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CHAPTER 1

General introduction

INTRODUCTION

Migration is a worldwide phenomenon present throughout history. Conflict, war, poverty and natural disasters have historically led people to leave their country of origin in search of a better life. In 2000, it was estimated that the total number of international migrants worldwide was 150 million, with this number reaching 214 million in 2010 (International Organization for Migration, 2010). However, moving to a new geographical area can be a stressful experience and may have a negative impact on health. Research has also shown that stress accompanying migration can, in fact, lead to mental illness (Bhugra & Jones, 2001). Another relevant finding is that migrants often experience greater difficulties accessing health care in their host countries.

This PhD thesis addresses a number of questions concerning the mental health of ethnic minorities, in particular, the treatment of depression. It aims to evaluate the effectiveness of psychotherapeutic treatments for depression in ethnic minorities. Specifically, it addresses the development and effectiveness of an Internet intervention for the Turkish migrant population in the Netherlands. The relationship between depression, anxiety and acculturation strategies among Turkish migrants in the Netherlands is also explored. In the present introductory chapter, the background to the research conducted for this thesis is discussed and the remaining chapters are presented. The research conducted is aimed at addressing the following questions;

- 1) What is the effectiveness of psychotherapy in the treatment of depression in ethnic minorities?
- 2) Is Internet-based problem-solving therapy for depressive symptoms among Turkish migrants feasible and clinically effective?
- 3) What are effective recruitment strategies to include ethnic minorities in research trials?
- 4) What is the relationship between depression and acculturation strategies (i.e. integration, assimilation, separation and marginalization) among Turkish migrants in the Netherlands?

MIGRATION AND DEPRESSION

Depressive disorders have a high rate of prevalence worldwide (Alonso et al., 2004; Kessler et al., 2007), and are associated with impaired quality of life (Saarni et al., 2007; Üstün, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004) and excess mortality (Cuijpers & Smit, 2002). Although the prevalence rate of depressive disorders is high among the general population, there are difference in the rates of depression between ethnic minorities and the native (indigenous) population. It has been found for example that depressive symptoms are more prevalent among immigrants (those who moved to a new country) and ethnic minorities (based on the ethnic background, regardless of actual movement) than among the native population in Europe (Missinne & Bracke, 2012). Underlying risk factors for these differences are lower socio-economic status among and discrimination against ethnic minorities in the host countries (Missinne & Bracke, 2012). Another study indicated that there are also differences in the level of prevalence between different ethnic minorities. Lindert and colleagues (2009) estimated the prevalence rate of depression among refugees as twice that among labor migrants. Therefore, ethnic minority groups are at higher risk for developing depression compared with natives. In contrast, ethnic minorities are less likely to make use of specialized treatment services for depression (Leong & Kalibatseva, 2011; U.S. Department of Health and Human Services, 2001). There is a need to improve access to depression treatment and explore whether existing depression treatments are effective for this target group (Santiago & Miranda, 2014).

EFFECTIVENESS OF PSYCHOTHERAPY IN ETHNIC MINORITIES

At present, there is convincing evidence from meta-analytic studies that certain types of psychotherapy are effective in the treatment of depression, such as cognitive behavioral therapy (Churchill et al., 2002; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012), problem-solving therapy (Cuijpers, Van Straten, & Warmerdam, 2007b), interpersonal therapy (Cuijpers et al., 2011) and behavioral activation therapy (Cuijpers, Van Straten, & Warmerdam, 2007a). However, the majority of these studies were conducted among the native population (Caucasian or White) and middle socio-economic status (SES) groups, whereas ethnic minorities and low SES populations are underrepresented in clinical research (Miranda, Nakamura, & Bernal, 2003). Ethnic minorities are also underrepresented in randomised controlled trials (Santiago & Miranda, 2014).

Over recent decades, a number of researchers have noted that ethnic minorities are not

only underrepresented in research populations, but also in the use of routine mental health care services (Leong & Kalibatseva, 2011; U.S. Department of Health and Human Services, 2001). Ethnic minorities are more likely to seek psychological therapy at a late stage, when their mental problems have reached a high degree of severity. When they do look for help, they often drop out of therapy prematurely (Trujillo, 2008).

Reasons for this underrepresentation in both research and routine mental health care services vary and may be attributed to both the characteristics of such settings as well, as ethnic minorities themselves. Possible explanations include barriers such as demographic characteristics (such as age and gender) and health beliefs (such as expectations about treatment) that account for the limited use of health care services (Scheppers, Van Dongen, Dekker, Geertzen, & Dekker, 2006). However, lower skill levels and cultural and linguistic knowledge and negative attitudes among providers toward minorities also play a role (e.g. Chen & Rizzo, 2010; Chen & Vargas-Bustamante, 2011; Scheppers et al., 2006).

Many researchers and mental health professionals have therefore argued that psychotherapy should be made more accessible to ethnic minorities, for example, through cultural and linguistic modifications to generic psychotherapy methods (Bhugra et al., 2011; Trujillo, 2008). Systematic reviews have found that culturally adapted psychotherapy for depression is potentially effective in ethnic minorities, where small to moderate effect sizes ($d=.32 - .47$) were found in comparison with a quasi-control group or a control group (Benish, Quintana, & Wampold, 2011; Griner & Smith, 2006). However, even when ethnicity is included as a characteristic in randomised controlled trials (RCT), detailed information and differential analyses of the treatment outcome are rarely provided (Weersing & Weisz, 2002).

Research in ethnic minorities is still scarce and little is known about the effectiveness of psychotherapy for depression among ethnic minorities. Chapter 2 of this thesis consists of a meta-analysis examining the effectiveness of psychotherapy, such as cognitive behavioral therapy, in ethnic minority groups with depression. Given the lack of sufficient RCTs on direct effects in ethnic minority groups, ethnic minority proportions in the study sample were examined as a moderator of the effect size of psychotherapy compared with a control group.

TURKISH MIGRANTS IN THE NETHERLANDS

The main object of this thesis, as presented in Chapters 3, 4, 5 and 6, is to target the Turkish migrant population in the Netherlands. The Netherlands has a rich history of immigration

and has become a multicultural society. Approximately one-fifth (19.9%) of the Dutch population has a non-Dutch background and more than half of the ethnic minority population (55%) originate from non-Western countries (CBS, 2014). After the Second World War, there was a large influx of immigrants who came to work on the post-war reconstruction, compensating for major labor shortages. Workers were invited from various countries in the 1960s and 1970s, including Turkey. At present, Turkish migrants represent the largest ethnic minority group living in the Netherlands, and constitute 2.3% of the total Dutch population.

In the Netherlands, there are indications that members of the Turkish population are at higher risk for developing depression. For example, van der Wurff and colleagues (2004) found a higher prevalence of depressive symptoms in Turkish elderly migrants (61.5%) compared with elderly Moroccan (33.6%) and native Dutch people (14.5%). Ethnic origin was found to be an important factor associated with the high prevalence of depressive symptoms. Furthermore, the 1-month prevalence of depressive and anxiety disorders is higher among Turkish migrants (18.7%) compared with Moroccan migrants (9.8%) and native Dutch people (6.6%) in Amsterdam (de Wit et al., 2008). In particular, Turkish women appear to be at high risk for developing depression compared with Dutch natives (de Wit et al., 2008). Turkish women are also at higher risk for suicide attempts (van Bergen, Smit, van Balkom, & Saharso, 2009).

Research also indicates that the perceived need for mental health care is the higher among Turkish migrants compared with Moroccan and Dutch people, probably due to higher levels of mental distress (Fassaert et al., 2009). It has also been shown that this perceived need is less often met in Turkish migrants (Fassaert et al., 2009). Although national data is lacking, there are indications that the dropout rate among ethnic minorities in mental health care is almost twice that among native Dutch people in the Netherlands (Hilderink, van 't Land, & Smits, 2009). It is therefore important to close the gap between the need for mental health care and the delivery of psychotherapy for this target group.

WEB-BASED 'PROBLEM-SOLVING THERAPY'

The Internet offers possibilities for making evidence-based psychotherapy more accessible to hard-to-reach populations, such as ethnic minorities. In 2014, the number of Internet users was estimated at 2.9 billion worldwide, with Internet penetration of 40.4% (InternetLiveStats, 2014c). In Europe, 520 million users were estimated in 2014 (InternetLiveStats, 2014b). In the Netherlands, about 16.1 million people are using the Internet and Internet penetration (96.1%)

is among the highest worldwide (InternetLiveStats, 2014a). Moreover, approximately 80% of the Turkish population in the Netherlands has access to the Internet (Foquz Media, 2008). The rapid development and dissemination of technology offers new opportunities to provide treatment for people with mental disorders, including ethnic minorities.

Using information and communication technologies (ICT) for health care delivery is not a new phenomenon. Since the 1990s, several e-terms were introduced to describe the possibilities for communication through the Internet (Oh, Rizo, Enkin, & Jadad, 2005). E-mental health is defined as “the use of information and communication technology – in particular the many technologies related to the Internet – when these technologies are used to support and improve mental health conditions and mental health care, including care for people with substance use and comorbid disorders” (Riper et al., 2010, page 1). There are many potential advantages related to eMental-health. For example, Internet delivery may facilitate access by health professionals to hard-to-reach populations, enable self-management by the patient and increase the cost-efficiency and the efficiency of treatment delivery (Riper et al., 2007).

Web-based treatments are generally based on evidence based face-to-face protocols, which are highly structured, guided and adapted for use on Internet (Ritterband & Thorndike, 2006). Whereas the majority of these treatments are based on cognitive behavioral therapy (Andersson & Cuijpers, 2009), online delivery of other types of psychotherapy, such as problem-solving therapy (e.g. Warmerdam, van Straten, Twisk, Riper, & Cuijpers, 2008) has been also found to be effective. It is important to offer guidance in Internet-based treatments and it has been shown that Internet-based treatments with guidance (by e-mail, telephone or face to face) are more efficacious in reducing depressive and anxiety symptoms than unguided Internet-based treatments (Andersson & Cuijpers, 2009; Palmqvist, Carlbring, & Andersson, 2007). Internet studies specifically targeted to ethnic minorities are still scarce. However, a systematic review showed promising results for psychological Internet interventions for depression in ethnic minorities (Dorstyn, Saniotis, & Sobhanian, 2013). It was found that three out of four studies (focusing on CBT, supportive counseling or audio-visual communication) for ethnic minorities, were effective compared with control groups with high effect sizes (ranging from $d=.83$ to 1.17; Dorstyn et al., 2013).

An evidence-based Internet treatment for adult depression has been developed in the Netherlands, “Alles Onder Controle” (AOC; Everything Under Control). AOC is a guided prevention intervention indicated for adults with mild to moderated depression who wish to deal with their depressive symptoms independently (Cuijpers, 2004; Mrazek & Haggerty, 1994;

Warmerdam et al., 2008). The method is based on Problem Solving Therapy (Bowman, Scogin, & Lyrene, 1995; Mynors-Wallis, Gath, Lloyd-Thomas, & Tomlinson, 1995), a short-term form of cognitive behavioral therapy. The core of this PST treatment is to teach people to deal with practical everyday problems, which may cause their depressive symptoms. The treatment aims to develop and improve the patient's ability to cope with specific problems based on a structured step-by-step method. During treatment, finding solutions to daily problems is emphasized rather than analyzing the origin of the problem. The ultimate goal is that by mastering these methods, people regain mastery of their daily problems and eventually reduce their depressive complaints.

AOC guided self-help Internet treatment consists of five sessions (one session per week) and is supported by a coach who gives feedback to the participant or client by e-mail. In the first session, the participant is asked to list the most important things in their lives and all the problems they experience in daily life. In the following three sessions (session two, three and four), participants must divide their problems into three possible categories: 1) unimportant problems, 2) solvable problems and 3) unsolvable problems. For each type of problems, participants are offered effective strategies to overcome and solve them. In the final session, participants make a plan for the future in order to prevent a similar pattern of depression.

AOC as a web-based therapy has been proven to be effective in the reduction of depressive symptoms (van Straten, Cuijpers, & Smits, 2008), the treatment of depression (Warmerdam et al., 2008) and is cost-effective (Warmerdam, Smit, van Straten, Riper, & Cuijpers, 2010). These results derive from studies including mainly native Dutch participants, making it difficult to generalize to ethnic minority populations. It is not known whether Internet AOC is also effective for Turkish migrants.

Guided self-help through the Internet has several advantages, such as a high level of anonymity for participants, which may diminish barriers in the delivery of treatment. Cultural and linguistic adaptations can be made in order to ensure that the intervention is suitable for Turkish migrants, for example by offering it in two languages and sensitiveness in terms of idioms of distress (such as the use of cultural appropriate descriptions of depression). Therefore, AOC could be an ideal way to fill the gap between the need for treatment of depression and the delivery of psychotherapy for this target group. Chapter 3 describes the protocol for a randomised controlled trial of a web-based problem-solving intervention for Turkish migrants with depressive symptoms in the Netherlands. The results of this randomised controlled trial are presented in Chapter 4. The trial aimed to compare findings between Turkish migrants

in the experimental group and those who were on a wait-list control group. In Chapter 5, the recruitment strategies applied during the trial are evaluated. Traditional recruitment methods, such as the distribution of information brochures on the trial or advertisements in newspapers and new media, such as Facebook, are explored in terms of their success in recruiting participants.

ACCULTURATION AND DEPRESSION

The final research question looks more closely at the relationship between migration and depression. Migration is a complex phenomenon, and dealing with a culturally different environment may be difficult for migrants for many different reasons. As migration impacts their lives a myriad of different ways. Research shows that the manner in which migrants ‘blend into’ their host country is important for their mental health. For example, in the Netherlands, researchers found that having fewer skills to participate in life in the host country was related to higher levels of psychological distress (Kamperman, Komproe, & De Jong, 2003; Knipscheer & Kleber, 2006, 2007).

