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## Chapter 5

# Collaboration of midwives in primary care midwifery practices with other maternity care providers

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*Under review*

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## Abstract

**Background.** Inter-professional collaboration is considered essential in effective maternity care. National projects are being undertaken to enhance inter-professional relationships and improve communication between all maternity care providers in order to improve the quality of maternity care in the Netherlands. However, little is known about primary care midwives' satisfaction with collaboration with other maternity care providers, such as general practitioners, maternity care assistance organisations (MCAO), maternity care assistants (MCA), obstetricians, clinical midwives and paediatricians. There is a need to understand the current state of collaboration among maternity care providers before major changes are made.

**Objective.** To assess how satisfied primary care midwives are with collaboration with other maternity care providers and to assess the relationship between their 'satisfaction with collaboration' and personal and work-related characteristics of the midwives, their attitudes towards their work and collaboration characteristics.

**Methods.** Our descriptive cross-sectional study is part of the DELIVER study. Of the 108 primary care midwives from the twenty DELIVER midwifery practices 99 midwives completed a written questionnaire in May 2010. Friedman ANOVA assessed differences in satisfaction with collaboration with six groups of maternity care providers. Bivariate analyses were carried out to assess the relationship between satisfaction with collaboration and personal and work-related characteristics of the midwives, their attitudes towards their work and collaboration characteristics.

**Results.** Satisfaction experienced by primary care midwives when collaborating with the different maternity care providers varies within and between primary and secondary/tertiary care. Interactions with non-physicians (clinical midwives and MCA(O)) are ranked consistently higher on satisfaction compared with interactions with physicians (GPs, obstetricians and paediatricians). Midwives with more work experience were more satisfied with their collaboration with GPs. Midwives from the southern region of the Netherlands were more satisfied with collaboration with GPs and obstetricians. Compared to the urban areas, in the rural or mixed areas the midwives were more satisfied regarding their collaboration with MCA(O)s and clinical midwives. Midwives from non-Dutch origin were less satisfied with the collaboration with paediatricians. No relations were found between the overall mean satisfaction of collaboration and work-related and personal characteristics and attitude towards work.

**Conclusions.** Inter-professionals relations in maternity care in the Netherlands can be enhanced, especially in the primary care midwives' interactions with physicians and with maternity care providers in the northern and central part of the Netherlands, and in urban areas. Future exploratory or deductive research may provide additional insight in the collaborative practice in everyday work setting.

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**Box 1 Collaboration in maternity care in the Netherlands.**

In the Netherlands, autonomous working primary care midwives provide care to women with a 'normal' physiological or low-risk pregnancy and birth, and obstetricians and clinical midwives, working under the responsibility of the obstetrician, provide care to women with high risk or complicated pregnancy and birth.

The independent primary care midwife plays a key role as provider of standard maternity care in the Netherlands and provides one-to-one care to women during pregnancy, birth and the postpartum period in solo or group practices of midwives. In 2013, 85.4% of all pregnant women in the Netherlands started antenatal care with a primary care midwife, 50.6% started labour with a primary care midwife and 28.6% of all births (n=167.159) were supervised by a primary care midwife at home or in a hospital or birth centre (The Netherlands Perinatal Registry, 2014).

Postpartum care is usually provided by primary care midwives and maternity care assistants (MCAs) (in Dutch: kraamverzorgenden) unless the woman and/or baby is hospitalized (Wiegers, 2006; de Vries, et al., 2009). Although there is a lack of evidence about the care of MCAs (Zorginstituut Nederland, 2015), MCAs form an essential part of the Dutch maternity care system (de Vries, et al., 2009; Kerssens, 1991; Wiegers & Janssen, 2006, Wiegers, 2006). Primary care midwives depend on the assistance they receive from maternity care assistants. During a home birth or during midwife-led hospital (poli-clinical) birth, the maternity care assistant assists the midwife and helps and advises the new mother with the baby during the postnatal period at home. The existence of this profession, an occupation unique to the Netherlands (de Vries, 2005), allows midwives to concentrate on midwifery tasks, and reduces the costs of care by freeing up midwives and physicians (van Teijlingen, 1990). It also enables pregnant women to consider giving birth at home or in a poli-clinical setting. Almost all of the women (95%) who give birth at home or in a poli-clinical setting use the services of MCAs (Coffie, et al., 2003). However, non-Dutch women (such as women from Turkish and Moroccan backgrounds) were not so familiar with the Dutch system of maternity care and make less use of this service (Houben-van Herten, 2013).

Primary care midwives in the Netherlands engage in different types of work-related collaborations (KNOV, 2014): collaboration with clients and their families, with co-workers in midwifery practices and other maternity care providers in primary care, such as general practitioners (GPs), maternity care assistance organisations (MCAOs) (in Dutch: kraamzorgaanbieders) and MCAs, and in secondary care, such as obstetricians, clinical midwives and paediatricians in departments of obstetrics and neonatology at the local hospital. Cooperation between primary and secondary care is organised in Maternity Care Consultation and Collaboration Groups (in Dutch: VSVs=Verloskundige samenwerkingsverbanden) around each hospital. There are several multidisciplinary guidelines, protocols, care pathways and an Obstetric Indication List (in Dutch: VIL: verloskundige indicatielijst) (College voor Zorgverzekeringen, 2003) for maternity care, which include recommendations about care and care provider. Furthermore, primary care midwives collaborate with other health system stakeholders, such as health insurances companies and (public health) authorities on local, regional and national level. As case manager of the client, midwives might coordinate and organize the collaboration between different disciplines with the aim to provide continuity of care to the client. Dutch primary care midwives spend an increasing amount of time on non-client-related activities, such as meetings and practice organisation (Wiegers et al., 2014).

