heeft al mijn verwachtingen overtroffen. We leerden elkaar kennen als collega's op de POP-poli en ik had al snel door dat jij het was bij wie ik wilde promoveren. Je inspireerde me niet alleen als psychiater, maar ook als onderzoeker. Samen kwamen we erop dit onderwerp te verder te onderzoeken, schreven we een subsidieaanvraag, verzamelden we een team van experts om ons heen en hebben we uiteindelijk vier jaar dagelijks samengewerkt. Vanaf het moment dat ik je leerde kennen heeft jouw enthousiasme, ambitie, hartelijkheid en humor aanstekelijk op mij gewerkt. Ik heb geen seconde getwijfeld of ik het tot een eind zou brengen, want onder jouw supervisie kon ik gewoonweg niet anders dan vrolijk doorgaan. Carlo heeft jou meer dan eens mijn 'cheerleader' genoemd wanneer hij ons hoorde overleggen via Zoom (het was tenslotte COVID-tijd) en ik kan geen betere bijnaam voor jou bedenken. Jij superviseert met een gezonde dosis energie en motivatie en na ons wekelijks overleg kon ik er altijd weer tegenaan. Dankjewel lieve Birit voor dit mooie traject, wij zijn nog lang niet uitgedacht!

Prof. dr. van den Heuvel, beste Odile, wat ontzettend fijn dat jij bereid was aan te sluiten als mijn 'tijdelijke eerste promotor' en wat een schot in de roos was die keuze voor mij! Al viel mijn onderwerp ietwat buiten jouw gewoonlijke onderzoeksgebied, je was vanaf het begin een zeer toegewijde promotor, maakte altijd tijd voor me vrij in jouw volle agenda, stond achter in de zaal foto's te maken als ik moest presenteren en volgde mijn ontwikkelingen op de voet. Ik waardeer het enorm dat je als mentor voor mij hebt gefungeerd en kritische vragen wist te stellen op de goede momenten. Jij was de enige die mijn immer doordenderende trein van energie even tot stilstand wist te brengen voor een momentje van bezinning. Ik hoop dat we elkaar in de toekomst, als onderzoekers of psychiaters, nog vaak zullen treffen.

Mijn bijzondere dank gaat uit naar de leden van de leescommissie: prof. dr. Popma, prof. dr. Jansen, prof. dr. Bockting, dr. de Kruif, dr. van Ditzhuijzen en prof. dr. de Groot voor het lezen en beoordelen van dit proefschrift.

Onmisbaar voor het schrijven van dit proefschrift zijn alle wetenschapsstudenten die in vier jaar tijd op verschillende manieren hebben bijgedragen: van includeren van deelnemers tot afnemen van interviews en het finetunen van protocollen. Zonder jullie was het echt niet gelukt! Bedankt ook voor alle gezelligheid en uitdagende vragen tijdens de begeleiding. Dasha, Margaux, Noa, Mei Yi, Sabine, Bianca, Lisa, Yunus, Yente, Hanna, Marion en Githa: veel dank!

Een aantal van jullie heeft daarnaast ook nog bijgedragen aan dit proefschrift door mee te schrijven aan een van de papers. Nadine, Pleun, Ruveyda, Shahenda en Jorina: ontzettend bedankt voor jullie enorme inzet en de fijne samenwerking. Ik kijk uit naar jullie toekomstige wetenschappelijke successen!

Lieve Margot, mijn paranimf en rots in de branding! Als enige peer-collega heb jij een hele bijzondere positie verdiend in dit dankwoord. Je was er altijd, klaar voor een gezellige kop koffie, voor de broodnodige peptalks, afleiding middels online winkel sessies en natuurlijk de heerlijke uitjes. Samen op het dakterras in Florence aan het zwembad, promoveren vonden we zo slecht nog niet die dag! Maar meer dan dat kon ik aan jou een voorbeeld nemen in deze periode, leerde je mij de kneepjes van het promoveren, vormden we samen een dreamteam met Birit en Odile (ook op de dansvloer), stond ik aan jouw zijde toen je jouw meesterwerk verdedigde, en ben ik super dankbaar en trots dat jij nu naast mij staat. Zonder jou geen proefschrift, zonder jou geen verdediging! Bedankt lieve Margot!