For example, cultural orientation is an important factor in determining how ethnic minorities behave in a new environment. The concept of ‘acculturation’ therefore is important for the exploration of the relationship between migration and mental health in ethnic minorities. The concept was originally defined by Redfield and colleagues (1936, page 149) as: “the process of change that occurs when groups of individuals from different cultures come into continuous contact with each other”. This is a broad concept, which impacts on various levels such as behavioral, socio-cultural and psychological areas of life (Berry, 1997). According to Berry (1980; 2003), four types of acculturation strategies are available, which differ in the level of importance given to the ethnic and the host culture. The first strategy, integration, is characterized by a preference for the ethnic culture, with the host culture also playing a role. The assimilation strategy is characterized by a preference for the host culture, to the exclusion of the ethnic culture. The third strategy, separation, is the opposite of assimilation, namely, an exclusive focus on the ethnic culture. Finally, marginalization occurs when the migrant chooses neither the host nor the ethnic culture.

Acculturation, or the level of engagement in different cultures, is positively associated with help-seeking attitudes for mental problems at mental health services (Tata & Leong, 1994; Ying & Miller, 1992). Acculturation strategies have often been studied in relation to psycho-

logical disorders, where integration has been found to be associated with better psychological outcomes, such as higher self-esteem and less depressive symptoms (Chen, Benet-Martínez, & Harris Bond, 2008; Schwartz, Zamboanga, & Jarvis, 2007). Less depressive symptoms were also found to be associated with participation in the host country in a meta-analysis by Gupta and colleagues (2013). However, little is known, about the relationship between acculturation strategies and depressive and anxiety disorders among ethnic minorities in the Netherlands. Chapter 6 of this thesis explores this relationship with the aim of investigating ways in which acculturation strategies may be associated with depressive and anxiety disorders. For this purpose, existing data was reviewed for secondary analyses from the General Health Monitor of Amsterdam of 2005 (e.g. Ujic-Voortman et al., 2009).

DISCUSSION

In the final chapter, Chapter 7, the main findings of the research conducted are summarized and discussed. The strengths and limitations of the research are also reviewed. The implications for future research and the potential clinical impact are also discussed. This PhD thesis is among the first research projects to directly target the role of psychotherapy in ethnic minorities. The findings offer a road map for future research on the effective treatment of mental disorders among ethnic minorities, an important health policy issue. This research could contribute to closing the gap between the need for evidence-based treatment and the delivery of mental health services to ethnic minorities.

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CHAPTER 2

The effects of psychotherapy on depression among racial-ethnic minority groups:
a metaregression analysis

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ABSTRACT

Background: Several psychotherapies have been found to be effective in the treatment of depression among adults. However, little is known about whether effectiveness differs by racial-ethnic minority group. The authors conducted a meta-analysis to assess the relative effects of psychotherapy for persons from racial-ethnic minority groups, by examining whether a sample's racial-ethnic minority proportion was a moderator of the effect size of psychotherapy.

Methods: Eligible studies were identified with an existing database of randomised controlled trials (RCTs) on the psychological treatment of depression among adults. The analysis included all studies in which the effect of psychotherapy for adults with a depressive disorder or symptomatology was compared with a control condition in an RCT. Only studies that reported the overall racial-ethnic minority proportion of the sample or the studies reporting specific racial ethnic backgrounds of participants were included. A total of 56 RCTs reported the proportion of participants from racial-ethnic minority groups (with 77 comparisons between psychotherapy treatment and control groups).

Results: An overall moderate effect size ($g=.50$) in favor of psychotherapy was found. No significant moderating effect of race-ethnicity was found in bivariate and multivariate analyses.

Conclusion: Results suggest that psychotherapy is equally effective regardless of care seekers' race-ethnicity. Future research should focus on filling in the gap between effective mental health care and the delivery of these services.

INTRODUCTION

Depressive disorders are highly prevalent (Alonso et al., 2004; Kessler et al., 2007), significantly impair quality of life (Saarni et al., 2007; Üstün, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004), and are associated with high economic costs (Smit, Cuijpers, et al., 2006). It is expected that by 2030, depression will be the second most disabling disorder worldwide (Mathers & Loncar, 2006). However, prevalence rates of depression vary considerably among racial-ethnic minority populations and nonminority native-born people (Missinne & Bracke, 2012). Socioeconomic conditions of and discrimination toward racial-ethnic minority groups have been found to be important predictors of these differences.

Several types of psychotherapies have been developed over the years in order to treat depression of adults. Many of these therapies have been found to be effective, such as cognitive behavioral therapy (Churchill et al., 2002; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012), interpersonal psychotherapy (Cuijpers et al., 2011), problem-solving therapy (Cuijpers, Van Straten, & Warmerdam, 2007b), and behavioral activation therapy (Cuijpers, Van Straten, & Warmerdam, 2007a). However, research on the effectiveness of psychotherapy for depressed members of racial-ethnic minority groups is sparse. The evidence for the effectiveness of psychological treatments is mostly obtained from studies conducted among white middle-income populations, leaving racial-ethnic minority populations underrepresented in clinical research (Miranda, Nakamura, & Bernal, 2003). Even when the racial-ethnic distribution of participants is reported in studies, detailed information and differential analyses of racial-ethnic subgroups are rarely provided (Hofmann et al., 2012; Weersing & Weisz, 2002).

Research in the past 30 years has also indicated that racial-ethnic minority groups are not only underrepresented in clinical research on depression, but individuals from these groups also make less use of mental health care services than the white majority in Western countries (U.S. Department of Health & Human Services, 2001; Leong & Kalibatseva, 2011; Santiago & Miranda, 2014). People from racial-ethnic minority groups often seek professional psychological help at a late stage of mental distress, when symptoms have developed into more severe mental problems. In fact, most people who use mental health services drop out of therapy prematurely (Trujillo, 2008).

A frequent argument has been that cultural and linguistic adaptations to psychotherapy should make it more accessible for people from racial-ethnic minority groups (Bhugra, 2005; Trujillo, 2008). However, randomised controlled trials (RCTs) of the effectiveness of culturally

adapted psychotherapies are also scarce (Griner & Smith, 2006), and there is a lack of scientific evidence concerning whether psychotherapy is equally effective in nonminority populations as in racial-ethnic minority populations.

Because of this lack of knowledge of whether psychotherapies are equally effective for racial-ethnic minority and majority populations, we conducted a meta-analysis to investigate the association between the proportion of participants with a racial-ethnic minority background and the effect size of the studies. It would have been better to examine directly within studies the difference between the effects of psychotherapy for native residents and for those from racial-ethnic minority groups. However, this has hardly been done in studies in this field. Therefore, we decided to examine the more indirect association between proportion of racial-ethnic minority participants and the effect size of studies in this field.

METHODS

SEARCH STRATEGY

Eligible studies were identified by searching the www.evidencebasedpsychotherapies.org database of RCTs for the psychological treatment of depression among adults. The database includes studies from 1966 to the present (last update January 1, 2012), is updated annually, and contains 315 RCTs. The development and methods of this database have been described in detail elsewhere (Cuijpers, Van Straten, Warmerdam, & Andersson, 2008). Searches in major bibliographic databases (PubMed, PsycINFO, Embase, and Cochrane Central Register of Controlled Trials) were conducted by combining terms indicative of psychological treatment and depression (both MeSH terms and text words). We also searched 42 published meta-analyses in the database at www.evidencebasedpsychotherapies.org as well as the reference lists of included studies.

INCLUSION AND EXCLUSION CRITERIA

We included all studies in which the effect of psychotherapy for adults (18 years and older) with a depressive disorder diagnosis (diagnostic interview) or an elevated level of depressive symptomatology (scoring above a cutoff on a self-report instrument) was compared with a control condition (care-as-usual, waiting-list, placebo, or another control group) in an RCT in which the distribution of race-ethnicity in the study sample was reported.

We included studies that reported the overall proportion of the sample that was from racial-ethnic minority groups, as well as studies reporting the specific racial-ethnic background of participants. Psychotherapy was defined as an intervention in which verbal communication between a therapist and a client was the core therapeutic element or in which a systematic psychological method was conveyed in print or on a Web site (bibliotherapy) for the client to work through more or less independently, but with some kind of personal support from a therapist (by telephone, e-mail, or otherwise).

QUALITY ASSESSMENT AND DATA EXTRACTION

We assessed the validity of the studies using four criteria of the Risk of Bias assessment tool, developed by the Cochrane Collaboration (Higgins & Green, 2008): adequate generation of allocation sequence, concealment of allocation to conditions, prevention of knowledge of the allocated interventions by outcome assessors, and dealing with incomplete data.

Apart from the validity assessment, we also extracted data on characteristics of the intervention, the participants, and the design of the study. The characteristics of the intervention we distinguished included type of therapy (cognitive-behavioral therapy, interpersonal psychotherapy, problem-solving therapy, nondirective supportive therapy, behavioral activation therapy, psychodynamic therapy, or other psychotherapy) (Cuijpers, Van Straten, Warmerdam, et al., 2008) and treatment format (individual or group). Study-related characteristics included method of recruitment into the study (through the community, clinical samples, or other recruitment type), target group (adults in general, older adults, student population, women with postpartum depression, persons with general medical conditions, or other target groups), and definition of depression (according to a diagnostic interview or established with a self-report measure). We also rated the type of control group (waiting-list, care-as-usual, pill placebo, or other type of control group).

Racial-ethnic minorities were categorized into five groups: black (African background), Asian, Hispanic (Latin American and Spanish background), Native American (referring to the indigenous peoples of North America), and other (people from racial-ethnic minority groups who could not be identified in one of these categories). Data extraction was conducted by two independent assessors (BÜI and EH); in case of disagreement, a third assessor (HR) was consulted.

ANALYSES

For each comparison between a psychotherapy and a control group, the effect size indicating the difference between the two groups at posttreatment was calculated (Cohen's *d* or standardized mean difference). Effect sizes were calculated by subtracting (at posttreatment) the average score of the control group from the average score of the comparison group and dividing the result by the pooled standard deviations of the two groups. Effect sizes $\geq .80$ can be assumed to be large, whereas an effect size of $.50$ is moderate and $.20$ is small (Cohen, 1988). Because several studies had small sample sizes, we adjusted the effect size for small-sample bias according to the procedures suggested by Hedges and Olkin (1985; Hedges' *g*).

In the calculations of effect sizes, we used only instruments that explicitly measured symptoms of depression, such as the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) or the Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1960). If more than one depression measure was used, the mean of the effect sizes was calculated, so that each study provided only one effect. If means and standard deviations or any other precise test statistic was not reported, we used the procedures of Comprehensive Meta-Analysis software (version 2.2.021) and dichotomous outcomes to calculate the effect size. The software was also used to calculate pooled mean effect sizes. Because we expected considerable heterogeneity among the studies, we decided to calculate mean effect sizes using a random-effects model.

The standardized mean difference (Hedges' *g*) is not easy to interpret from a clinical perspective. Therefore, we also transformed it into a numbers-needed-to-treat (NNT) value, using the formulas provided by Kraemer and Kupfer (2006). The NNT indicates the number of patients that must be treated in order to generate one additional positive outcome (Smit, Ederveen, Cuijpers, Deeg, & Beekman, 2006).

We examined heterogeneity of effect sizes by using the *Q* statistic and I^2 statistic. The *Q* statistic informs only about the presence of heterogeneity, which we report in terms of significance. The I^2 statistic indicates the heterogeneity in proportions. A value of 0% indicates no observed heterogeneity, and 25%, 50%, and 75% indicate low, moderate, and high levels of heterogeneity, respectively (Higgins, Thompson, Deeks, & Altman, 2003).

Publication bias was tested by inspecting the funnel plot on primary outcome measures and by Duval and Tweedie's (2000) trim-and-fill procedure, which yields an estimate of the

effect size after the publication bias has been taken into account (as implemented with the software). We also conducted Egger's test of the intercept to quantify the bias captured by the funnel plot and test whether it was significant.

In order to examine whether the proportion of participants from racial-ethnic minority groups was associated with the effect size of each study, we first conducted a series of bivariate metaregression analyses with the Comprehensive Meta-Analysis software. In the first bivariate metaregression analysis we examined whether the effect size was significantly associated with the proportions of racial-ethnic minorities.

Then we conducted another bivariate metaregression analysis in which we examined the association between the effect size and the proportion of black participants, another one with the proportion of Asian participants, and separate analyses of the proportion of Hispanic, Native American, and "other race-ethnicity" participants. Then we conducted multivariate metaregression analyses with the effect sizes as the dependent variable and as predictors the proportion of racial-ethnic minorities and the characteristics of the participants, the interventions and the studies. In the first multivariate analysis, we entered the proportion of racial-ethnic minorities as predictor. In the second we entered each of the specific minority groups (black, Asian, Hispanic, Native American, and other) as separate predictors. Because multivariate metaregression analyses cannot be conducted with Comprehensive Meta-Analysis software, we used Stata/MP for Mac (version 11) for these analyses.

RESULTS

SELECTION AND DESCRIPTION OF THE INCLUDED STUDIES

We examined a total of 13,407 abstracts, removed 9,860 duplicates, and then retrieved 1,344 full-text papers for further consideration. We excluded 1,288 of the retrieved papers for the following reasons: studies with adolescents (N=69), no random assignment (N=54), inclusion of disorders other than depression (N=165), no psychotherapy (N=151), no comparison condition (N=113), maintenance trial (N=53), dissertation (N=10), duplicate of paper already included (N=64), no information about racial-ethnic distribution of the population sample (N=125), no effect size reported (N=5), or other reasons (N=479). A total of 56 studies (as indicated with an asterisk in the reference list) with 5,819 participants met inclusion criteria. The inclusion process is presented in detail in a flowchart (figure 1).

Most (N=42, 75%) of the trials were conducted in the United States, four were conducted

in the United Kingdom, four in Australia, four in the Netherlands, one in Brazil, and one in Sweden. Selected characteristics of the 56 studies are presented table 1.

Psychotherapy was compared with a control condition in 56 trials (77 comparisons between a psychotherapy group and a control group). Most of these trials examined cognitive-behavioral therapy (N=32, 57%) and interpersonal psychotherapy (N=11, 20%). Care as usual (N=28, 50%) and a waiting list (N=14, 25%) were the most frequent control groups. Furthermore, most of the studies used a diagnostic interview to establish the presence of a depressive disorder among participants (N=38, 68%), and most of the therapies were delivered to the individual (N=34, 61%).