# Background

Maternity care in the Netherlands is divided into primary and secondary/tertiary care, similar to the overall organisation of the Dutch healthcare system (Rowland, et al., 2012). In box 1 a short overview is given of the collaboration in maternity care in the Netherlands.

Close inter-professional collaboration is considered essential in effective maternity care (de Geus & Cadée, 2015; de Jonge, et al., 2015; Downe, et al., 2010; Frank & Danoff, 2007; ten Hoop-Bender, et al., 2016; WHO, 1978). Nevertheless, a variety of Dutch studies showed that collaboration and communication between the maternity care professionals within and between these echelons at times falls short of the high standards women should expect. For example, Schölmerich, et al. (2014) found fragmented organizational structures, different perspectives on antenatal health and inadequate inter-professional communication in the collaboration between primary care midwives, obstetricians and clinical midwives. Van der Lee, et al. (2016) found that primary care midwives in their collaboration with obstetricians experienced a power imbalance, a lack of trust and mutual acquaintanceship. Warmelink, et al. (2015) found that primary care midwives felt that co-operation and communication with other health care disciplines in general could be improved.

Problems with communication and collaboration among maternity care providers can threaten the quality and safety of care given to mothers and babies (Joint Commission on Accreditation of Healthcare Organizations, 2004; Simpson & Knox, 2003). National projects in the Netherlands are being undertaken to enhance inter-professional relationships and improve communication between all maternity care providers and the client (CPZ, 2014) with the goal of providing seamless access for patients whose health care needs may change, requiring transfer from primary midwifery to obstetrician led care and vice versa over the course of pregnancy, childbirth and the postpartum period. The ultimate goal is to improve the quality of maternity care. To achieve this, a so-called 'integrated care' approach (CPZ, 2014) was suggested, including a proposal (Schippers, 2014) for a fusion of the maternity care professional societies or organisations (van der Lee, 2014). Health insurance companies supported this approach by strongly advising obstetricians and midwives to collaborate in a professional as well as a financial partnership (van der Lee, 2014). These changes could alter how maternity care has historically been organised, going from a strict echelon system to a more integrated maternity care system (de Vries, et al., 2013; de Vries, 2014; Roman & van den Wijngaart, 2011). However, a thorough assessment of the collaboration is needed before making fundamental changes to the maternity care system. Understanding these working relations is critical given the organizational structure of maternity care in the Netherlands, the multidisciplinary focus, the

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involvement of diverse stakeholders and, ultimately, the quality and safety of care given to mothers and babies.

International research shows important associations of satisfaction with collaboration with: a) work-related and personal characteristics, such as gender, race, advanced education and profession (Bruner, et al., 2011) and b) attitudes towards work, such as job satisfaction (Antoine, et al., 2014; Baggs & Ryan, 1990; Chang, et al., 2009; Zhang, et al., 2016) and turnover intentions (Antoine, et al., 2014) or retention (Baggs & Ryan, 1990; Zhang, et al., 2016). Yet, prior quantitative studies on associations with 'satisfaction with collaboration' have often focused on the physician-nurse collaboration in hospitals. Little is known about primary care midwives' satisfaction with collaboration with other maternity care providers in the different echelons in the Netherlands and associations with characteristics of the midwives.

### *Aim of the study*

In our study, we wanted to assess how satisfied primary care midwives are with collaboration with other maternity care providers. Furthermore, we wanted to assess the association between this 'satisfaction with collaboration' with factors such as a) their work-related and personal characteristics (age, non-Dutch origin, education and job type) b) attitudes towards work (job satisfaction and intention to leave) and c) collaboration characteristics (reciprocity in initiating the interaction and accessibility). The aim of this study is to provide insight into the professional working relations of primary care midwives in the Netherlands. The research questions that were investigated in this study:

1. Are there differences in how primary care midwives experience satisfaction when collaborating with other maternity care providers?
2. What is the relationship between the primary care midwives' 'satisfaction with collaboration' and midwives' work-related and personal characteristics, attitudes towards their work and collaboration characteristics?

## **Methods**

### *Recruitment and enrolment of study participants*

This study is part of a larger project, the 'DELIVER-Study', of which background and design are described extensively in another publication (Manniën et al., 2012). Twenty of the 519 primary care midwifery practices in the Netherlands participated in the DELIVER study. Practices were sampled using three stratification criteria: practice type (dual or group practice), level of urbanization (urban or rural area) and region (north, centre, south). All 108 midwives from the twenty participating practices were asked to complete a written questionnaire in

May 2010. Midwives who did not complete and return the questionnaire received a reminder. A comparison of background data of the participating midwives in the DELIVER practices with data from the midwifery occupational registration was presented in Wiegers, et al. (2014).

### Measures

Primary care midwives were asked to evaluate the interactions they had with three other maternity care providers in the first echelon (General Practitioners (GPs), Maternity Care Assistance Organisations (MCAOs) (in Dutch: kraamzorgaanbieders), Maternity Care Assistants (MCAs) (in Dutch: kraamverzorgenden) and with three other maternity care providers in the secondary/tertiary echelon (obstetricians, clinical midwives, paediatricians). Collaboration was assessed in terms of *satisfaction* which respondents were asked to categorise as generally good, reasonable, moderate, poor or very variable.