Beste collega's van de POP-poli in OLVG, het idee voor dit proefschrift is ontstaan in de spreekkamer van de poli in West, al brainstormend met jullie. Bedankt voor alle fijne momenten van klinische samenwerking en jullie support gedurende mijn promotietraject. Tof dat we met dit boekje weer een klein steentje hebben kunnen bijdragen aan de wetenschappelijke basis van de POP-zorg. Bedankt ook voor alle hulp met het includeren van deelnemers!
Een paar collega's wil ik in het bijzonder noemen: Mariëlle, geweldig hoe jij vanaf het begin van dit traject elke versie van elk paper met evenveel toewijding hebt gelezen en met mij hebt meegedacht. Ik kon altijd rekenen op jouw expertise als perinatoloog en onderzoeker!
Fedde, bedankt dat je wilde aansluiten vanuit jouw rol als kwalitatief onderzoeker, het proefschrift is geleidelijk van koers veranderd en daar sloot jouw kennis heel goed bij aan.
Beste Maartje en Anne, wat fijn dat we jullie als kinderartsen altijd konden betrekken bij onze plannen, dat jullie aan verschillende papers hebben meegeschreven en dat we klinisch werk en onderzoek zo laagdrempelig konden samenbrengen in OLVG.

Lieve Nini, wat hebben we veel overlegd over de opzet van dit proefschrift en een fijne samenwerking gehad met elkaar en met alle andere disciplines. Tof dat je me hebt uitgedaagd met R te gaan werken, ik ben daar achteraf heel blij mee en heb veel van je geleerd. Dit proefschrift was er niet gekomen zonder jouw methodologische inzichten vanaf dag één!

Elena, bedankt voor jouw expertise rondom kwalitatief onderzoek en de fijne samenwerking aan ons gezamenlijke paper. Je bent niet alleen een hele goede dokter en collega op de zaal, maar ook nog eens een zorgvuldige onderzoeker met een hart voor mensen in buitengewoon ingewikkelde situaties. Ik hoop in de toekomst nog vaak met je te mogen samenwerken!

Lieve OLVG-collega's van en bij het Leerhuis: Merel, Efraïm, Ise, Chantal, Amy en al die andere fijne mensen die mijn promotietraject lichter en vrolijker hebben gemaakt door mij te adopteren op jullie werkkamer en de dag te beginnen met koffie. Ik mis jullie nu al!

Veel dank ook aan zoveel andere collega's die vanuit OLVG ons onderzoek op verschillende manieren hebben gesteund: prof. dr. van den Bosch als voorzitter van de RvB, Olga Muijs voor al het razendsnelle schakelen op de meest onmogelijke tijdstippen en de leden van de ACWO voor jullie wetenschappelijke adviezen waardoor de studies verantwoord en secuur uitgevoerd konden worden.
Veel dank Bert Berenschot voor jouw expertise als informatiespecialist binnen het leerhuis en jouw bijdrage aan het eerste paper.

Beste Marja Rexwinkel, veel dank voor het inbrengen van jouw kennis over infant mental health in verschillende onderdelen van dit proefschrift.

Dank ook aan alle jonge onderzoekers die ik heb mogen ontmoeten binnen het ZonMw project 'Onbedoelde zwangerschap en kwetsbaar jong ouderschap'. Clair, Wieke, Merel, Femke en Justine: wat mooi om te weten dat er vanuit zoveel plekken in ons land samen wordt gewerkt aan een gemeenschappelijk doel en dat wij tijdens ons symposium in Rotterdam een gezamenlijke boodschap mochten presenteren over onbedoelde zwangerschappen in Nederland!

Beste Anja, bedankt dat je mij hebt ondergedompeld in de wereld van het kwalitatieve onderzoek in jouw cursussen. Je bent een voorbeeld voor mij in dit vak en ik hoop nog veel van je te mogen leren!

Dr. van den Eijnden, lieve Monique, waar zal ik beginnen? We hadden vier jaar geleden niet durven dromen dat jouw meelezen van onze subsidieaanvraag als ervaringsdeskundige onderzoeker, uiteindelijk zou leiden tot een langdurige en vruchtbare samenwerking waarin we zulke mooie dingen hebben mogen doen. Zo nu en dan kon het werk ons overweldigen, en dan zei je het zo raak: 'Weet je Noralie, het is veel, maar het is zo machtig mooi!'. Je was mijn anker in het uitvoeren van dit onderzoek, hebt je licht laten schijnen over elke stap, elke beslissing en elke letter van dit boekje (behalve deze alinea natuurlijk). Je bent een zorgvuldige, kritische en ambitieuze onderzoeker, maar meer nog een hele lieve, optimistische en inspirerende vrouw. Ik ben heel blij dat ik je heb mogen leren kennen en hoop dat we samen nog lang de barricades opgaan om dit thema en onze ideeën daarover de wereld in te brengen!