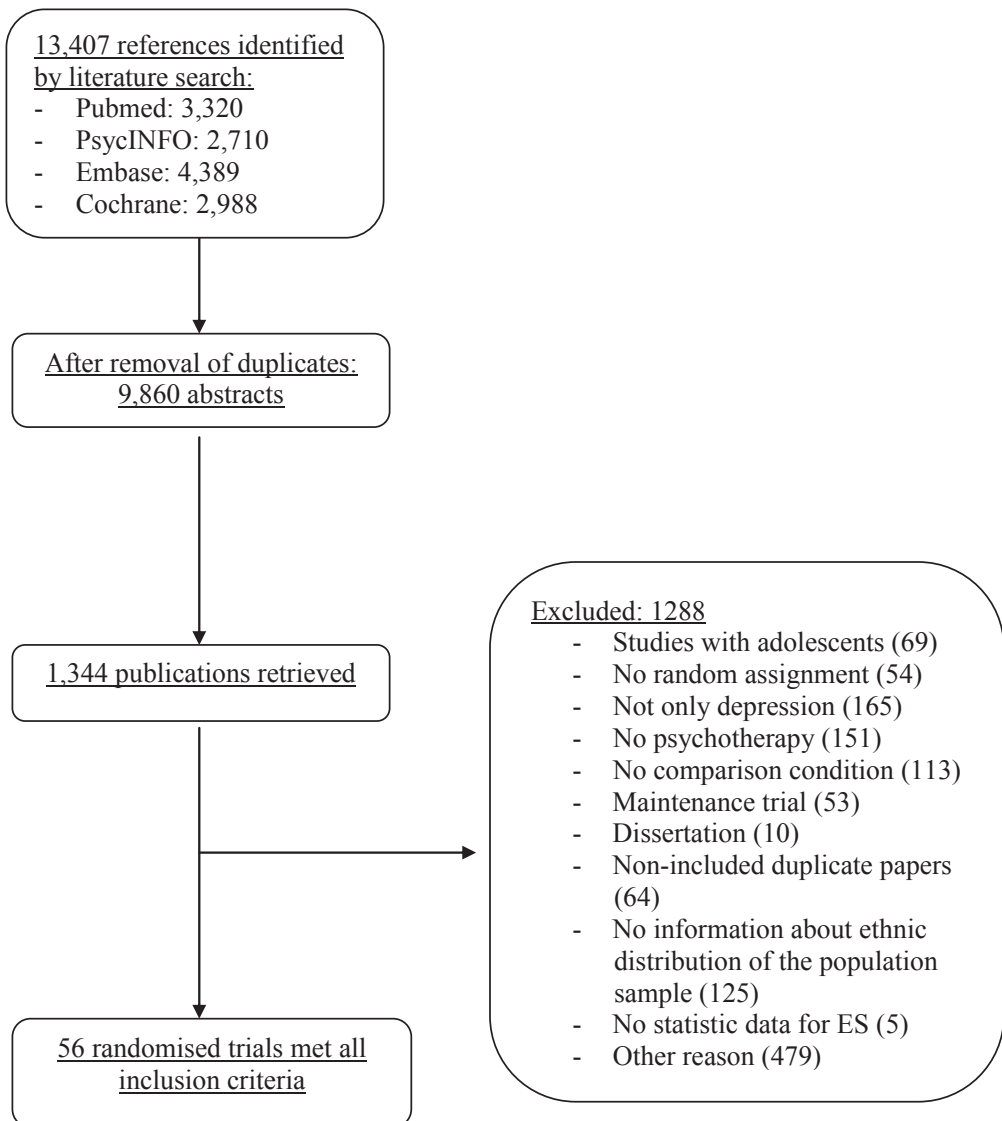


Figure 1. Flow chart of the selected studies

Table 1. Characteristics of selected randomised controlled trials.

Study	Recruitment	Target group	Definition of depression	Conditions	Format	N	% Ethnicity							Allocation conc	Blind assess	Risk of ITT bias	
							Native	Black	Asian	Latin American	Native-American	Other	Country				Random seq
Araon, Perri, Nezu, Schein, Christopher & Joseph, 1993	Community	Older adults	Major depression	1. PST	Grp	19	77.3	16	1.3	6.67	0	0	USA	-	+	-	1
				2. RT													
				3. Waiting-list													
Baker et al., 2010	Community	Other	Other definition	1. CBT (depression focus)	Ind	71	79	0	0	0	0	21	AU	+	+	+	4
				2. CBT (alcohol focus)													
Barber, Barrett, Gallop, Rynn & Rickels, 2011	Community	Adults	Major depression	3. CBT (integrated focus)	Ind	51	48	45	2	5	0	0	USA	+	+	+	4
				4. Brief Intervention													
				Intervention (control)													
				70													
Barrett et al., 2001	Clinical	Adults	Mood disorder	1. PST	Ind	29	90	3	3	1	3	0	USA	+	+	+	4
				2. PBO													
				32													
Beeber et al., 2010	Specific program for low-income mothers	Other	Other definition	1. IPT	Ind	34	0	0	0	100	0	0	USA	+	+	-	3
				2. CAU													
Bohlmeijer, Fiedlerus, Rokx & Prietere, 2011	Community	Adults	Other definition	1. ACT	Grp	49	85	0	0	0	0	8	NL	+	-	+	3
				2. Waiting-list													
Carpenter, Smith, Alarovich & Nunes, 2008	Clinical	Other	Mood disorder	1. BAT	Ind	18	81.6	7.9	0	10.5	0	0	USA	-	-	+	1
				2. REL (control)													
Chesney, Chambers, Taylor, Johnson & Folkman, 2003	Community	General medical	Other definition	1. CET	Grp	46	82	0	0	0	0	18	USA	-	+	-	1
				2. Waiting-list													
Cohen, O'Leary & Foran, 2010	Community	Adults	Mood disorder	1. BCT	Ind	16	88.2	3	3	5.7	0	0	USA	-	+	-	1
				2. Waiting-list													

Gramer, Salisbury, Conrad, Eldred & Araya, 2011	Community	Other	Other definition	1. CBT 2. CAU	Grp	48 19	87.7 0	0 0	0 0	0 0	11	UK	+	+	-	+	3
Dimidjian et al., 2006	Community	Adults	Major depression	1. CBT 2. BAT 3. PBO	Ind	45 43 53	81.7 0	0 0	0 0	0 0	18.3	USA	+	+	+	+	4
Dobkin et al., 2011	Community	General medical	Mood disorder	1. CBT 2. CAU	Ind	41 39	93 0	1 5	4 0	0 0	1	USA	+	+	+	+	4
Duarte, Miyazaki, Blay & Sesso, 2009	Dialysis units	General medical	Major depression	1. CBT 2. CAU	Grp	41 44	76.5 0	0 0	0 0	0 0	23.5	BR	+	+	+	+	4
Dunn et al., 2007	Clinical	Other	Mood disorder	1. SEMT 2. CAU	Grp	33 44	55.4 27.7	0 0	11.9 0	0 0	5	USA	+	+	+	+	4
Dwight-Johnson, Aisenberg, Golinelli, Hong, O'Brien & Ludman, 2011	Rural health center	Other	Other definition	1. CBT 2. CAU	Ind	50 51	4 0	0 0	91 0	0 0	5	USA	-	+	+	+	2
Elkin et al., 1989	Clinical	Adults	Major depression	1. CBT 2. IPT 3. PBO+	Ind	59 61 62	89 0	0 0	0 0	0 0	11	USA	+	+	+	+	4
Exans & Comms, 1995	List of patients for radiation treatment	General medical	Other definition	1. CBT 2. SUB	Grp	27 21	59.7 11.1	0 0	0 0	0 0	29.2	USA	-	+	+	-	1
Freedland et al., 2009	Outpatient research clinic	General medical	Mood disorder	1. CBT 2. SUB 3. CAU	Ind	41 42 40	81.3 18.7	0 0	0 0	0 0	0	USA	+	+	+	+	4
Haringsma, Engels, Cuijpers & Spinhoven, 2006	Community	Older adults	Other definition	1. CBT 2. Waiting-list	Grp	52 58	90 0	0 0	0 0	0 0	10	NL	-	+	+	+	2
Harley, Sprich, Safren, Jacobso & Fava, 2008	Clinical	Adults	Major depression	1. DBT 2. Waiting-list	Grp	10 9	83.3 0	0 0	0 0	0 0	16.7	USA	+	+	+	-	3
Heckman, Sikkema, Hansen, Kochman, Heh & Neufeld, 2011	Community	General medical	Other definition	1. COP 2. IPS	Grp	104 105	52 48	0 0	0 0	0 0	0	USA	+	+	-	+	3

% Ethnicity

Study	Recruitment	Target group	Definition of depression	Conditions	Format	N	Native	Black	Asian	Latin American	Native-American	Other	Country	seq	Random Allocation conc	Blind assess	Risk of ITT bias	
Hogg & Deffenbacher, 1988	Clinical	Student population	Other definition	1. CBT	Grp	13	91.9	0	0	0	0	8.1	USA	-	-	+	-	1
				2. IP														
				3. Waiting-list														
Jamison & Scogin, 1995	Community	Adults	Major depression	1. CBT	Grp	33	85	15	0	0	0	0	USA	-	-	-	-	0
				2. Waiting-list														
Kay-Lambkin, Baker, Lewin & Carr, 2009	Community	Other	Other definition	1. CBT (by therapist)	Ind	21	93	0	0	0	0	7	AU	+	+	+	+	3
				2. CBT (by computer)														
				3. Brief intervention (control)														
Kelly, et al., 1993	Community	General medical	Other definition	1. CBT	Grp	27	61.8	29.4	0	0	0	8.8	USA	-	-	+	-	1
				2. SUB														
				3. Comparison condition														
King et al., 2000	Clinical	Adults	Other definition	1. CBT	Ind	63	91.2	0	0	0	0	8.8	UK	+	+	+	+	4
				2. SUB														
				3. CAU														
Le, Perry & Stuart, 2011	Other	Other	Other definition	1. CBT	Grp	112	0	0	0	100	0	0	USA	+	+	-	-	3
				2. CAU														
				105														
Levin et al., 2011	Clinical	Adults	Other definition	1. CBT	Grp	99	90.1	2.1	0.5	3.1	2.1	2.1	USA	+	+	+	+	4
				2. CAU														
				91														
Linde et al., 2011	Mixed-model health care system	Other	Major depression	1. CBT	Grp	101	78.5	0	0	0	0	21.1	USA	+	+	+	+	4
				2. BWL (control)														
Lustman, Griffith, Freedland, Kassel & Clouse, 1998	Community	General medical	Major depression	1. CBT	Ind	24	81	0	0	0	0	19	USA	+	+	+	+	4
				2. CAU														
				27														
Milgrom, Negri, Gemmill, McNeil & Martin, 2005	Maternal and child health centres	Women with PPD	Mood disorder	1. CBT	Grp	46	97.1	0	0	0	0	2.9	USA	-	+	+	+	3
				2. SUB (group)														
				47														
				3. SUB (individual)														
66																		
63																		

Author(s), Year	Study Design	Population	Intervention	Comparison	Duration	Follow-up	Dropouts	Loss to follow-up	Intention to treat	Analysis	Effect Size	Significance	Notes
Milgrom et al., 2011	General practices and maternal and child health centres	Women with PPD	1. CBT (by nurse) 2. CBT (by psychologist) 3. CAU	Ind	22	83.8	0	0	0	0	16.2	AU	+ + + 3
Miller & Weissman, 2002	Ongoing longitudinal study	Adults	1. IPT 2. CAU	Ind	15	36.67	26.67	0	30	0	6.67	USA	- + + 2
Miranda et al., 2003	Special programs in suburban area	Other	1. CBT 2. CAU	Grp	90	6	43.8	0	50.2	0	0	USA	+ + + 4
Mohr, Carmody, Erickson, Jin & Leader, 2011	Clinical	Adults	1. CBT 2. CAU	Ind	39	78.8	0	0	0	0	21.2	USA	- + + 2
Mossey, Knott, Higgins & Talerico, 1996	Medical college and hospital	Older adults	1. IPT 2. CAU	Ind	31	45	55	0	0	0	0	USA	- + + 1
Mulcahy, Reavy, Wilkinson & Owen, 2010	Clinical	Women with PPD	1. IPT 2. CAU	Grp	23	86	0	0	0	0	14	AU	+ + + 3
Murphy, Carney, Knaesevich, Wetsel & Whitworth, 1995	Community	Adults	1. CBT 2. Relaxation training (control)	Ind	11	97.3	2.7	0	0	0	0	USA	- - - 0
Mynors-Wallis, Gath, Lloyd-Thomas & Tomlinson, 1995	Clinical	Adults	1. PST 2. PBO	Ind	29	95.6	0	0	0	0	4.4	UK	+ + + 4
Neugebauer et al., 2006	Other	Other	1. IPT 2. CAU	Ind	10	21	0	16	63	0	0	USA	- - - 1
O'Hara, Stuart, Gorman & Wenzel, 2000	Letters to targetgroup in specific countries	Women with PPD	1. IPT 2. Waiting-list	Ind	48	96.7	0	0	0.8	0.8	1.7	USA	+ - - 2
Ransom, Heckman, Anderson, Garske, Holroyd & Basta, 2008	Community	General medical	1. IPT 2. CAU	Ind	31	77	13	0	9	1	0	USA	- - + 2
Rohan et al., 2007	Community	Adults	1. CBT 2. CBT+LT 3. Waiting-list	Grp	15	78.7	11.5	4.9	3.3	0	1.6	USA	- - + 2