The questionnaire included *work related* characteristics, such as job-type (self-employed practitioners, employees or locum), work experience (in years), practice type (group or dual practice), level of urbanization (urban or rural area or both), region (north, centre, south), country of midwifery education (in the Netherlands or abroad) and advanced postgraduate education (i.e. Masters degree (MSc)– yes/no). The questionnaire further included *personal characteristics* such as age (in years), ethnicity (“Were you and/or one of your parents born outside the Netherlands” (Dutch/non-Dutch) and gender (male/female). Regarding *attitude towards work*, perceived work pressure was measured based on the Perceived Work Pressure Scale (Ruijters & Stevens, 1992) and overall job satisfaction using the Job Satisfaction scale (Boumans, et al., 1989). Both scales consist of general statements about the work situation, with answers on a 5-point Likert scale (strongly agree to strongly disagree). Another question “To what extent are you satisfied with your work” is answered on a 4-point Likert scale. To measure the intention to leave (ITL), we asked the question “Have you been thinking about seeking other employment in the past year” (yes/no). Regarding *collaboration characteristics* the primary care midwives were asked ‘who is the initiator for interaction between you and the GP, MCAO and obstetrician: “I take initiative for consultations?” (never / rarely / as often / more often/ always / very variable). Furthermore, the experiences or problems in accessibility of GPs and MCAOs were assessed (name unknown / no time to retrieve phone number / I call the care provider, but not present / not called back / call back, but I’m absent) and if this was problematic (yes/no).

### Data analysis

A new variable (‘satisfaction with collaboration’) was made using a 4-point rating scale; the outcome ‘generally good’ was recoded as ‘4’; reasonable = 3; ‘moderate’= 2, ‘poor’= 1 and the outcome ‘very variable’ of the evaluation of the interactions was recoded as ‘moderate’=2. A mean score for interaction with

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each of the other maternity care providers was calculated and an overall mean for all six maternity care providers. The satisfaction with the collaboration was then recoded into binary categories for interaction with each of the maternity care providers: 'well satisfied with collaboration' (generally good) (WSC-group) versus 'less satisfied with collaboration' (reasonable, moderate, poor, very variable and missing data) (LSC-group). A Friedman test for correlated samples (a non-parametric repeated measures ANOVA) was carried out to assess differences in mean ranks between 'satisfaction with collaboration' with the six maternity care providers separately. Kendall's coefficient of concordance for ranks (W) was used to measure the agreement among the midwives. The strength of the agreement between the variables was considered as weak  $W = .10$  to  $.29$ ; moderate for  $W = .30$  to  $.49$  and strong for  $W = .50$  to  $1.0$ . Post-hoc analyses (Wilcoxon signed-rank tests) were performed to determine the specific differences in ranking between each related group. A Bonferroni correction for the number of comparisons (k) was applied, so all effects are reported at a  $0.0083$  ( $\alpha/k$ ) level of significance (Field, 2009).

The variable 'job-type' was recoded into binary categories (self-employed practitioners versus employees or locum). Scores on scales were reversed if needed so that higher scores represented higher perceived work pressure and higher job satisfaction. The variable 'satisfied with your work' was dichotomized in satisfied (score 1 'very satisfied' and 2 'satisfied') and less satisfied (score 3 'varying satisfied' and 4 'not satisfied'). On the question 'Who usually takes the initiative for interaction', the outcomes were coded as follows: 'I never, always the other care provider' = -2; 'I rarely = -1; 'Me as often as other care provider' = 0; 'I more often, sometimes the other care provider' = +1; 'I always, never the other care provider' = +2. The outcome 'very variable' was coded as missing. Higher dispersions from 0 indicated less reciprocity. The plus and minus sign indicated who is the initiator for interaction, the other care provider (negative scores) or the midwife (positive scores). Bivariate analyses were carried out for comparing both groups ('well' versus 'less' satisfied with collaboration) for interaction with GPs, MCA(O)s, obstetricians, clinical midwives, paediatricians all together and separate - with respect to work related and personal characteristics, and attitudes towards work. Regarding collaboration characteristics, bivariate analyses were carried out to assess reported satisfaction with GPs, obstetricians and MCAOs. For comparing means with respect to the continuous, normally distributed variables, we used Student's t-test. If equal variances could not be assumed (Levene's test) or cases per group were  $<30$  (de Vocht, 2014), non-parametric equivalents were used. Spearman's rank-order correlation coefficient ( $\rho$ ) was used to assess the relationship between two continuous variables, at least one of which is not normally distributed. Pearson's chi-squared tests (or Fisher exact tests for small sample size) were used for comparing the distribution of percentages of both groups with respect to categorical predictors. Of the scales 'perceived work

pressure' and 'overall job satisfaction' the mean scale scores for the whole group and two subgroups were calculated. A two-tailed p-value of .05 or lower was considered statistically significant, except for the Wilcoxon tests. SPSS, version 22 was used for the analyses.

### *Ethical approval and privacy issues*

This study was carried out as part of the national DELIVER study, which obtained ethical approval by the Medical Ethics Committee of our institute. Participation of the midwifery practices in this study was voluntary and consent to cooperate in this study was given. Privacy was guaranteed in accordance with Dutch legislation. Midwives' anonymity was maintained by using anonymous midwife and practice identifiers.

## Results

### *Baseline characteristics of participants*

Overall, 99 (91.7 %) of the 108 primary care midwives, who were invited to participate, completed the questionnaire. The mean age of the participants was 37.5 years (SD=10.9; range 22-61 years). Most participants were female (99.0%) and they, as well as their parents, were born in the Netherlands (87.9%). The midwives were working in private practices, either as self-employed practitioners (72.7%), or as employees or in locum positions (27.3%). A few (4.0%) worked together with one colleague in a duo-practice, 96.0% worked in group practices (practices with more than 2 midwives). 82.2% were educated in the Netherlands and 17.8 % elsewhere (Belgium, the UK). The mean working years was 12.7 years (SD=9.9; range 0-40 years). Midwifery practices in the north region only worked in urban or rural areas, and in the south only in mixed areas.