Beste Cisca en alle andere zeer gewaardeerde leden van MIND Platform die aan dit proefschrift hebben meegeholpen door het delen van jullie ideeën, teksten, illustraties, banners op de NVvP congressen en bovenal door jullie aanwezigheid online en in persoon: bedankt!

Beste Connie, Daniëlle en andere collega's van Nu Niet Zwanger. Onze samenwerking heeft de implementatie van onze wetenschappelijke bevindingen zoveel verder gebracht. Dank voor jullie vertrouwen en enthousiasme in ons werk, en voor alle kansen om dit te verspreiden.

Beste Etelka en alle andere gynaecologen in OLVG, bedankt dat jullie mij de kans boden om parttime te werken bij de afdeling Verloskunde & Gynaecologie, waardoor ik alle ruimte kreeg om dit promotietraject op te zetten. Etelka, als opleider geloofde jij in mijn plan en dat heb ik altijd zeer gewaardeerd.

Beste Dorenda, ik wil je bedanken voor jouw fijne mentoraat tijdens mijn assistentschap, maar nog meer bedankt voor jouw stralende en inspirerende aanwezigheid bij alle overleggen rondom de MOPP onderzoeken, de uitnodiging om samen naar het EMAS te gaan en de vele gezellige momenten daaromheen binnen en buiten Florence.

Beste collega's van de afdeling Psychiatrie en Medische Psychologie van OLVG, wat fijn dat ik bij jullie kon komen werken tijdens de laatste maanden van het afronden van dit proefschrift, waardoor ik kliniek en onderzoek kon combineren, een droombaan! Veel dank Jeroen Lijmer voor het rekenen (en vooral de uitleg over het rekenen) en het meeschrijven op een van de eerste papers.

Lieve Rinde, bedankt voor jouw wijze woorden, onze mooie gesprekken over de psychoanalyse en onze gezamenlijke wetenschappelijke interesse. Wat fijn dat we naast collega's nu ook vriendinnen zijn.

Aan alle lieve UMCU-collega's die mij hebben gesteund tijdens de laatste loodjes: bedankt!

En dan zijn er nog heel veel lieve mensen in mijn leven die op een of andere manier een bijdrage hebben geleverd aan dit proefschrift.

Youri, mijn oudste vriend. 14.400 kilometer. Dat is het aantal kilometers dat wij samen van Schimmert naar Meerssen fietsten. Daar werd de eerste belangrijke basis gelegd voor het schrijven van dit proefschrift, want mijn associatie met naar school gaan, studeren en luisteren naar anderen werd een hele positieve! Fijn dat we zo nu en dan koffie blijven drinken in 't sjoane Limburgse!

Lieve 'I am watching you' vriendinnen, Charlotte, Bente, Roos, Ivi, Anne-Louise, Anika: vele jaren samen op pad in binnen- en buitenland. Fijn dat we elkaar zo goed kennen en ook 20 jaar later alle highs en lows in het leven samen mogen meemaken. Jolien, fysiek altijd op afstand geweest maar in mijn hart dichtbij. Je bent een geweldige vrouw en ik vind het heerlijk te weten dat we met elkaar meeleven en inmiddels zelfs als collega's in dit vak nooit uitgepraat zullen raken.

Lieve Heleen, studiegenoten aan de VU, huisgenoten aan de eerste Helmers en nu collega's in UMCU: wat hebben we samen veel meegemaakt! Het waren soms roerige tijden, maar wij zijn er altijd voor elkaar geweest. Springend door de kamer in tentamentijd voor een pauze, SATC kijkend en dansend in de stad: wat hebben we het leuk gehad. Inmiddels forenzen we naar UMCU en is een korte knuffel bij de koffie al een zonnig momentje op de drukke dagen. Bedankt dat je er altijd bent, ten tijde van dit proefschrift maar ook ver daarvoor en ik hoop vooral ook lang hierna!