% Ethnicity

Study	Recruitment	Target group	Definition of depression	Conditions	Format	N	Native	Black	Asian	Latin American	Native-American	Other	Country	Random seq	Allocation conc	Blind assess	Risk of bias
Safren et al., 2009	Community	General medical	Mood disorder	1. CBT 2. WL	Ind	23 22	51	31	0	18	7	0	USA	+	+	+	4
Schmidt & Miller, 1983	Community	Adults	Other definition	1. CBT (individual) 2. CBT (small group) 3. CBT (large group) 4. CBT (bibliotherapy) 5. Waiting-list	Ind	12	86	0	0	0	0	1.4	USA	-	-	+	1
Schulberg et al., 1996	Clinical	Adults	Major depression	1. IPT 2. CAU	Ind	93 92	55.1	0	0	0	0	44.9	USA	-	-	+	2
Serfaty, Haworth, Blanchard, Buszewicz, Murad & King, 2009	Community	Older adults	Mood disorder	1. CBT 2. CAU 3. Talking control	Ind	64 55 58	94.1	2.9	1	0	0	2	UK	+	+	+	4
Snarski, Scogin, DiNapoli, Presnell, McAlpine & Marcinek, 2011	Clinical	Older adults	Other definition	1. BAT 2. CAU	Ind	16 13	60	32	0	0	2	6	USA	-	-	+	1
Spinelli & Endicott, 2003	Clinical	Other	Major depression	1. IPT 2. PEP (control)	Ind	19 19	28.9	5.3	0	65.8	0	0	USA	+	-	-	2
Swartz et al., 2008	Community	Other	Major depression	1. IPT 2. CAU	Ind	24 18	79	0	0	0	0	21	USA	-	-	+	2
Talbot et al., 2011	Clinical	Other	Major depression	1. IPT 2. CAU	Ind	34 24	58.6	41.4	0	0	0	0	USA	-	-	-	1
Taylor et al., 2009	Clinics and advertisements	General medical	Other definition	1. CBT 2. Waiting-list	Ind	19 21	95.8	0	0	0	0	4.2	USA	-	-	+	2
van Bastelaar, Pouwer, Cuijpers, Riper & Schoek, 2011	Community	General medical	Other definition	1. CBT 2. Waiting-list	Grp	125 130	89	0	0	0	0	11	NL	+	+	+	4
Warmerdam, van Straten, Twisk, Riper & Cuijpers, 2008	Community	Adults	Other definition	1. CBT 2. PST 3. Waiting-list	Grp	88 88 87	92.4	0	0	0	0	7.6	NL	+	+	+	4

Wiklund, Mohlkert & Edman, 2010	Maternity clinic	Women with PPD	Other definition	1. CBT 2. CAU	Ind	33 34	91	0	0	0	0	9	SE	-	-	+	-	1
	Referral, community and primary care practices	Women with PPD	Other definition	1. PST 2. PBO	Ind	138 140	77.8	9.2	0	11.8	0	0.7	USA	+	+	+	-	3

Abbreviations: ACT: acceptance and commitment therapy; Allocation conc: adequate concealment of allocations prior to assignment; AU: Australia; BAT: behavioral activation therapy; BCT: brief couple therapy; Blind assess: blinding of outcome assessors; BR: Brazil; BWL: behavioral weight loss intervention; CAU: care-as-usual; CBT: cognitive behavior therapy; CET: coping effectiveness training; COP: coping intervention; DBT: dialectical behavior therapy; EU: Europe; Grp: group; Ind: individual; IPS: interpersonal support intervention; IP: interpersonal-process therapy; IPT: interpersonal psychotherapy; ITT: intention-to-treat analysis; ITUR: individual therapy upon request; NL: the Netherlands; PBO+: pill-placebo + clinical management; PEP: parenting education program; PPD: post-partum depression; PST: problem-solving therapy; Random seq: adequate sequence generation; REL: structured relaxation intervention; Risk of bias: number of fulfilling the quality criteria; RT: Reminiscence Therapy; SE: Sweden; SEMT: self-management therapy; SET: supportive-expressive therapy; SUB: non-directive supportive therapy; UK: United Kingdom; USA: United States of America.

QUALITY ASSESSMENT

The quality of the studies varied considerably. Thirty-one studies (55%) reported an adequate sequence generation, and 30 studies (54%) conducted an adequate concealment of allocations before assignment. Seventy-seven percent of the studies (N=43) reported blinding of outcome assessors, and 41 studies (73%) conducted intention-to-treat analyses. Only 19 (34%) studies met all four quality criteria, and two studies (4%) met none of the criteria. Details on the quality assessment are available in table 1.

EFFECTS OF PSYCHOTHERAPY COMPARED WITH A CONTROL CONDITION

The mean effect size of 77 comparisons for psychotherapy compared with a control condition was $g=.50$ (95% Confidence Interval (CI)=.41–.58, NNT=3.62). Heterogeneity was moderate to high ($I^2=61.64\%$) and significant ($p<.001$). The results of these analyses are shown in table 2. Removal of possible outliers (studies outside the CI of the mean effect size) showed a small decrease in the mean effect size ($g=.46$, 95% CI=.39–.53, NNT=3.91). Studies based on the HAM-D had an effect size of $g=.66$ (95% CI =.48–.85), and studies in which the BDI was used had a higher mean effect size ($g=.73$, 95% CI =.60–.87).

Inspection of the funnel plot and use of Duval and Tweedie's (2000) trim- and- fill procedure indicated considerable publication bias. After adjustment for missing studies, g decreased from .45 to .30 (95% CI =.26–.35, N=22 imputed studies). Egger's test pointed to significant asymmetry of the funnel plot ($p<.001$).

Table 2. Efficacy of psychotherapy versus a control condition in meta-analyses of 56 randomised controlled trials of psychotherapy for depression.^a

Characteristic	Effect size			Slope			Z	p ^c
	N _{comp}	g	95% CI	I ^{2b}	NNT	Point estimate		
All studies	77	.50	.41 - .58***	61.64***	3.62			
outliers removed ^d	66	.46	.39 - .53***	29.96*	3.91			
HAM-D only	30	.66	.48 - .85***	72.11***	2.78			
BDI only	32	.73	.60 - .87***	47.61**	2.54			
<i>Subgroup analyses</i>								
All racial-ethnic minority groups (proportion of \leq)								
≤ 24.9%	57	.49	.40 - .59***	59.97***	3.68			
25 - 49.9%	11	.41	.28 - .55***	9.05	4.39			
≥ 50%	9	.56	.19 - .93**	82.67***	3.25			
Black								
≤ 24.9%	65	.53	.44 - .63***	65.33***	3.42			
≥ 50%	12	.30	.18 - .43***	.00				
Asian								
≤ 24.9%	77	.50	.41 - .58***	61.64***	3.62			
Latin								
≤ 24.9%	71	.48	.40 - .57***	55.97***	3.76			
≥ 25%	6	.61	.11 - 1.10*	85.60***	2.99			
Native-American								
≤ 24.9%	77	.50	.41 - .58***	61.64***	3.62			
Other								
≤ 24.9%	74	.49	.41 - .58***	62.60***	3.68			
≥ 25%	3	.53	.29 - .77***	.00	3.42			

Abbreviations: BDI: Beck Depression Inventory; CI: confidence interval around the effect size; CBT: cognitive behavioral therapy; HAM-D: Hamilton Depression Rating Scale; Ncomp: number of comparisons;

^a Efficacy (Hedges' g) was analyzed with a random-effects model.

^b Heterogeneity in proportions, with values in percentages. The p value indicates whether the Q statistic for heterogeneity is significant.

^c Values indicate whether the difference between the effect sizes in the subgroups is significant.

^d Baker et al., 2010 (two comparisons); Dobkin et al., 2011; Dwight-Johnson et al., 2011; Jamison & Scogin, 1995; Miranda et al., 2003; O'Hara et al., 2000; Schmidt & Miller, 1983 (two comparisons); van Bastelaar et al., 2011; Williams Jr et al., 2000.

*p<.05; **p<.01; ***p<.001

RACE-ETHNICITY AS A MODERATOR

BIVARIATE METAREGRESSION ANALYSES

The results of the bivariate metaregression analyses are reported in table 2. For illustrative purposes, we also present the effect sizes for studies with differing proportions of participants from racial-ethnic minority groups. As the table shows, there was a trend ($p < .100$) indicating that the proportion of racial-ethnic minorities in the samples may be associated with the effect size, with a lower effect size for higher proportions of persons from racial-ethnic minority groups.

In the metaregression analyses in which we examined whether the racial-ethnic minority proportion of study groups was associated with the effect size, we did not find any indication that this was the case, although there was a trend ($p = .10$) indicating that the effect size may have been lower when the proportion of black participants was higher.

MULTIVARIATE METAREGRESSION ANALYSES

The results of the multivariate analyses are reported in table 3. There was no significant association between the total sample proportion of racial-ethnic minorities and the effect size after we adjusted for other characteristics of the studies (model 1). We also found no significant association between each racial-ethnic minority group and effect size, after adjusting for other study characteristics (model 2).

Table 3. *Multivariate regression analyses of predictors of psychotherapy use, by study characteristics and ethnicity in 56 randomised controlled trials of psychotherapy for depression.*

Variable	Psychotherapy vs control condition			
	Model 1 ^a		Model 2 ^b	
	β	SE	β	SE
Race-ethnicity (reference: nonminority)				
% from racial-ethnic minority group	-.00	.00		
% nonminority native born			Ref	
% Black			.00	.00
% Asian			-.01	.03
% Latin			.00	.00
% Native-American			-.01	.06
Diagnosis (reference: no diagnosis)				
Yes	.05	.11	.07	.11
Study group: adults (reference: other)				
Adults	.17	.12	.16	.12
Recruitment (reference: community)				
Clinical	-.23	.13	-.27	.14
Other	-.03	.14	-.08	.14
Intervention (reference: other ^c)				
CBT	.30*	.14	.23	.16
IPT	.27	.19	.21	.19
PST	.12	.21	.09	.22
SUB	.49*	.22	.45*	.23
Group format (reference: individual)				
Group	.09	.11	.08	.11
Control condition (reference: waiting list)				
Care-as-usual	-.12	.14	-.09	.14
Other	-.17	.10	-.14*	.10
U.S. Study (reference: non-U.S. study)				
USA	.18	.14	.20	.15
Quality of study	-.06	.04	-.06	.05

^a Study characteristics and ethnicity were categorized into nonminority and racial-ethnic minority groups.

^b Study characteristics and ethnicity were categorized into five groups: nonminority native born, Black, Asian, Latin, and Native American.

^c Includes behavioral activation therapy, psychodynamic therapy, and other psychotherapies, as noted in table 1.; * $p < .05$

DISCUSSION

In this meta-analysis, we selected 56 trials that examined effects of psychotherapy on depression by comparing treatment with a control group and that contained information about the racial-ethnic distribution of the population samples. We found no association between race-ethnicity and effect size. We found a moderate effect size ($g=.50$) in favor of psychotherapy.

Our overall results suggest there is little reason to assume that psychotherapy is less effective for racial-ethnic minority populations compared with nonminority populations. Although we were not able to make direct comparisons between racial-ethnic subgroups because of sparse literature in this field, our finding is in line with the general view that evidence-based psychotherapy is generalizable across racial-ethnic minority groups (Miranda et al., 2005). Cultural context and race-ethnicity seem to play a minor role in the effectiveness of psychotherapy. Moreover, a recent meta-analysis that included 17 studies of psychotherapy for depression and anxiety in low- and middle-income countries found comparable effect sizes (Cohen's $d=1.02$) for psychotherapy in high-income countries (Van 't Hof, Cuijpers, Waheed, & Stein, 2011). This finding suggests that the effectiveness of psychotherapy for depression can be generalized over different cultural contexts.

In our study, we found some trends suggesting that higher numbers of participants from racial-ethnic minority groups may be associated with lower effect sizes for psychotherapy. These trends did not reach statistical significance, however, and disappeared completely after adjustment for other characteristics of the studies. It is often found that people from minority populations are less affluent, are much more likely to be seen in impoverished settings, and have lower levels of education compared with the majority population, and these differences result in considerable differences between studies with higher levels of minority participants and other studies. It could very well be the case that in such conditions psychotherapy would be less effective, but that is not what we found. In fact, we found that after adjustment for the characteristics of the studies, there was no indication that the percentage of racial-ethnic minority representation was associated with the outcome.

This study had several limitations. First, we could not directly look at the effect of race-ethnicity on effect size because an insufficient number of trials reported the necessary data. We therefore examined race-ethnicity proportions of the population samples in relation to the effect of psychotherapy. Second, some publication bias was indicated in studies in which psycho-

therapy was compared with a control condition. This finding suggests that our meta-analysis could have overestimated the effect size of psychological treatments. Third, the mean effect size for psychotherapy found in our study is somewhat lower than that found in earlier meta-analyses (Cuijpers, Van Straten, Andersson, & Van Oppen, 2008; Cuijpers, Van Straten, Bohlmeijer, Hollon, & Andersson, 2010). One interpretation is that our sample of studies reporting the proportion of racial-ethnic minorities was not representative of all studies in this field. If this is the case, the results of this study may not be generalized to other studies of psychotherapy for adult depression. Another important limitation is that among blacks and Hispanics, those who enroll in psychotherapy have a high probability of being highly educated and well integrated, thus being less representative of their minority groups. Therefore, generalizing the findings of our study to racial-ethnic minority groups must be done with great care. Because of these limitations, the results of this study should be considered with caution.

The difficulties with conceptualizing the term race-ethnicity also should be stressed. Race-ethnicity is a very broad concept that includes several dynamic sociological conditions in terms of history, culture, religion, language, and nation, making it difficult to clearly define as a variable in this study. There are several sociological factors that could also be important moderators for treatment effects that were not taken into account in this study. For example, some authors suggest the importance of distinguishing between immigrants and native-born persons from racial-ethnic minorities when evaluating mental health interventions (Missinne & Bracke, 2012). Such distinctions can reveal different characteristics between the two groups, including in regard to depressive symptoms. In addition to this possible distinction, socioeconomic status, immigration history, and education level are among the other factors that should be taken into account (Alvidrez, Azocar, & Miranda, 1996). We oversimplified the concept by categorizing race-ethnicity in several groups according to country of origin, which is another important limitation of this study.

The generalizability of our findings to other racial-ethnic minority groups is another important point of discussion. Because a majority of the studies focused on culturally and linguistically unadapted therapies, it is very likely that mainly highly integrated people were included in the RCTs used in our analyses, limiting generalizability of the results. In most of the studies we reviewed, participants were included only if they could read and speak the language of their resident country. As mentioned earlier, degree of acculturation is found to be related to help-seeking behavior and therefore should also not be overlooked when evaluating the effect of race-ethnicity on treatment effect. The participants in our meta-analysis may very well be a

very select, small group who were well integrated and aware of their psychological problems, who identified with the mainstream, and who were willing to participate in a research study (Hall, 2001). Possibly, a large portion of the racial-ethnic minority groups therefore remain overlooked in this type of research.