### *Satisfaction with collaboration*

Table 1 shows how primary care midwives evaluate their interactions with other maternity care providers. Most primary care midwives described their interaction as 'generally good' with non-physicians: MCAs (79.8%), clinical midwives (76.3%) and MCAOs (68.4%). Less than half of the midwives described the interaction with physicians as 'generally good': obstetricians (44.9%), paediatricians (45.5%) and GPs. (38.4%). A Friedman test was conducted to test for differences between 'satisfaction with collaboration' with the six groups of maternity care providers separately, namely with non-physicians: MCA (mean= 3.78; mean rank = 4.21), clinical midwives (mean= 3.75; mean rank = 4.15), MCAO (mean= 3.66; mean rank= 3.94) and with physicians: obstetricians (mean= 3.26; mean rank = 3.02), paediatricians (mean= 3.11; mean rank =2.90) and GPs (mean 3.10; mean rank=2.78). The test was significant:  $\chi^2$  (5, N=89) = 91.85;  $p < .0001$ . Kendall's W was .21.

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**Table 1** The evaluation of the interactions that the individual primary midwife has with other maternity care providers: general practitioners (GPs), maternity care assistance organisations (MCAOs), maternity care assistants (MCAs), obstetricians, clinical midwives and paediatricians and the mean satisfaction with this collaboration

	Generally good	Reasonable	Moderate	Poor	very variable	System Missing	Satisfaction # Mean [mean rank*] n=89
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
GPs	38 (38.4%)	42 (42.4%)	8 (8.1%)	5 (5.1%)	6 (6.1%)		3.10 [2.78]
MCAOs	65 (65.7%)	26 (26.3%)	1 (1.0%)	1 (1.0%)	2 (2.0%)	4 (4.0%)	3.66 [3.94]
MCAs	79 (79.8%)	17 (17.2%)	1 (1.0%)		2 (2.0%)		3.78 [4.21]
Obstetricians	44 (44.4%)	43 (43.4%)	9 (9.1%)	2 (2.0%)		1 (1.0%)	3.26 [3.02]
Clinical midwives	71 (71.7%)	20 (20.6%)			2 (2.2%)	6 (6.1%)	3.75 [4.15]
Paediatricians	45 (45.5%)	32 (32.3%)	11 (11.1%)	8 (8.1%)	3 (3.0%)		3.11 [2.90]

#The higher the score (range 1-4), the higher the satisfaction with collaboration

\*the higher the mean ranking [range 1-6], the higher the satisfaction with collaboration

Wilcoxon tests, with Bonferroni correction, showed significant differences between collaboration with physicians (GPs, obstetricians and paediatricians) and non-physicians (clinical midwives, MCAO, MCA) (all  $p < 0.0001$ ), except between MCAO and obstetricians ( $p = 0.001$ ). There are no differences between satisfaction with collaboration within the group of physicians, or within the group of non-physicians. Interactions with non-physicians are ranked consistently higher than the interactions with physicians.

### *Work-related and personal characteristics and their attitude towards work of the WSC-group*

Table 2 shows the *work-related and personal characteristics and their attitude towards work* of the group of midwives with good collaboration with GPs, MCAOs, and MCAs, obstetricians, clinical midwives and paediatricians. Regarding the collaboration with GPs, significant differences show up between the group of midwives who are 'well satisfied with collaboration' (WSC-group- data in table) versus the group of midwives who are 'less satisfied with collaboration' (LSC-group – data not in table). Midwives with higher *mean working years* (WSC=15.82 years; LSC=10.74 years;  $p=0.012$ ), living in the south *region* {north (WSC=26.9%), centre (WSC=35.2%), south (WSC=63.2%);  $p=0.037$ }, and with higher *mean age* (WSC=41.16 years; LSC=35.13 years;  $p=0.007$ ) are more likely to be well satisfied with GP collaboration.

Regarding the collaboration with MCA(O)s and clinical midwives there was a difference on *level of urbanisation*. Compared to the urban areas, in the rural or mixed areas the midwives were more satisfied:

- For MCAOs: urban (WSC=43.3%), rural (WSC=80.0%), both (WSC=73.5%);  $p=0.008$ ;
- For MCAs: urban (WSC=60.0%), rural (WSC=95.0%), both (WSC=85.7%);  $p=0.004$ ;
- For clinical midwives: urban (WSC=53.3%), rural (WSC=70.0%), both (WSC=83.7%);  $p=0.014$ .

Midwives from the southern *region* were more satisfied with collaboration with obstetricians {north (WSC=34.6%), centre (WSC=37.0%), south (WSC=78.9%);  $p=0.003$ }. Midwives from *non- Dutch origin* were less satisfied with collaboration with paediatricians (WSC=8.3%;  $p=0.006$ ) than midwives who were born in the Netherlands (as well as their parents). No relations were found between the overall mean satisfaction of collaboration and work-related and personal characteristics and attitude towards work. A positive correlation was found between the variables age and working years ( $r=0.924$ ,  $p<0.001$ ), between the level of urbanisation and region ( $\chi^2 (4, N=99) = 46.865$ ;  $p<0.001$ ), and between the level of urbanisation and non-Dutch origin ( $\chi^2 (2, N=99) = 6.468$ ;  $p=0.039$ ).

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**Table 2 Sample characteristics of the whole group (n=99) and of the group of primary care midwives who are well satisfied with their collaboration (WSC) with General Practitioners (GPs), Maternity Assistants Providers (MCAOs), and maternity care assistants (MCAs), obstetricians, clinical midwives, paediatricians**