Lieve Rosan, wat fijn dat we elkaar weer tegen het lijf zijn gelopen en onze vriendschap konden vervolgen. Ik hoop dat er nog veel etentjes, yoga sessies en fietstochten zullen komen!

Lieve Anne-Marieke, vanaf dag één van onze opleiding zijn wij bevriend, delen we onze dromen en ideeën en dat het liefst onder het genot van een lekker baksel (natuurlijk gemaakt door jou). Ik waardeer je oprechtheid, hartelijkheid en

eigenzinnigheid en vind het tof dat we ook deze reis, het promoveren, gezamenlijk hebben doorlopen.
Lieve Charlotte, samen werden we in drie jaar coschappen tot dokter gevormd. We waren elkaars steun en toeverlaat, maar hebben vooral ook heel veel plezier gehad. Alle fases van onze carrière lopen we inmiddels samen door, van onze eerste pittige maanden als arts-assistent, tot deze fase als onderzoekers. Ik waardeer jouw adviezen (in leven en kleding) en kijk uit naar alle klaag koffiesessies, shopmiddagen en vakanties in Rome of elders. Bedankt voor al jouw steun de afgelopen jaren!

Ragazze: Leonie, Merel, Coco, Beatrijs, Hanna en Emma. Wat is het één groot avontuur geweest sinds we elkaar op de kennismakingsborrel op Nereus hebben ontmoet. Ik had niet kunnen dromen dat ik zulke geweldige vriendinnen eraan zou overhouden. Lief en leed hebben we gedeeld en jullie sprankelende aanwezigheid in deze turbulente promotietijd was onmisbaar. Aan onze eindeloze zorgeloosheid kwam drie jaar geleden abrupt een einde en er volgde een onzekere en verdrietige periode. Ik ben trots en dankbaar dat we elkaar hebben kunnen vasthouden hierin. Trice, ik ben bijzonder dankbaar dat jij er vandaag bij bent. Jullie zijn voor altijd mijn gekozen familie.

Dear Merry Poppins, over the past three years, you ladies were the light to my weeks. We have had and still have so much fun singing our hearts out every Saturday morning. Singing with you has really supported me in many ways during this PhD trajectory, I cannot thank you enough for the opportunity to let it all out, soak up new energy and be creative. Especially to all my fellow altos: you ladies are rockstars!

Lieve tante Miriam en oom Rudi, bedankt voor jullie meeleven, interesse en steunende appjes de afgelopen jaren.

Oom Ivo, een peetoom als geen ander. Je had een ander pad voor mij in gedachten, sterrenkundige had jou beter geleken. Toch koos ik voor dit promotietraject en ondanks jouw cynisme over die keuze, weet ik dat je trots bent en met mij mee hebt geleefd. Ik waardeer jouw kennis over het leven en hoop dat we hierover in de toekomst nog vaak in gesprek kunnen.

Mijn zussen, Maartje en Femke. Mijn lieve, dappere, mooie en wijze zussen. Waar zou ik zonder jullie zijn? Maart, dat jij mijn paranimf bent is vanzelfsprekend. Je bent de verstandigste persoon die ik ken en zou altijd het juiste zeggen, dat komt goed uit tijdens een verdediging. Maar vooral heb ik je gevraagd omdat je mijn oudste zus bent en met jou naast mij ik er alle vertrouwen in heb dat de dingen goedkomen.

Fem, je bent de liefste persoon op aarde. Bij jou kan ik volledig mezelf zijn, je kent me beter dan wie dan ook en jij weet elke situatie beter te maken met jouw humor en gezelligheid.
Bedankt ook dat jullie mij tot viermaal toe tante hebben gemaakt, de leukste rol die ik mag vertolken. Eva, Gustav, Hannah en Camille brengen zoveel geluk, liefde en vrolijkheid in mijn leven! Bedankt ook dat jullie zulke leuke mannen in ons gezin hebben gebracht. Lieve Ben, inmiddels niet meer weg te denken uit ons gezin. Zo fijn dat je met humor het leven weet in te kleuren. Ik ben altijd blij om bij jou in de buurt te zijn en je maakt me voortdurend aan het lachen.
Dear Paul, thank you for always listening to my stories and making comfort food when I arrive at your place. Thanks for taking me into your house when I really needed it. Must not have been easy living with two Schonewille ladies but you did it with grace. And thanks for the spelling checks on several of my papers!