CONCLUSION

However, given the societal and personal burden of depression, the need for treatment is not always met among racial-ethnic minority populations, as mentioned earlier. Racial-ethnic minorities stay underrepresented in clinical as well as research settings. Because our meta-analysis did not give strong indications that psychological treatments work differently between specific racial-ethnic minority groups, more attention should be paid to the gap between effective mental health care and the delivery of these services (Bhugra, 2005).

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CHAPTER 3

Guided self-help on the Internet for Turkish migrants with depression:
the design of a randomised controlled trial

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ABSTRACT

Background: The Turkish population living in the Netherlands has a high prevalence of psychological complaints and has a high threshold for seeking professional help for these problems. Seeking help through the Internet can overcome these barriers. This project aims to evaluate the effectiveness of a guided self-help problem-solving intervention for depressed Turkish migrants that is culturally adapted and web-based.

Methods: This study is a randomised controlled trial with two arms: an experimental condition group and a wait list control group. The experimental condition obtains direct access to the guided web-based self-help intervention, which is based on Problem Solving Treatment (PST) and takes 6 weeks to complete. Turkish adults with mild to moderate depressive symptoms will be recruited from the general population and the participants can choose between a Turkish and a Dutch version. The primary outcome measure is the reduction of depressive symptoms, the secondary outcome measures are somatic symptoms, anxiety, acculturation, quality of life and satisfaction. Participants are assessed at baseline, post-test (6 weeks), and 4 months after baseline. Analysis will be conducted on the intention-to-treat sample.

Discussion: This study evaluates the effectiveness of a guided problem-solving intervention for Turkish adults living in the Netherlands that is culturally adapted and web-based.

Trial registration: Nederlands Trial Register: NTR2303

INTRODUCTION

Historically, the Netherlands has played an important role in Europe as a host country for immigrants. The immigration of guest workers became an important trend after World War II and changed the Netherlands into a multi-ethnic and multicultural society. Nowadays, almost one-fifth (19.9%) of the Dutch population was born outside the Netherlands (first generation migrants) or has one or both parents born outside the Netherlands (second generation migrants; CBS, 2010). Slightly more than half of these migrants (55%) come from non-western countries. The Turkish population is one of the main ethnic groups in Dutch society and constitutes 2.3% of the total population. About half of this group was born in Turkey (first generation), while the other half has parents who were born in Turkey (second generation). Migration is a complex process, which can have a immense impact on a migrant's life and mental health. It can improve the quality of life of migrants in the economic sense, but it can also involve complexities in the adjustment process, such as unemployment, minority status and tensions between generations (Desjarlais, Eisenberg, Good, & Kleinman, 1995).

One-third of the Turkish population living in the Netherlands has psychological problems such as depression and anxiety, which is a higher prevalence than normally found in general population studies (Bengi-Arslan, Verhulst, & Crijnen, 2002; de Wit et al., 2008; Van der Wurff et al., 2004). The 1-month prevalence of depressive and/or anxiety disorders is highest among the Turkish migrant group (18.7%) in comparison with other ethnic groups (6.6% among Dutch and 9.8% among Moroccan; de Wit et al., 2008). Turkish women in particular currently have a strongly increased risk for developing depression compared to Dutch natives, and young Turkish women are at a high risk of attempting suicide (van Bergen, Smit, van Balkom, & Saharso, 2009). Despite the high risk of serious psychological problems among the Turkish population, they benefit to a much lesser extent from advances in evidence-based depression prevention services than the general population. Their mental health care service uptake is low and they often have a high threshold for seeking professional help for their mental health problems (Hilderink, van 't Land, & Smits, 2009; Rabbea, Smits, & Franx, 2008).

An innovative way to overcome the barriers referred to above is the Internet, which has low threshold acceptability, a high level of anonymity and offers flexibility in time and place. There is now convincing evidence that web-based interventions effectively reduce depressive symptoms and prevent depression (Andersson, Cuijpers, Carlbring, & Lindefors, 2007; Gerhards et al., 2010; Spek, Cuijpers, et al., 2007; Spek, Nyklíček, et al., 2007; Van 't Hof, Cuijpers, & Stein, 2009; Warmerdam, Van Straten, Twisk, Riper, & Cuijpers, 2008) and they have been

shown to be not only clinically effective, but also cost effective (Gerhards et al., 2010). Little is known, however, about the effectiveness of these interventions in ethnic minority groups, although expectations are that these groups may also benefit from the interventions. Self-help through the Internet has the main advantage of a high level of anonymity and might overcome important cultural barriers. Since almost 80% of the Turkish population in the Netherlands has Internet access (Foquz Media, 2008), it could be an ideal way of reaching and offering help to Turkish people with depressive symptoms.

One successful example of an evidence-based intervention is *Alles Onder Controle* (AOC). This is a web-based guided treatment defined as a standardized psychological intervention, which can be worked through independently by the clients themselves in their own homes. The clients receive weekly feedback from a trained coach by e-mail. AOC has a self-examination framework (Bowman, Scogin, & Lyrene, 1995) and is based on problem-solving therapy, the core element being that clients learn to regain control over their problems and lives in a structured way. This method has been proven to be effective in several studies (Bowman, Charles Ward, Bowman, & Scogin, 1996; Floyd et al., 2002) and the statistical and clinical effectiveness of AOC in reducing symptoms of depression and anxiety among native Dutch have been shown in several studies (van Straten, Cuijpers, & Smits, 2008; Warmerdam et al., 2008). It is still unknown, however, whether this intervention is also effective among ethnic groups, especially among the Turkish population, which is currently a high-risk group for developing depression. No previous attempts have been made to adjust and examine AOC for Turkish migrants, although the limited studies available on depression interventions in other countries show that ethnic minorities can be effectively recruited and treated with prevention interventions (Manson & Brennehan, 1995; Muñoz et al., 2006; Muñoz et al., 1995; Rosselló, 2008).

In the present study, we will work with AOC-TR, the culturally adapted version based on the needs of the Turkish population that is available in Dutch and in Turkish. This online guided self-help intervention is intended to reduce depression complaints and the effectiveness of AOC-TR will be examined in a randomised controlled trial with adult Turkish people living in the Netherlands.

METHODS

STUDY DESIGN

This study is a randomised controlled trial with two arms: an experimental group and a wait list control group. The experimental group obtains direct access to the guided web-based self-help intervention; the wait list control group receives access to the intervention after 4 months. The study protocol, information brochure and informed consent have been approved by the Medical Ethics Committee of the VU University.

INCLUSION AND EXCLUSION CRITERIA

Turkish adults living in the Netherlands are eligible if they meet the following criteria: 1) age 18 years or older; 2) depressive symptoms (measured by the Center for Epidemiologic Depression Scale, CES-D score ≥ 16); 3) Turkish background (participant was born in Turkey or at least one of his/her parents was born in Turkey); 4) has access to a PC and the Internet and an e-mail address. Participants will be excluded if they are suicidal (according to the MINI-International Neuropsychiatric Interview).

RECRUITMENT

Recruitment will take place among the Turkish population in the Netherlands by means of advertisements in Dutch and Turkish national newspapers, magazines, community sites, and banners on health related websites for migrants. These advertisements contain a link to the research website with information about the study. Respondents who are interested can apply by sending an e-mail to the researcher. The information brochure and informed consent will be e-mailed together with the link for the screening.

RANDOMIZATION

After screening, participants will be randomised into one of the two conditions: the experimental group and wait list control group. The allocation schedule will be generated by an independent researcher using a computerized system. Those in the experimental condition will receive a username and password to log in to AOC-TR. Participants who are in the wait list condition will receive the same schedule of assessments online as the people in the experimental condition and receive a username and password to log in to the treatment after four months.

SAMPLE SIZE

The sample size will be based on the expected difference of $d=.45$ on the primary outcome between the experimental and control groups. This expected difference is based on previous studies (Warmerdam, Van Straten, Twisk, Riper, & Cuijpers, 2008; Spek, Nyklíček, et al., 2007). Based on a power (1-beta) of .80 in a two-tailed test, an alpha of .05, we need to start with 100 participants at baseline in each condition to show an effect-size of .45. The total sample size at baseline therefore, is determined as being 200 participants with depressive complaints.

INTERVENTIONS

PROBLEM - SOLVING TREATMENT

The Dutch version of *Alles Onder Controle* has been adapted by:

- cultural sensitivity in the languages and presentation in relation to psychological problems
- use of culture-specific cases and problems that are recognizable for the target group concerned
- culture-specific examples of persons with similar problems

The intervention was translated into Turkish by a Turkish psychologist after adaptation and the translation was checked by two native speakers. Each participant is allowed to choose his/her language of preference.

The intervention consists of 5 sessions and takes 5 weeks in total. During that period the respondents indicate what they think is important in their lives, they make a list of their “problems and worries” and they categorize their problems into three groups: unimportant (not related to what they think is important in their lives), important and solvable (these problems are solved by a systematic problem-solving approach consisting of 6 steps), or important but unsolvable (having lost someone through death or having a chronic general medical disease for example; in the case of problems like these, they make a plan for how to live with them). The 6-step problem-solving procedure is the core of the intervention and people are stimulated to use this procedure during the course for several of their ‘important and solvable’ problems. The idea is that by mastering this technique people will regain mastery of their problems and ultimately their lives. At the end, participants will receive a certificate for completing the intervention.

S U P P O R T

The participants are supported by trained coaches, whose feedback on the homework assignments done by the participants is given in brief weekly e-mails. The total amount of time spent on each participant is about 1.5 hours. It takes about 15 or 20 minutes per week per respondent to write these e-mails, which will be done by a bi-lingual psychologist at the VU University. The researcher (BÜ) will verify whether the coach has followed the treatment protocol sufficiently by reading a selection of the emails and by supervision.

A S S E S S M E N T S

All assessments will take place in the preferred language, either Dutch or Turkish. The primary outcome measure is the reduction of depression symptoms as measured by the CES-D, the secondary outcome measures are symptoms of anxiety, somatic symptoms, acculturation, quality of life and satisfaction.

The CES-D, one item on the Beck Depression Inventory- II (BDI-II) and Section C of the Mini-International Neuropsychiatric Interview (M.I.N.I.) will be administered as screening measures. Suicide ideations and risk will be measured in two steps. Suicide ideations and risk will be measured in two steps. First, the suicide item on the BDI-II will be presented (Beck & Steer, 1987; Beck, Steer & Brown, 1996). This instrument is validated among Dutch (e.g. Van der Does, 2002; Zitman, 1989) and Turkish populations (Hisli, 1988; Uslu, 2008). If the response is confirming, then the suicide risk will be measured with the suicidality section of the MINI (Lecrubier et al., 1997; Sheehan et al., 1998). The suicide section of the MINI consists of six items and quantifies respondents in four groups: no suicide risk, low suicide risk, moderate suicide risk and high suicide risk. Dutch (Van Vliet & De Beurs, 2007) and Turkish (Engeler, 2004) translations of the MINI will be used.

Assessments will take place before randomization (T0), after completing the treatment (6-8 weeks, T1), and four months after baseline (T2). An overview of the procedures the participants will undergo in this study is given in figure 1. See table 1 for an overview of all assessments at each point in time.

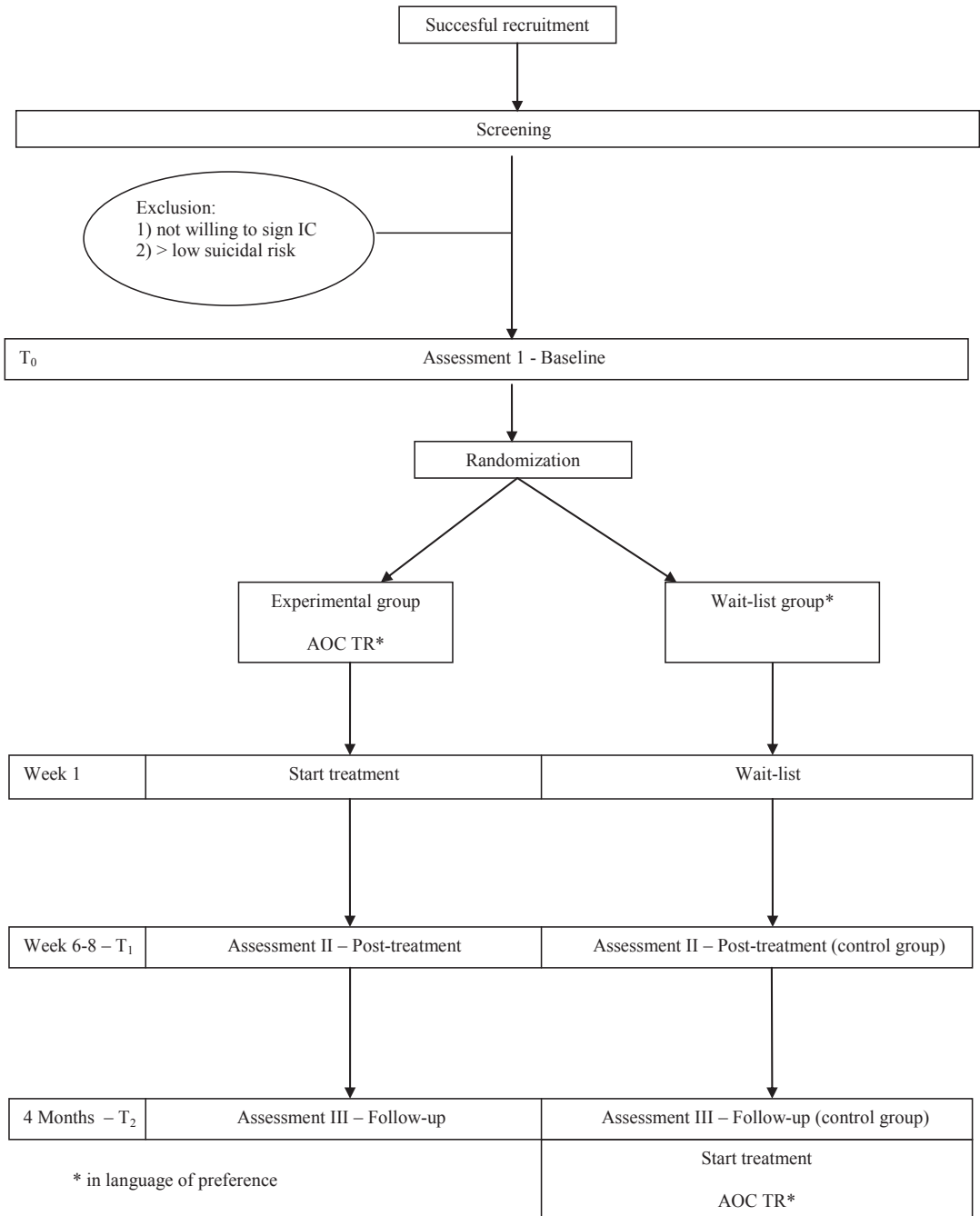


Figure 1. Research procedure in flow diagram.