		<i>Work related</i>					<i>Personal</i>						
Total	WSC GPs	WSC MCAOs	WSC MCAs	WSC Obstetricians	WSC Clin. midwives	WSC Paedia-tricians	Total	WSC GPs	WSC MCAOs	WSC MCAs	WSC Obstetricians	WSC Clinical midwives	WSC Paedia-tricians
n (% of total n); mean ± SD)	n (%); mean (± SD)	n (%); mean (± SD)	n (%); mean (± SD)	n (%); mean (± SD)	n (%); mean (± SD)	n (%); mean (± SD)	n (%); mean ± SD)	n (%); mean ± SD)	n (%); mean ± SD)	n (%); mean ± SD)	n (%); mean ± SD)	n (%); mean ± SD)	n (%); mean ± SD)
Self-employed	31 (43.1%)	49 (68.1%)	60 (83.3%)	33 (45.8%)	53 (73.6%)	33 (45.8%)	72 (72.7%)	31 (43.1%)	49 (68.1%)	60 (83.3%)	33 (45.8%)	53 (73.6%)	33 (45.8%)
Work experience	<b>15.82</b>	13.12	13.35	14.14	13.00	13.11	12.69	<b>15.82</b>	13.12	13.35	14.14	13.00	13.11
Years (SD)	<b>(10.342)</b>	(9.685)	(9.412)	(10.193)	(10.034)	(10.134)	(9.913)	<b>(10.342)</b>	(9.685)	(9.412)	(10.193)	(10.034)	(10.134)
Group-practicea	38 (40%)	63 (66.3%)	77 (81.1%)	42 (44.2%)	68 (71.6%)	45 (47.4%)	95 (96%)	38 (40%)	63 (66.3%)	77 (81.1%)	42 (44.2%)	68 (71.6%)	45 (47.4%)
Level of urbanisation													
Urban	11 (36.7%)	<b>13 (43.3%)</b>	<b>18 (60.0%)</b>	10 (33.3%)	<b>16 (53.3%)</b>	13 (43.3%)	30 (30.3%)	11 (36.7%)	<b>13 (43.3%)</b>	<b>18 (60.0%)</b>	10 (33.3%)	<b>16 (53.3%)</b>	13 (43.3%)
Rural	7 (35.0%)	<b>16 (80.0%)</b>	<b>19 (95.0%)</b>	11 (55.0%)	<b>14 (70.0%)</b>	11 (55.0%)	20 (20.2%)	7 (35.0%)	<b>16 (80.0%)</b>	<b>19 (95.0%)</b>	11 (55.0%)	<b>14 (70.0%)</b>	11 (55.0%)
both	20 (40.8%)	<b>36 (73.5%)</b>	<b>42 (85.7%)</b>	23 (46.9%)	<b>41 (83.7%)</b>	21 (42.9%)	49 (49.5%)	20 (40.8%)	<b>36 (73.5%)</b>	<b>42 (85.7%)</b>	23 (46.9%)	<b>41 (83.7%)</b>	21 (42.9%)
Region													
North	<b>7 (26.9%)</b>	17 (65.4%)	21 (80.8%)	9 (34.6%)	18 (69.2%)	12 (46.2%)	26 (26.3%)	<b>7 (26.9%)</b>	17 (65.4%)	21 (80.8%)	9 (34.6%)	18 (69.2%)	12 (46.2%)
Centre	<b>19 (35.2%)</b>	36 (66.7%)	43 (79.6%)	<b>20 (37.0%)</b>	38 (70.4%)	25 (46.3%)	54 (54.5%)	<b>19 (35.2%)</b>	36 (66.7%)	43 (79.6%)	<b>20 (37.0%)</b>	38 (70.4%)	25 (46.3%)
South	<b>12 (63.2%)</b>	12 (63.2%)	15 (78.9%)	<b>15 (78.9%)</b>	15 (78.9%)	8 (42.1%)	19 (19.2%)	<b>12 (63.2%)</b>	12 (63.2%)	15 (78.9%)	<b>15 (78.9%)</b>	15 (78.9%)	8 (42.1%)
Dutch education	33 (40.2%)	54 (65.9%)	65 (79.3%)	37 (43.9%)	60 (73.2%)	38 (46.3%)	82 (82.2%)	33 (40.2%)	54 (65.9%)	65 (79.3%)	37 (43.9%)	60 (73.2%)	38 (46.3%)
MSc	4 (57.1%)	3 (42.9%)	4 (57.1%)	3 (42.9%)	6 (85.7%)	2 (28.6%)	7 (7.1%)	4 (57.1%)	3 (42.9%)	4 (57.1%)	3 (42.9%)	6 (85.7%)	2 (28.6%)

Age	37.47 (10.930)	<b>41.16</b> <b>(11.173)</b>	38.32 (10.505)	38.42 (10.325)	39.05 (11.344)	37.90 (10.509)	38.51 (10.900)
Non-Dutch origin	12 (12.1%)	4 (33.3%)	5 (41.7%)	7 (58.3%)	7 (58.3%)	8 (66.7%)	<b>1 (8.3%)</b>
Female	97 (99%)	37 (38.1%)	64 (66.0%)	78 (80.4%)	43 (44.3%)	69 (71.1%)	44 (45.4%)

## Attitudes towards work

Total	WSC GPs		WSC MCAOs		WSC MCAs		WSC Obstetricians		WSC Clinical midwives		WSC Paediatricians	
	n (%)	mean $\pm$ SD	n (%)	mean $\pm$ SD	n (%)	mean $\pm$ SD	n (%)	mean $\pm$ SD	n (%)	mean $\pm$ SD	n (%)	mean $\pm$ SD
Perceived work pressure (mean scale score $\pm$ SD)*	2.5816 (0.66431)	2.4211 (0.67670)	2.6219 (0.66104)	2.5899 (0.66864)	2.5256 (0.72509)	2.5887 (0.67009)	2.4756 (0.63143)	2.5887 (0.67009)	2.5887 (0.67009)	2.5887 (0.67009)	2.4756 (0.63143)	2.4756 (0.63143)
Overall job satisfaction (mean scale score $\pm$ SD)	4.5015 (0.41851)	4.5038 (0.50342)	4.5268 (0.41892)	4.4919 (0.43146)	4.4884 (0.45735)	4.5171 (0.44353)	4.5524 (0.45237)	4.5171 (0.44353)	4.5171 (0.44353)	4.5171 (0.44353)	4.5524 (0.45237)	4.5524 (0.45237)
Satisfied or very satisfied with work	82 (82.8%)	30 (36.6%)	54 (65.9%)	65 (79.3%)	37 (45.1%)	58 (70.7%)	39 (47.6%)	58 (70.7%)	58 (70.7%)	58 (70.7%)	39 (47.6%)	39 (47.6%)
Intention to leave	32 (32.7%)	16 (50.0%)	23 (71.7%)	29 (90.6%)	15 (46.9%)	25 (78.1%)	14 (43.8%)	15 (46.9%)	25 (78.1%)	25 (78.1%)	14 (43.8%)	14 (43.8%)