Lieve papa en mama, bedankt voor de liefde, veiligheid, positiviteit, sterke moraal en het onvoorwaardelijke vertrouwen. Ik realiseer me, mede door het schrijven van dit proefschrift, dat dat geen vanzelfsprekendheid is. De spreuk '*Dich kins álles!*' heb ik zo vaak gehoord. En volgens mij geloven jullie het ook echt. Al denk ik daar soms anders over, dit horen was alles dat ik nodig had om dit proefschrift af te kunnen ronden. Bedankt!

Lieve Carlo, lieve Gar, wat is het leven nog zoveel mooier sinds ik jou ken. We gingen samenwonen toen mijn promotie startte. Jij werd van de ene op de andere dag niet alleen mijn huisgenoot maar ook mijn voltijd, enige collega. Wat siert het je dat je stug hebt volgehouden. Dan zeg je dat alles goed komt, dat er ook een leven is naast werk, dat het wel genoeg was voor vandaag… Bedankt lieve, bedankt dat je er altijd bent, dat je niet uit het veld bent te slaan. Jij, Polly en Kareltje hebben mijn promotie aan de Lodewijk Tripstraat op 3 hoog in een studeerkamertje tot een hele waardevolle, liefdevolle en warme tijd gemaakt. Jij brengt mij rust als de twijfelzucht toeslaat, je tovert een ovenpasta uit de oven als ik een slechte dag heb, of brengt een cappuccino op bed als ik de motivatie nog even niet kan vinden. Ik hou van ons leven samen en kijk uit naar elke dag die we zo mogen doorbrengen. Ooit op een boerderij in le Marche, maar voorlopig in Weesp. Mille grazie amore mio.

En dan zijn er enkele mensen van wie ik afscheid heb genomen, maar wiens steun ik wel voel en naar wie ik zo dankbaar ben.

Lieve oma Paula, lieve peettante, je hebt een onvergetelijk lieve en warme indruk op mij gemaakt. Bedankt dat ik dat met me mee mag dragen in de zorg voor mijn patiënten en de mensen om mij heen.
Lieve opa Henk, het harde werken heb ik niet van een vreemde. Bedankt voor jouw humor, sterke moraal en rechtvaardigheidsgevoel.
Lieve Omi, wat had ik je graag trots gemaakt vandaag. Je was erbij de dag dat ik arts werd en als het had gekund had je op de eerste rij gezeten tijdens mij verdediging. 'Sjoan, Noorke', ik hoor het je zeggen.

Curriculum vitae

Noralie Schonewille was born in Geleen, the Netherlands on the 9th of December 1993. After graduating from Stella Maris College in Meerssen, she started her studies as a medical student at the Vrije Universiteit in Amsterdam. During her clinical internships, she had gained a particular interest in obstetrics and gynecology. She dedicated her whole last year to clinical internships in obstetrics and gynecology in OLVG Amsterdam and the Haydom Lutheran Hospital in Tanzania. She finished her medical degree with a scientific internship at the VU medical center where she focused on the cardiovascular risk after hypertensive disorders of pregnancy in women with and without inheritable thrombophilia, a project with led to two publications under supervision of dr. M.A. de Boer.

She started her work as a medical resident (not in training) at the Obstetrics and Gynecology department in Ede and later in OLVG Amsterdam, where she gained interest in perinatal psychiatry. She was offered a PhD position at the Psychiatry and Medical Psychology department at OLVG Amsterdam and Vrije Universiteit Amsterdam, where she studied the relationship between unintended pregnancies and psychiatric vulnerability with a mixed methods approach under supervision of prof. dr. B.F.P. Broekman and prof. dr. O.A. van den Heuvel. She was awarded a study grant in 2021 and worked on her PhD for two years, during which she continued her work on the perinatal psychiatry outpatient clinic at OLVG (POP-poli). In July 2023, she started working as a resident (not in training) at the Psychiatry and Medical Psychology department at OLVG.

In April 2024, Noralie was admitted to the psychiatry residency program at UMC Utrecht, where she currently works as a resident in training.

“I would rather be the child of a mother who has all the inner conflicts of the human being than be mothered by someone for whom all is easy and smooth, who knows all the answers, and is a stranger to doubt.”

D. W. Winnicott