Table 1. *Overview of instruments per measurement.*

	Number of items	T ₀ (baseline)	T ₁ (6-8 weeks)	T ₂ (4 months)
1. Socio-demographic data	10	<i>x</i>		
2. Depressive symptoms (CES-D)	20	<i>x</i>	<i>x</i>	<i>x</i>
3. Anxiety (scale of HADS)	7	<i>x</i>	<i>x</i>	<i>x</i>
4. Somatic symptoms (scale of SCL-90)	12	<i>x</i>	<i>x</i>	<i>x</i>
5. Acculturation (LAS)	28	<i>x</i>	<i>x</i>	<i>x</i>
6. Quality of life (EuroQol 5D)	5	<i>x</i>	<i>x</i>	<i>x</i>
7. Satisfaction and track and trace	5		<i>x</i>	<i>x</i>

INSTRUMENTS

DEPRESSIVE SYMPTOMS

Depressive symptoms will be measured using the Center for Epidemiologic Depression Scale (CES-D; Radloff, 1977). It includes 20 self-rated items, each scored 0-3, and measures the severity of depression. The total score ranges from 0 (no feelings of depression) to 60 (severe symptoms of depression). The CES-D is available in Dutch and Turkish and both have been proven to have good psychometric properties in terms of validity and reliability (Beekman et al., 1997; Spijker et al., 2004). The CES-D is also reliable and valid when presented digitally (Donker, van Straten, Marks, & Cuijpers, 2009). The optimal cut-off score varies in literature, but a score of 16 is usually regarded as indicating clinically relevant depressive symptoms (Haringma, Engels, Beekman, & Spinhoven, 2004).

ANXIETY

The Anxiety scale of the Hospital Anxiety and Depression Scale (HADS) will be used to measure symptoms of anxiety (Zigmond & Snaith, 1983). The HADS consists of a depression scale and an anxiety scale with a total of 14 items. Each item can be scored with a 4-point Likert scale on a range of 0-3, where 0 refers to no anxiety and 3 to high anxiety. The total score range is 0-21. A score between 0 and 7 indicates no anxiety; a score between 8 and 10 indicates possible anxiety; scores above 11 or 12 are indicative of a clinical anxiety disorder. The HADS has been proven to be a valid and reliable instrument in various normal and clinical Dutch samples (Bjelland, Dahl, Haug, & Neckelmann, 2002; Spinhoven et al., 1997) and in Turkish samples (Aydemir, 1997).

SOMATIC SYMPTOMS

The Somatization (SOM) subscale on the Symptom Checklist-90-Revised (SCL-90-R) will be used for measuring somatic symptoms (Derogatis, 1994). This is a five-point rating scale containing 12 items. Dutch and Turkish translations will be used for this study (Aksaray, Kortan, Erkaya, Yenilmez, & Kaptanoğlu, 2006; Arrindell & Ettema, 2003).

ACCULTURATION

The Lowlands Acculturation Scale (LAS) will be used to measure the degree of acculturation (Kamperman, Komproe, & De Jong, 2007; Mooren, Knipscheer, Kamperman, Kleber, & Komproe, 2001). It consists of 25 items that are rated on 6-point Likert-type scales with the extremes labeled as ‘totally disagree’ and ‘totally agree’. The LAS can be divided into 5 subscales: Skills, Traditions, Social Integration, Values and Norms, and Feelings of Loss. The official Dutch and Turkish translations will be used, both of which have been validated (Mooren et al., 2001).

QUALITY OF LIFE

The quality of life will be measured by the EuroQol Questionnaire (EQ5D; Brooks, 1996) in the official Dutch and Turkish translations, both of which have been validated (Eser, 2007; Lamers, Stalmeier, McDonnell, Krabbe, & Van Busschbach, 2005; Rabin & Charro, 2001). This instrument consists of 5 items (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression), each of which is rated as causing “no problems”, “some problems”, or “extreme problems”. The score per item ranges from 0 (poor health) to 1 (perfect health).

SATISFACTION AND TRACK AND TRACE

A track and trace system will keep a record of the dates the participant logs on or finishes a lesson, and the number of e-mails sent to and received by the coach. This system will also ask the question “Was this lesson useful to you?” in Dutch and Turkish after each lesson and the answer can be given on a 5-point Likert scale.

STATISTICAL ANALYSIS

The study will be carried out in accordance with the CONSORT guidelines. All analyses will be based on the intention-to-treat sample and missing values will be imputed by means of regression analyses. A t-test will be used to compare the post-test mean scores (at T1 and T0) for the intervention group with the post-test mean scores for the control group. For comparison of the two means Cohen's d will be used as the between effect size. Cohen's d will be calculated as the difference between the post-test mean scores of the intervention and the control group divided by the pooled standard deviation. Effect sizes of 0.8 are assumed to be large; effect sizes of 0.5 are moderate; and effect sizes of 0.2 are assumed to be small (Cohen, 1988).

DISCUSSION

A substantial part of the Dutch population has a Turkish background. They have a high prevalence of mental health disorders and have a high threshold for seeking professional help for these problems, but providing psychological help through the Internet may lower this threshold. This study evaluates the effectiveness of a guided self-help problem-solving intervention for depressed Turkish migrants that is culturally adapted and web-based. The strengths and limitations of the study can be summarized as follows:

Much is still not known about the effectiveness of Internet interventions for depression in ethnic groups. By examining the effectiveness of a problem-solving treatment on the Internet for Turkish adults in the Netherlands, important information about psychological treatments in an ethnic minority group will be gathered. This will be highly relevant for clinicians and mental health services in improving the quality and the effectiveness of offering professional help.

A second strength of this study is that the intervention is available in two languages, which provides the flexibility of choosing the language of preference for receiving professional help. Turkish migrants who were previously unable to seek help because of the language barrier can now be treated. Moreover, by using the Internet to offer help, those who have a high threshold for seeking help can be reached and benefit from the treatment.

Another strength of this study is that the assessments will be carried out in two languages, while most other studies exclude non-Dutch speakers. All questionnaires used have been validated in both languages.

There are some limitations, however, that are worthwhile mentioning. First of all, we are unable for practical reasons to perform lengthy and costly diagnostic interviews, which mean that we will not know how many participants in our study met the DSM criteria for depression. The results will, however, reflect the population whose symptoms are so distressing that they are willing to seek help. Secondly, the psychometric validities of the questionnaires used in this study have not yet been tested in an online environment.

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CHAPTER 4

Internet-based, culturally sensitive, problem-solving therapy for Turkish migrants with depression: randomised controlled trial

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ABSTRACT

Background: Turkish migrants living in the Netherlands have a high prevalence of depressive disorders, but experience considerable obstacles to accessing professional help. Providing easily accessible Internet treatments may help to overcome these barriers. The aim of this study was to evaluate the effectiveness of a culturally sensitive, guided, self-help, problem-solving intervention through the Internet for reducing depressive symptoms in Turkish migrants.

Methods: A two-armed randomised controlled trial was conducted. The primary outcome measure was the severity of depressive symptoms; secondary outcome measures were somatic symptoms, anxiety, quality of life, and satisfaction with the treatment. Participants were assessed online at baseline, posttest (6 weeks after baseline), and 4 months after baseline. Posttest results were analyzed on the intention-to-treat sample. Missing values were estimated by means of multiple imputation. Differences in clinical outcome between groups were analyzed with a t-test. Cohen's *d* was used to determine the between-groups effect size at post-treatment and follow-up.

Results: Turkish adults (N=96) with depressive symptoms were randomised to the experimental group (n=49) or to a waitlist control group (n=47). High attrition rates were found among the 96 participants of which 42% (40/96) did not complete the posttest (6 weeks) and 62% (59/96) participants did not complete the follow-up assessment at 4 months. No significant difference between the experimental group and the control group was found for depression at posttest. Recovery occurred significantly more often in the experimental group (33%, 16/49) than in the control group (9%, 4/47) at posttest ($p=.02$). Because of the high attrition rate, a completers-only analysis was conducted at follow-up. The experimental group showed significant improvement in depression compared to the control group both at posttest ($p=.01$) and follow-up ($p=.01$).

Conclusion: The results of this study did not show a significant effect on the reduction of depressive symptoms. However, the effect size at posttest was high, which might be an indicator of the possible effectiveness of the intervention when assessed in a larger sample and robust trial. Future research should replicate our study with adequately powered samples.

Trial registration: Dutch Trial Register: NTR230

INTRODUCTION

Depressive disorders are highly prevalent (Alonso et al., 2004; Kessler et al., 2007) and are significantly associated with an impaired quality of life (Saarni et al., 2007; Üstün, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004). It is estimated that the prevalence of depression varies in different ethnic populations. For example, a European study showed that the prevalence of depressive symptoms among adult ethnic minorities was significantly higher than among native people (Missinne & Bracke, 2012). Lower socioeconomic conditions and discrimination against ethnic minorities have been found to be important predictors for these differences. Research shows that Turkish people in the Netherlands, one of the largest ethnic minority groups in the country, have the highest 1-month prevalence of depressive and/or anxiety disorders (18.7%) in comparison with Dutch (6.6%) and Moroccan (9.8%) people (de Wit et al., 2008). Furthermore, it has been found that young women of Turkish and South-Asian descent in the Netherlands are at increased risk for committing suicide. Social oppression is perceived as one of the risk factors contributing to this higher suicidal risk (van Bergen, Smit, van Balkom, & Saharso, 2009).

Despite the fact that ethnic minorities encounter a higher risk for depression compared to the ethnic majority, they seem to receive less professional help from mental health care services than native people in Western countries (Leong & Kalibatseva, 2011; U.S. Department of Health and Human Services, 2001). Several reasons have been found for this lower uptake. For example, people from ethnic minorities seek mental health care at a later and more advanced stage of their mental health problems. They also have a higher chance of dropping out from therapy prematurely (Trujillo, 2008). To lower the access threshold, it is important to apply effective recruitment strategies and to provide culturally sensitive interventions for ethnic minorities.

Psychotherapy, such as cognitive behavior therapy (Churchill et al., 2002; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012) and problem-solving therapy (Cuijpers, Van Straten, & Warmerdam, 2007), has found to be effective in the treatment of adult depression, but little is known about whether this effectiveness also holds for ethnic minorities. Data are mostly obtained from studies among white, middle-income populations, leaving ethnic minorities underrepresented in clinical research (Miranda, Nakamura, & Bernal, 2003).

However, a recent meta-analysis taking ethnic minorities into consideration showed a first indication that psychotherapy may be equally as effective in ethnic minorities as in native

populations (Ünlü Ince, Riper, van 't Hof, & Cuijpers, 2014). Therefore, this finding would justify strategies for lowering the access threshold to psychotherapy for ethnic minorities with depression. One such way could be the delivery of depression interventions by Internet. Because the Internet can overcome several barriers to treatment uptake, it could help in reaching out to ethnic minorities with unmet needs for treatment. It can lower the access threshold and provide anonymity and considerable flexibility in terms of time and place.

Internet interventions have proved to be effective in the treatment of depressive symptoms and the prevention of depression, as shown in a number of studies (Richards & Richardson, 2012; Spek et al., 2007; Van 't Hof, Cuijpers, Waheed, & Stein, 2011). However, it is unclear whether this evidence for Internet-based interventions can be generalized to ethnic minority groups. So far, few studies have focused on ethnic minorities in online trials. For example, a recent Australian study showed promising results for an Internet-based cognitive behavior therapy in the treatment of depression in Chinese migrants (Choi et al., 2012). The participants in the experimental group evaluated the Internet-based treatment as acceptable and reported significantly reduced depressive symptoms (Cohen's $d=.93$) up to 3 months after treatment compared to a control group.

In the Netherlands, one such successful Internet-based, guided, self-help intervention based on problem-solving therapy is Alles Onder Controle (AOC; Everything under Control). AOC has been shown to be clinically effective in the reduction of depressive symptoms with a moderate effect size (Cohen's $d=.50$; van Straten, Cuijpers, & Smits, 2008; Warmerdam, van Straten, Twisk, Riper, & Cuijpers, 2008). This intervention appears also to be cost-effective as shown by Warmerdam and colleagues (2010). For the purpose of this study, AOC was adapted to the specific needs of Turkish people living in the Netherlands (AOC-TR; Ünlü, Riper, Van Straten, & Cuijpers, 2010). We investigated the effectiveness of AOC-TR by means of a randomised controlled trial with a similar design as the trial of Warmerdam and colleagues (2008). We hypothesized that Turkish adult migrants in the experimental group would show a significant reduction in depressive complaints compared to those in a waitlist control group. To the best of our knowledge, this is the first study evaluating a culturally sensitive, Internet-based, self-help intervention for Turkish migrants with depressive complaints.

METHODS

TRIAL DESIGN

A two-armed randomised controlled trial was conducted to examine the effectiveness of AOC-TR, comparing the experimental group with a waiting list control group. The experimental group obtained direct access to the intervention and the waiting list control group received access after 4 months. Ethical approval was granted by an independent medical ethics committee (METc VUmc registration no: 2010/82). The trial is registered in the Dutch Trial Register (NTR2303). A detailed description of the trial design has been published earlier (Ünlü et al., 2010).