\*The higher the score (range 1-5), the higher the perceived work pressure

\*\* the higher the score (range 1-5), the higher the job satisfaction

**In bold and italic: there is a significant difference ( $p < 0.05$ ) between the WSC-group (the group of primary care midwives who were well satisfied with the collaboration) and LCS-group (the group of primary care midwives who were less satisfied with the collaboration)**

*Collaboration characteristics*

Table 3 shows midwives' reports on who usually takes the initiative for interaction between the primary care midwife and three other maternity care providers. A quarter of the midwives (25.3%) stated that the interaction between midwives and obstetricians and MCAO was reciprocal and mutual ('the midwife as often as other care provider'). The initiator for interaction between midwife and GP is more one-sided. A quarter of the midwives (25.3%) stated that was 'always the midwife, never the GP' who was the initiator for interaction. In all interactions, the highest percentage of midwives stated that 'often the primary care midwife and sometimes the other care provider' took initiative in interaction.

**Table 3** The initiator for interaction between the primary care midwife and other maternity care providers: general practitioners (GPs), maternity care assistance organisations (MCAOs) and obstetricians and reciprocity.

	Never or rarely the midwife, often the other care provider	The midwife as often as other care provider	Often the midwife, sometimes the other care provider	Always the midwife, never other care provider	Very variable	Missing	Reciprocity
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
<b>GPs</b>		13 (13.1%)	55 (55.6%)	25 (25.3%)	6 (6.1%)		1.129
<b>MCAOs</b>	9 (9.1%)	25 (25.3%)	40 (40.4%)	13 (13.1%)	2 (2.0%)	10 (10.1%)	0.644
<b>Obstetricians</b>	1 (1.0%)	25 (25.3%)	66 (66.7%)	4 (4.0%)	3 (3.0%)		0.760

Table 4 shows the experiences with or problems of accessibility in the interaction with GPs. In the interaction with GPs the midwives found it most problematic that 'they called the GP, but the GP was not present' (60.6%), with significant differences between the WSC-group and LSC-group ( $p=0.009$ ). 'the GP did not call back' is problematic for 41.4% of the midwives ( $p=0.002$ ), and 'GP did call back, but the midwives themselves were absent' for 32.2% of the midwives ( $p=0.015$ ).

**Table 4** The experiences or problems in accessibility in the interaction between individual primary care midwives with general practitioners (GPs) (n (%))

	Always	Often	Some-times	Never	Missing	This is problematic n (%)
<b>Name of care provider is unknown</b>	1 (1.0%)		30 (30.3%)	68 (68.7%)		18 (18.2%)
<b>No time to retrieve phone number</b>		3 (3.0%)	15 (15.2%)	80 (80.8%)	1 (1.0%)	8 (8.1%)
<b>I call the care provider, but he/she is not present</b>	2 (2.0%)	41 (41.4%)	52 (52.5%)	2 (2.0%)	2 (2.0%)	60 (60.6%)*
<b>Care provider does not call back</b>	1 (1.0%)	9 (9.1%)	48 (48.5%)	40 (40.4%)	1 (1.0%)	41 (41.4%)*
<b>Care provider does call back, but I'm absent</b>	3 (3.0%)	62 (62.6%)	33 (33.3%)		1 (1.0%)	32 (32.2%)*

\* significant differences between the group primary care midwives who were well (WSC-group) versus less (LSC-group) satisfied with the collaboration in the interaction with GPs

Table 5 shows the experiences with or problems of accessibility in the interaction with MCAOs. In the interaction with the MCAOs the midwives found it most problematic that 'there is no time to retrieve the phone number' (25.3%) with no difference between the groups. 'They called the MCAO, but no one was present' was problematic for 23.5% of the midwives, with significant differences between the WSC-group and LSC-group in the interaction with MCAO ( $p=0.022$ ). 'The name of MCAO is unknown' was problematic for 23.2% of the midwives, with significant differences between the WSC-group and LSC-group in the interaction with MCAO ( $p=0.000$ ) and MCAs ( $p=0.002$ ).

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**Table 5** The experiences or problems in accessibility in the interaction between individual primary care midwives with maternity care assistance organisations (MCAOs)(n (%))

	Always	Often	Some- times	Never	Missing	This is problematic n (%)
<b>Name of care provider is unknown</b>	5 (5.1%)	17 (17.2%)	29 (29.3%)	42 (42.4%)	6 (6.1%)	23 *\$ (23.2%)
<b>No time to retrieve phone number</b>	2 (2.0%)	7 (7.1%)	37 (37.4%)	47 (47.5%)	6 (6.1%)	25 (25.3%)
<b>I call the care provider, but he/she is not present</b>	1 (1.0%)	15 (15.2%)	55 (55.6%)	22 (22.2%)	6 (6.1%)	25 * (25.3%)
<b>Care provider does not call back</b>		1 (1.0%)	23 (23.2%)	69 (69.7%)	6 (6.1%)	16 (16.7%)
<b>Care provider does call back, but I'm absent</b>			58 (58.6%)	34 (34.3%)	7 (7.1%)	17 (17.2%)