PARTICIPANTS AND INCLUSION/EXCLUSION

CRITERIA

Participants aged 18 years or older with depressive symptoms as measured by a Center for Epidemiologic Studies Depression Scale (CES-D) score ≥ 16 (Radloff, 1977) and a Turkish background (participant or at least 1 parent was born in Turkey) were included in the trial. To be included, participants also needed to have access to a computer with Internet, have an email address, and have returned a signed informed consent form.

Exclusion took place if the participant was suicidal, which was assessed in 2 steps as part of the online screening. First, the suicide item on the Beck Depression Inventory II (BDI-II) was presented (Beck & Steer, 1987; Beck, Steer, & Brown 1996). The BDI-II is validated among Dutch (Van der Does, 2002; Zitman, 1989) and Turkish populations (Hisli, 1988; Uslu, 2008). Second, if the response was affirmative, the suicide risk was measured with the suicidality section of the Mini-international Neuropsychiatric Interview (MINI; Lecrubier et al., 1997; Sheehan et al., 1998) in Dutch (Van Vliet & De Beurs, 2007) or Turkish (Engeler, 2004). Participants with a relatively high risk were advised to contact their general practitioner or were referred to the online portal for suicide prevention (www.113Online.nl).

RECRUITMENT

Recruitment took place from June 16, 2010 to March 15, 2012. Participants were recruited among the adult Turkish migrant population via several recruitment strategies. The following strategies were applied: advertisements in Dutch and Turkish national newspapers, maga-

zines, and community websites; banners on health-related websites for migrants; and through social media. Information brochures were distributed at Turkish associations in the Netherlands, mental health care organisations, and sociocultural organisations. The recruitment took place in 2 languages, Dutch and Turkish. Facebook was the most effective recruitment strategy during the trial.

Recruitment on Facebook took place between January 1, 2011 and March 15, 2012. A personal profile and a fan page about the trial were created on Facebook, where pictures from the research website, information about the project, and status updates were shared. Facebook groups related to Turkish migrants and Turkish groups focusing on (general) health and psychology were joined. Next, random people from these groups were invited to join the fan page and friend requests were sent. A total of 584 friend requests were accepted by these invited people. Afterwards, friends of our friends list and people from the Facebook groups began to add our Facebook profile, which resulted in 3308 friends on the research profile by the end of the trial. Friends from our friends list and from the joined Facebook groups sent us messages or, if the researcher was online, chat conversations took place with them. We received or had chat conversations (about diverse topics, including application to the trial) with 348 people.

The advertisements contained a link to our research website with detailed information about the trial. Interested parties could apply by sending an email to the researcher, who then returned a digital information brochure about the study, the informed consent form, and a unique Web link for an online screening questionnaire.

I N T E R V E N T I O N

The original version of the self-guided, problem-solving intervention (AOC; van Straten et al., 2008) was adapted to a culturally sensitive intervention (AOC-TR) in collaboration with the Trimbos Institute (Netherlands Institute of Mental Health and Addiction). First, the intervention was translated from Dutch into Turkish, and then both versions were culturally adapted. Although there are multiple descriptions of cultural adaptation of psychotherapy to specific populations, it has been defined as the modification of intervention protocols according to the clients' values, contexts, and worldviews (Bernal, Jiménez-Chafey, & Domenech Rodríguez, 2009). Culture-specific adaptations in our intervention included several components: (1) the participants' preferred language, (2) describing psychological problems in terms of idioms of distress (e.g., using symptoms of depression instead of the term depression), (3) explicitly dis-

Discussing migration and culture by using culture-specific cases and problems that are recognizable for the target group concerned, and (4) including recognizable examples of persons with similar problems (e.g., a young woman who migrated 2 years ago and can't find her way in the Netherlands). After adapting the intervention from the original Dutch version, 2 native Turkish persons evaluated the interventions both for language- and cultural-specific items in close collaboration with the first author who is a Turkish person herself. Finally, recommendations from these reviewers in terms of culture and language were incorporated in the interventions. Screenshots of the interventions are shown in figure 1 and 2.



Figure 1. A screenshot of the Turkish version of AOC-TR.



Figure 2. A screenshot of the Dutch version of AOC-TR.

The AOC-TR consists of 5 sessions over 5 weeks. During the intervention, participants indicate what they think is important in their lives, they make a list of their problems and worries, and they categorize their problems into 3 groups: (1) unimportant problems, which are not related to what they think is important in their lives, (2) important and solvable problems, which are approached by a systematic problem-solving approach consisting of 6 steps, and (3) important but unsolvable problems, such as having lost someone through death or having a chronic general medical disease and making a plan for how to live with it. The core of the intervention is the 6-step problem-solving procedure, which teaches to use this technique during the course for several of their important and solvable problems. The idea is that by mastering this technique people will regain mastery of their problems and ultimately their lives.

The participants received feedback on their homework assignments in brief weekly emails in either Turkish or Dutch from the researcher (BÜI).

C O N T R O L C O N D I T I O N

The control condition was a waiting list comparator; participants in this condition did not receive access to the intervention after randomization. However, they were provided with access to the intervention 4 months after the baseline measures.

OUTCOME MEASURES

O V E R V I E W

Assessments took place before randomization (T0), after completing the treatment (8 weeks, T1), and 4 months after baseline (T2). All assessments were offered in the preferred language of the participant, either Dutch or Turkish.

P R I M A R Y O U T C O M E M E A S U R E : D E P R E S S I V E

S Y M P T O M S

Depression severity was measured with the CES-D (Radloff, 1977) including 20 self-rated items, each scored from 0 to 3. The Dutch (Beekman et al., 1997), Turkish (Spijker et al., 2004), and online (Donker, van Straten, Marks, & Cuijpers, 2009) versions of the CES-D have been proven to have good psychometric properties in terms of validity and reliability. In the current study, the internal consistency was good (Cronbach's $\alpha = .87$ at baseline).

SECONDARY OUTCOME MEASURES

A N X I E T Y

The anxiety scale of the Hospital Anxiety and Depression Scale (HADS) was used to measure symptoms of anxiety (Zigmond & Snaith, 1983). The HADS consists of an anxiety scale with a total of 7 items. Each item is scored on a 4-point Likert scale within a range of 0 to 3 (low to high). The HADS has proven to be a valid and reliable instrument in various normal and clinical Dutch (Spinoven et al., 1997) and Turkish samples (Aydemir, 1997). The Cronbach's alpha coefficient was .78 at baseline in the current study.

S O M A T I C S Y M P T O M S

To measure somatic symptoms, the somatization subscale on the Symptom Checklist-90-Revised (SCL-90-R) was used (Derogatis, 1994). This is a 5-point rating scale containing 12 items. Dutch (Arrindell & Ettema, 2003) and Turkish translations (Dağ, 1991) were used for this study, both having good reliability and validity. In the current study, the Cronbach's alpha coefficient was .86 at baseline.

Q U A L I T Y O F L I F E

Quality of life was measured using the EuroQol Questionnaire (EQ-5D) (Brooks, 1996; Rabin & Charro, 2001) in the official Dutch and Turkish translations, both of which have been validated (Eser, 2007; Lamers, Stalmeier, McDonnell, Krabbe, & Van Busschbach, 2005). The last item on the EQ-5D, the EQ visual analogue scale (EQ-VAS), was used in which the health state of the participant is measured by a thermometer-like scale from 0 (worst) to 100 (best health state).

S A T I S F A C T I O N W I T H T H E T R E A T M E N T

Participants were asked to define their satisfaction with each lesson by asking, "Was this lesson useful to you?" in Dutch and Turkish. The answers could be rated on a 5-point Likert scale. The score per item ranged from 1 (not at all) to 5 (very much). The Cronbach's alpha coefficient was .90 at T1.

A D D I T I O N A L M E A S U R E S

Socio-demographic information (sex, age, country of birth of participant and participant's parents, educational level, employment, and long-term relationship or partner status) and additional information were collected about how the participants were referred to the trial, why they chose an Internet-based intervention, and whether they use the Internet for health-related topics.

S A M P L E S I Z E

The sample size was calculated on an expected difference of $d=.45$ between the experimental and control groups. This expected difference was based on effect sizes derived from previous effect studies on Internet-guided problem-solving therapy for depression (Warmerdam et al., 2008). To achieve a power of .80 and an alpha of .05, we needed 78 participants at baseline in each condition ($N=156$). In keeping with our hypothesis, the primary and secondary outcomes were analyzed with a 1-tailed t-test as in the study of Warmerdam and colleagues (2008).

R A N D O M I Z A T I O N

Participants were randomly assigned to the experimental or the control group after baseline assessment. The allocation schedule was generated by an independent researcher using a computerized system.

A N A L Y S E S

O V E R V I E W

The study was carried out in accordance with the CONSORT guidelines (Schulz, Altman, & Moher, 2010). Differences in demographic characteristics were computed with a chi-square test. For small samples, the likelihood ratio test was performed. Clinical outcomes, differences in baseline, posttest, and follow-up mean scores (at T0, T1, and T2) were analyzed with a t-test.

MISSING VALUES

Only post-treatment data were analyzed according to the intention-to-treat principle. Missing values were handled using the multiple imputation technique in SPSS Statistics version 20.0 (IBM Corp, Armonk, NY, USA). All variables (except nominal variables) were included as predictors and generated 100 imputations. Analyses were performed using pooled data.

EFFECT SIZES

For comparison of the 2 means, Cohen's d was used to determine the between-group effect size at post-treatment and follow-up (Cohen, 1988). Cohen's d was calculated as the difference between the posttest mean scores of the intervention and the control group divided by the pooled standard deviation. Effect sizes of 0.8 are assumed to be large, effect sizes of 0.5 are moderate, and effect sizes of 0.2 are assumed to be small (Cohen, 1988).

CLINICALLY SIGNIFICANT CHANGE

Analyses of clinically significant change on the CES-D were conducted according to the Jacobson and Truax formula (Jacobson & Truax, 1991). This method evaluates 2 criteria for each participant. The first is whether each participant's CES-D score improved such that it is unlikely to be due to chance (reliable change index, RCI). The RCI is a function of a participant's pretest and posttest scores, the standard deviation of the population before treatment, and the test-retest reliability of the measure (Bouma, 1995; Jacobson & Truax, 1991). A participant is considered to have experienced reliable change if his or her RCI is greater than 1.96 (Jacobson, Roberts, Berns, & McGlinchey, 1999). The second criterion evaluated for participants shown to have reliable change is whether their post-treatment symptom level places them at a score of 16 or lower on the CES-D. Clinically significant change was determined if the participant had recovered and shown reliable improvement over time.

PER-PROTOCOL ANALYSIS

Per-protocol analyses were performed for participants who completed all the measurements and all 5 lessons of the course (if randomised to the experimental condition).

RESULTS

PARTICIPANTS

Figure 3 shows the flow of participants through the trial. A total of 287 individuals applied for participation. However, 66 of them did not complete the screening. The screening questionnaire was filled in by 221 individuals, of whom 125 were excluded primarily because of suicidal ideations (64/125, 51.2%). A total of 96 individuals met all inclusion criteria and were randomised to 1 of the 2 conditions.

Table 1 provides the baseline characteristics of study participants. The mean age of the participants was 35.2 years (SD=9.3) and 62% (59/96) were women. Most participants were born in Turkey (91%, 87/96) and preferred the Turkish language for study participation (89%, 85/96). More than three-quarters of the participants (78%, 75/96) were recruited through the Internet. The most important reason for choosing an Internet intervention was flexibility of use (62%, 59/96), followed by privacy and anonymity (23%, 22/96).

The mean score at baseline for all the participants on the CES-D was 29.9 (SD=9.6, range 11-52). There were no statistically significant differences between the experimental and control group at baseline on any of the demographic and secondary outcomes.

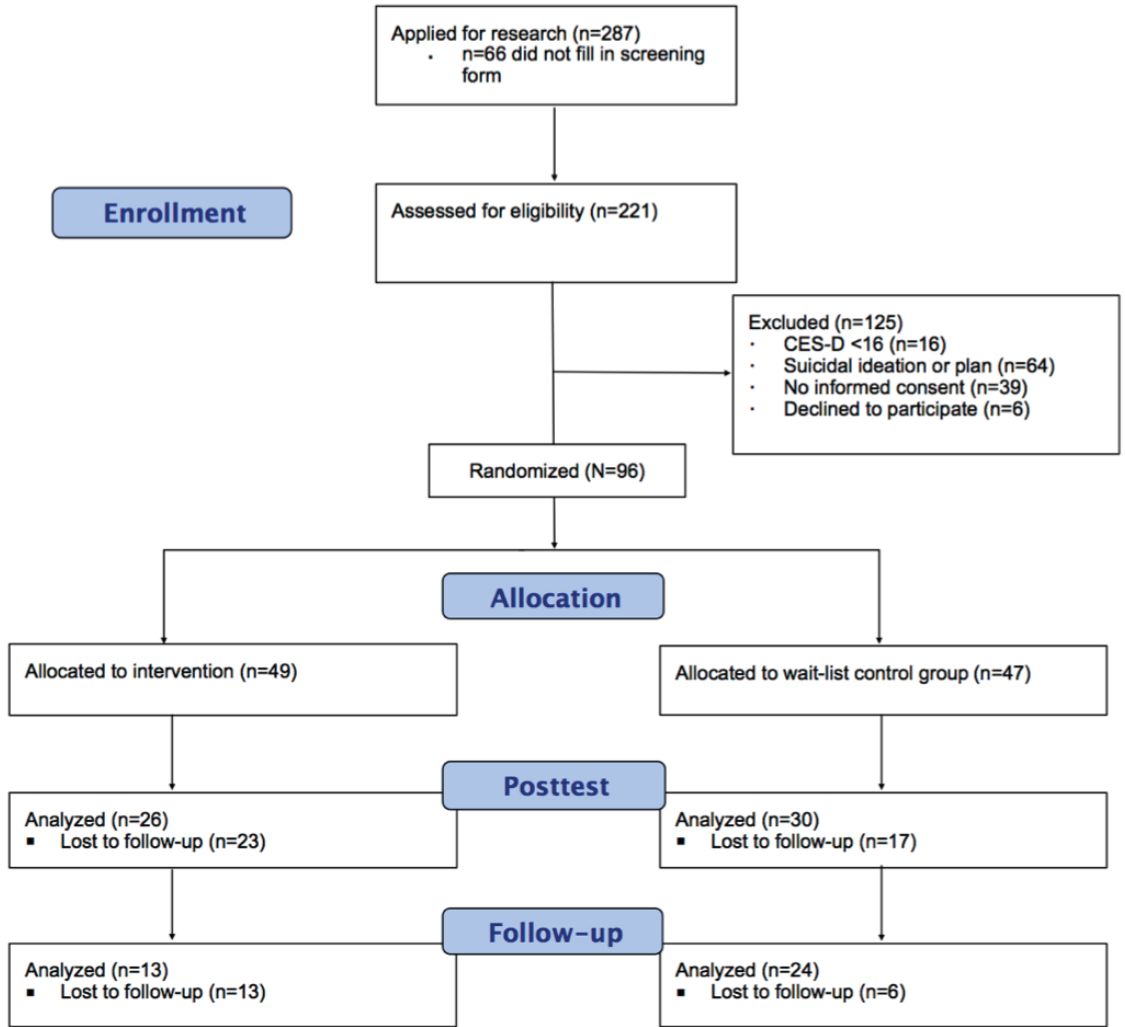


Figure 3. CONSORT flow diagram of the participation progress through the trial.