\*significant differences between the group primary care midwives who were well (WSC-group) versus less (LSC-group) satisfied with the collaboration in the interaction with maternity care assistance organisations (MCAOs)

\$ significant differences between the group primary care midwives who were well (WSC-group) versus less (LSC-group) satisfied with the collaboration in the interaction with maternity care assistants (MCAs)

## Discussion

### *Synopsis*

Satisfaction experienced by primary care midwives when collaborating with the different maternity care providers varies within and between primary and secondary/tertiary care. Interactions with non-physicians (clinical midwives, MCAO, MCA) are ranked consistently higher than the interactions with physicians (GPs, obstetricians and paediatricians). Midwives with more working years were more satisfied with the collaboration with the GPs. Midwives from the southern region of the Netherlands were more satisfied with collaboration with GPs and obstetricians. Compared to the urban areas, in the rural or mixed areas the

midwives were more satisfied regarding the collaboration with MCA(O)s and clinical midwives. Midwives from non-Dutch origin are less satisfied with the collaboration with paediatricians. We found associations of satisfaction with collaboration with reciprocity and problems in accessibility in some interactions. No relations were found between the overall mean satisfaction of collaboration and work-related and personal characteristics and attitude towards work. primary care e ornal, paedicitricians.e more satisfied with the collaboration with the GP, and midwives from non-Dutch origin ar

Although the midwives in our study from the southern region were more satisfied regarding the collaboration with GPs, our study showed that overall the interactions of primary care midwives with GPs indicate that there is a lot of room for improvement. Collaboration problems may be historically rooted: the two maternity care providers in primary care have long struggled around the *primaat*-a regulation, introduced in 1941 and abolished in 2001, that advantaged midwives by requiring women to seek maternity care given by midwives instead of GPs if it was available in their neighbourhood (de Vries, 2005; Baarveld, 2007). The majority of midwives did not see opportunities for increased cooperation with GPs in maternity care (Baarveld, 2007). However, pregnant women considered their GP as an important care provider and contacted their GP an average of 3.6 times during pregnancy and postpartum (Feijen-de Jong, et al., 2013). Our study showed that the interactions of primary care midwives with GPs are not often mutual and reciprocal. This could lead to a series of problems inherent to fragmented care, such as conflicting advice on pregnancy problems or complications, information loss, or even errors and the receipt of more interventions than are necessary (Feijen-de Jong, 2015). It is therefore essential to strengthen collaboration between GPs and midwives in care during pregnancy and postpartum. Our findings indicate that the longer midwives have been working, the better this relationship becomes. It could simply be about trust and familiarity with one another.

Our study showed that fewer than half of the participating midwives described the interaction with obstetricians and paediatricians in secondary/ tertiary care as 'generally good'. Various studies have identified collaborative problems between obstetricians and primary care midwives in the Netherlands (e.g. Posthumus, et al., 2013; Van der Lee, 2014). Primary care midwives experienced a power imbalance and a lack of trust and mutual acquaintanceship in their collaboration with obstetricians (Van der Lee, 2014). These perceptions can be explained from the historical perspectives of obstetricians' domination over midwives and the continuous disputes over midwives' authorities (Van der Lee, et al., 2014). The midwives from non-Dutch origin were less satisfied with the collaboration with paediatricians. It is possible that midwives who were not born in the Netherlands are less familiar with the autonomous, independent, medical

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profession of midwifery, and in their country of origin the obstetricians, and not the midwives, are working with paediatricians.

The percentage of clinical midwives in the Netherlands has grown over the past decade from 22% to 29% of all registered midwives (van Hasselt, et al., 2014). These clinical midwives work in hospitals under the supervision of an obstetrician. Most primary care midwives describe the interaction with clinical midwives as 'generally good', with no evidence for professional rivalry. Compared to the urban areas, in the rural or mixed areas the midwives were more satisfied regarding the collaboration with clinical midwives. Perhaps because in rural/mixed areas cooperation is more familiar, because care providers know each other and fewer professionals are involved in providing care.

Despite the finding that midwives in our study perceived problems in accessibility, most midwives described their interaction with MCA(O)s as generally good. Prior research showed that the duration of care of the maternity care assistant is closely related to the level of urbanisation: in large cities (most highly urbanized area), the average duration of maternity care assistance is 37 hours, which is nearly a third less than in rural (non-urbanized area) where the average duration of maternity care assistance is 52 hours (Wiegers & Janssen, 2006). We could argue there lies a possible relation in the average duration of maternity care assistance and the midwives' satisfaction with collaboration with MCA(O)s on the level of urbanisation in our study.

Our study did not find predicted associations of satisfaction with collaboration with attitudes towards work, such as job satisfaction, turnover intentions or retention (Antoine, et al., 2014; Baggs & Ryan, 1990; Chang, et al., 2009; Zhang, et al., 2016). Instead, we found differences on work-related and personal characteristics with some care providers, on the level of urbanisation, region, age, working years, non-Dutch origin and problems of accessibility in the interaction. We could not find profiles or characteristics of midwives who described the collaboration in general with all maternity care providers as 'generally good'.

### *Strengths and limitations*

Our descriptive study gave a detailed cross-sectional insight into some aspects of the collaboration between primary care midwives and other maternity care providers in primary and secondary care in the Netherlands. Since collaboration between midwives and other maternity care providers is vital, it has been valuable to gain insight into this from the midwives' perspective. Our study provided an identification and understanding of the elements of interactions in maternity care and can be considered as a part of a growing trend of identifying positive aspects of collaboration in maternity care (van Helmond, et al., 2015). Generalizability to primary care midwifery has been enhanced by the participation of DELIVER

midwifery practices from various geographical locations in the country. The practices in our study were a good representation for the Netherlands in terms of region and degree of urbanisation. The overall response rate of 91.7% can be considered as high.

The study has a number of limitations. Morgan, et al. (2015) found as single most important and concrete element of successful inter-professional collaboration the 'constant opportunity for frequent, shared informal communication'. However, our study did not measure the opportunities for, or time spent in, informal consultations, occasionally or frequently. In addition to maternity care providers, pregnant women visit other health care providers in the community, such as complementary and alternative healthcare practitioners (Feijen- de Jong, et al., 2015), mental health care professionals and self-help groups. Our study did not examine the collaboration with these other health care providers, nor did it examine the collaboration of midwives with other health system stakeholders, such as ambulance personnel, youth health care or health insurances companies (van Wensveen, 2014) and authorities on local, regional and national level (ten Hoope-Bender et al., 2016), or parents (van Helmond, et al., 2015). Furthermore, our study collected data on *collaboration characteristics* for some care providers, but not for all six groups of maternity care providers.

Differentiation between the 20 DELIVER practices is difficult, given the relatively small sample size. Only bivariate associations were examined, with no control for effect of predictors on satisfaction with collaboration. For more robust results, including prediction -, association - or class analyses (de Vocht, 2014; Vermunt, 2004; Wurtps & Geiser, 2014), a larger study with all relevant variables is required.

### *Implications*

According to van der Lee (2014) organisational problems are probably best assessed and solved by a joint effort of the maternity care providers and their professional societies. Primary care midwives and other maternity care providers provide complementary care and should inform and/or involve each other when taking decisions about pregnant women. The involvement of GPs and the accessibility back and forth in collaborative care and the sharing of relevant information during pregnancy and postpartum appears to be in need of improvement. One might think of asynchronous communication tools (Morgan, et al., 2015), like an integrated digital environment facilitating the communication, such as appropriately recording a pregnancy in an electronic medical record, e.g. by prompting this on the occasion of a pregnancy test or a referral to a primary care midwife or obstetrician (Feijen-de Jong, 2015), or common clinical records that can be shared quickly and easily when and where convenient (Morgan, et al., 2015). Exchanging contact information, such as name and phone number of

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care providers, with MCAOs or other maternity care providers can be a simple but effective measure in enlarging the accessibility.

To address relational problems between disciplines, one might also think of creating multiple opportunities for frequent, informal communication in a shared physical or digital work space (Morgan, et al., 2015) or in inter-professional education (King, et al., 2012; van der Lee, 2014), where mutual respect and 'professional courtesy' is required (Reiger & Lane, 2009). Similar to the role Xyrichis & Lowton (2008) saw for nurses in primary care, one might see a role for midwives in inter-professional teamwork, as the largest professional group dealing with direct client care. Midwives could place themselves in a position where their professional input is acknowledged both for client benefits and for the effective functioning of the inter-professional team.

In addition to this descriptive study, future exploratory or explanatory/hypothetical-deductive research can give more insight in the collaborative practice in everyday work setting. Direct observation has the potential to identify elements of inter-professional collaboration that are not so obvious to individuals when asked to self-report, and qualitative research can gain better understanding of the complex phenomena of inter-professional collaboration, inter-professional collaborative practice and/or teamwork in primary maternity care. In order to do more explanatory or deductive analysis, a larger quantitative study can explore the contextual components on the effectiveness of interdisciplinary collaboration, such as clear and respected boundaries, mutual trust, acknowledgement of interdependence, acceptance of shared responsibilities (Downe, et al., 2010), and the influencing factors, such as the history of collaboration (Corbally, et al., 2007; van der Lee, 2014), supportive organizational structure, availability of resources and positive individual attitude (Downe, et al., 2010). Avery et al. (2012) described five main themes for successful and sustainable models of midwife and obstetrician collaborative practice: impetus for collaboration, foundations of collaborative care, commitment to partnership, care integration, and inter-professional education. King et al. (2012) conclude that the success of interdisciplinary teams is dependent on professional competence, inter-professional respect, and a common orientation to the patient. Valentijn, et al. (2015) distinguished five different themes in order to evaluate the collaboration processes of a partnership: shared ambition, mutual gains, process management, relationship and organisation dynamics. All these factors can be important to include in future studies to develop deeper understanding of satisfaction with collaboration.

## Conclusion

Our results indicate that satisfaction with collaboration of primary care midwives with the different maternity care providers varies within and between the echelons. Interactions with non-physicians (clinical midwives, MCAO, MCA) are ranked consistently higher/more positive than the interactions with physicians (GPs, obstetricians and paediatricians), independent in which echelon they worked. We found associations of satisfaction with collaboration with the level of urbanisation, region, age, working years, non-Dutch origin, reciprocity and problems in accessibility in some interactions. Future exploratory or explanatory research can give more insight in the collaborative practice in everyday work setting.

### *Competing interests*

The authors declare that they have no competing interests.

### *Abbreviations*

AVAG	Midwifery Academy Amsterdam Groningen
ANOVA	ANalysis Of VAriance
AVAG	Midwifery Academy Amsterdam Groningen
CPZ	College Perinatale Zorg
DELIVER	Data EersteLijns VERloeskunde
GP	General Practitioner
WSC	Well Satisfied with Collaboration
ITL	Intention To Leave
LSC	Less Satisfied with Collaboration
MCA	Maternity Care Assistant
MCAO	Maternity Care Assistance Organisation
KNOV	Royal Dutch Association of Midwives
NIVEL	Netherlands institute for health services research
SD	Standard Deviation
UK	the United Kingdom
VIL	Obstetric Indication List
VUmc	Free University medical centre
WHO	World Health Organisation

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### *Authors' contribution*

TW, TK and EH originated and supervised the DELIVER study and the recruitment the midwifery practices. CW analysed the data and drafted the manuscript. All authors read and corrected draft versions of the manuscript and approved the final manuscript.

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