Table 1. *Demographic characteristics and baseline test scores at T0 (N=96).*

Demographic characteristics and baseline test scores at T0 (N=96)	Total (N=96)	Experimental group (N=49)	Control group (N=47)	p-value ^a
Age in years (M, SD)	35.2 (9.3)	34.9 (8.9)	35.6 (9.8)	.72
Female gender, % (n)	61.5 (59)	65.3 (32)	57.4 (27)	.43
Born in Turkey, % (n)	90.6 (87)	91.8 (45)	89.4 (42)	.68
Lasting partnership, % (n)	63.5 (61)	71.4 (35)	55.3 (26)	.10
Educational level, % (n) ^b				
low	27.1 (26)	34.7 (17)	19.1 (9)	
middle	40.6 (39)	30.6 (15)	51.1 (24)	
high	32.3 (31)	34.7 (17)	29.8 (14)	.09
Preference for Turkish language, % (n)	88.5 (85)	87.8 (43)	89.4 (42)	.81
Recruitment channel, % (n)				
the Internet	78.1 (75)	77.6 (38)	78.7 (37)	.89
<i>of which from</i>				
Facebook	98.7 (74)	100 (38)	97.3 (36)	
newspaper	1.0 (1)	0.0 (0)	2.1 (1)	
magazine	1.0 (1)	2.0 (1)	0.0 (0)	
friends or family	6.3 (6)	10.2 (5)	2.1 (1)	
other	13.5 (13)	10.2 (5)	17.0 (8)	
Employed, % (n)	51.0 (49)	44.9 (22)	57.4 (27)	.22
Reason for choosing Internet intervention, % (n)				
privacy/anonymity	22.9 (22)	22.4 (11)	23.4 (11)	
flexibility	61.5 (59)	51.0 (25)	72.3 (34)	
other	15.6 (15)	26.5 (13)	4.3 (2)	.01
Use of the Internet for health information, % (n)				
physical complaints	7.3 (7)	8.2 (4)	6.4 (3)	
psychological complaints	10.4 (10)	8.2 (4)	12.8 (6)	
physical and psychological complaints	66.7 (64)	71.4 (35)	61.7 (29)	
none	15.6 (15)	12.2 (6)	19.1 (9)	.65
Test outcomes, M (SD)				
CES-D Depression	29.9 (9.6)	29.6 (9.2)	30.1 (10.1)	.79
HADS Anxiety	13.0 (4.1)	13.3 (4.3)	12.7 (3.9)	.52
SCL-90 Somatisation	30.0 (8.6)	31.0 (9.2)	29.0 (8.0)	.25
EQ-VAS score ^a	60.4 (21.2)	57.7 (21.5)	63.14 (20.8)	.27

^a CES-D was analyzed with a 1-tailed t-test. The other tests were analyzed with a 2-tailed t-test.

^b Total: N=74; experimental group: n=38; control group: n=36. This item was the last of the assessment, which was not filled in by every participant.

ATTRITION

Of the 96 original participants, a total of 40 (42%) participants did not complete the posttest (6 weeks), and 59 participants (62%) did not complete the follow-up assessment at 4 months. Reasons for the high attrition rates are not known. There were no significant differences in attrition rates between the experimental (47%, 23/49) and the control group (36%, 17/47) at posttest ($p = .29$). However, at follow-up, the experimental group (74%, 36/49) had a higher attrition rate than the control group (49%, 23/47; $p = .01$).

EFFECTS OF THE INTERVENTION AT POSTTEST

INTENTION - TO - TREAT ANALYSIS

Table 2 shows the outcomes for the primary (CES-D) and secondary (HADS, SCL-90, and EQ-5D) measures at post-treatment. The results show no difference between the experimental and the control group at posttest for the primary outcome assessed with the CES-D ($p = .07$; Cohen's $d = .37$, 95% CI = $-.03$ to $.78$). We did not find any significant differences between the 2 groups on the secondary outcomes.

Table 2. Study outcomes at posttest including posttest between-group effect size (Cohen's d): intention-to-treat analysis.

Outcome and group	Pre-test		Post-test		P-value	Mean Difference	Post-test between group effect size Cohen's d (95% CI)
	n	M	n	M			
<i>Primary outcome</i>							
CES-D Depression							
Experimental group	49	29.6	49	23.0			
Control group	47	30.1	47	27.2	.07	-4.25	.37 (-.03 - .78)
<i>Secondary outcomes</i>							
HADS Anxiety							
Experimental group	49	13.3	49	11.0			
Control group	47	12.7	47	11.7	.23	-.76	.25 (-.16 - .65)
SCL-90 Somatisation							
Experimental group	49	31.0	49	28.1			
Control group	47	29.0	47	28.0	.48	.13	.15 (-.26 - .55)
EQ-VAS score							
Experimental group	38	57.7	38	65.4			
Control group	36	63.1	36	65.7	.48	-.28	.15 (-.26 - .55)

CLINICALLY SIGNIFICANT CHANGE

Data on clinically significant change are shown in table 3. In the intention-to-treat sample, the experimental group (32.9%) had significantly higher recovery rates on the CES-D than the control group (9.4%, $p=.02$) at posttest. However, no differences between the experimental and control group were found for improvement or clinically significant change.

Table 3. *Clinically significant change analyses of depression tested by the CES-D.*

	Posttest, n (%)		p-value	Follow-up, n (%)		p-value
	Experimental group	Control group		Experimental group	Control group	
Clinically significant change analyses ^a						
Intention-to-treat analysis						
Recovery	15.6 (32.9)	4.3 (9.4)	.02			
Improvement	18.5 (37.8)	9.4 (20.0)	.07 ^b			
Clinically significant change	11.8 (24.9)	2.6 (5.7)	.05			
Completers only						
Recovery	10 (38.5)	1 (3.3)	<.001	6 (46.2)	3 (12.5)	.01
Improvement	12 (46.2)	4 (13.3)	.01	4 (16.7)	4 (16.7)	.01
Clinically significant change	6 (23.1)	1 (3.3)	.01	5 (38.5)	2 (8.3)	.01

^a Recovery was defined as having a CES-D score below 16. Improvement was defined as having a reliable change if the individual RCI is greater than 1.96. Clinically significant change was determined if both recovery and improvement took place.

^b For this analysis, the p-value of the chi-square analysis is provided.

PER - PROTOCOL ANALYSIS

The outcomes for participants who fulfilled the protocol for intervention and outcome assessments are shown in table 4. Several significant outcomes at posttest assessments can be observed. At posttest, the experimental group showed a significantly greater improvement in depressive symptoms compared to the control group ($p<.001$) with a large effect size of $d=1.68$ (95% CI=.69-2.67). Differences were also found in favor of the experimental group for reduction of anxiety symptoms ($p<.001$), with a large effect size of $d=1.48$ (95% CI=.51-2.45) and also in somatization symptoms ($p<.001$), with a large effect size of $d=1.37$ (95% CI=.41-2.33) compared to the control group.

Table 4. Study outcomes of participants at posttest and follow-up including between-group effect size (Cohen's *d*): per protocol (*n*=30).

Per protocol	Post-test		Post-test P-value	Post-test between group effect size Cohen's <i>d</i> (95% CI)	4-month follow-up		Follow-up P-value	4 month follow-up between group effect size Cohen's <i>d</i> (95% CI)
	<i>n</i>	M (SD)			<i>n</i>	M (SD)		
<i>Primary outcome</i>								
CES-D Depression								
Experimental group	6	15.3 (9.9)	< .001	1.68 (.69 - 2.67)	6	19.0 (13.9)	.02	1.13 (.19 - 2.07)
Control group	24	29.5 (8.8)			24	30.1 (11.3)		
<i>Secondary outcomes</i>								
HADS Anxiety								
Experimental group	6	7.3 (2.9)	< .001	1.48 (.51 - 2.45)	6	7.8 (4.9)	.01	1.26 (.31 - 2.21)
Control group	24	12.4 (3.5)			24	12.1 (3.7)		
SCL-90 Somatisation								
Experimental group	6	18.8 (6.2)	< .001	1.37 (.41 - 2.33)	6	19.2 (6.9)	.01	1.27 (.32 - 2.22)
Control group	24	28.5 (8.1)			24	28.5 (8.5)		
EQ-VAS score								
Experimental group	5	79.4 (28.9)	.07	.95 (-.06 - 1.97)	5	82.3 (23.0)	.11	.83 (-.18 - 1.84)
Control group	20	63.6 (21.7)			20	66.4 (23.2)		

COMPLETERS - ONLY ANALYSIS

Table 5 shows the outcomes for responding participants at posttest assessments in comparison with the control condition. Results show a significantly greater improvement in depressive symptoms in the experimental group than the control group at posttest ($p < .001$), with a large effect size of $d = .72$ (95% CI = .18-1.26). We did not find any significant differences between the 2 groups on the secondary outcomes at posttest.

Table 5. Study outcomes of participants at posttest and follow-up including follow-up between-group effect size (Cohen's *d*): completers only (*n*=56).

Completers only	Post-test		Post-test P-value	Post-test between group effect size Cohen's <i>d</i> (95% CI)	4-month follow-up		Follow-up P-value	Follow-up between group effect size Cohen's <i>d</i> (95% CI)
	<i>n</i>	M (SD)			<i>n</i>	M (SD)		
<i>Primary outcome</i>								
CES-D Depression								
Experimental group	26	21.38 (10.5)	.01	.72 (.17 - 1.26)	13	21.23 (10.79)	.01	.94 (.23 - 1.65)
Control group	30	28.27 (8.71)			24	30.08 (11.27)		
<i>Secondary outcomes</i>								
HADS Anxiety								
Experimental group	26	10.54 (4.00)	.10	.45 (-.08 - .98)	13	9.69 (4.92)	.05	.69 (-.00 - 1.39)
Control group	30	11.87 (3.76)			24	12.08 (3.67)		
SCL-90 Somatisation								
Experimental group	26	26.00 (10.02)	.24	.32 (-.21 - .85)	13	25.31 (9.78)	.15	.51 (-.18 - 1.19)
Control group	30	27.70 (7.76)			24	28.54 (8.52)		
EQ-VAS score								
Experimental group	19	70.95 (19.52)	.15	.46 (-.16 - 1.07)	10	78.80 (22.50)	.13	.61 (-.17 - 1.39)
Control group	23	64.17 (21.54)			19	66.42 (23.19)		

SESSIONS ATTENDED AND SATISFACTION WITH TREATMENT

A total of 18 of 49 (37%) participants who were assigned to the experimental group did not start the treatment. Of those who started, 12 of 49 (26%) participants completed 1 to 2 lessons, 9 of 49 (18%) participants completed 3 or 4 lessons, and 10 of 49 (20%) participants completed all 5 lessons. Participants who completed the treatment expressed moderate satisfaction (total score mean 2.75, SD 0.96) with the intervention.

EFFECTS OF THE INTERVENTION AT FOLLOW-UP: BASED ON COMPLETERS-ONLY SAMPLE

Because of high attrition, we conducted completers-only analysis for follow-up results at 4 months after the start of the intervention. Results are shown in tables 3-5. As is shown, the experimental group did significantly better on the primary and secondary outcomes analyses (clinically significant change, per-protocol analysis, and completers-only analysis).

DISCUSSION

Our results show no significant difference in improvement of depressive complaints in the experimental group compared to the control group on intention-to-treat analysis at posttest. This may be because our study was underpowered (Hackshaw & Kirkwood, 2011) (see also the limitations section). However, we found an effect size for the primary outcome (depression) of $d=1.68$ at posttest and $d=1.13$ at follow-up, which is an indication that the intervention could be effective with a sample size indicative of sufficient power. We did not find any differences on secondary outcomes. Recovery occurred significantly more often in the experimental group than in the control group at posttest ($p=.01$) but clinically significant change was not ($p=.09$). Completers-only analyses showed that the results of the analysis for the primary outcome differed from the imputation data, suggesting that the analysis was influenced by data imputation.

COMPARISON WITH PRIOR WORK

Our results did not support the effectiveness of the Internet-based, guided, self-help intervention, in contrast to the original version (AOC; van Straten et al., 2008). As mentioned before, AOC was previously shown to be clinically effective in the general Dutch population in

the reduction of depressive symptoms with a moderate effect size (Cohen's $d=0.50$). However, the effect size at posttest in the current study was high, which might be an indicator of the possible effectiveness of the intervention for Turkish migrants when assessed in a larger sample.

The inclusion of ethnic minorities in clinical research has been a challenge for many years. Ethnic minorities are generally underrepresented in scientific and clinical analyses and are known to be a hard-to-reach population for research purposes (Griner & Smith, 2006; U.S. Department of Health and Human Services, 2001). Although previous research shows that ethnic minorities may have participated in Internet interventions (e.g. Muñoz et al., 2006), randomised controlled trials on the effectiveness of psychotherapy for common mental disorders, such as depression, are still sparse. Ethnic minorities are underrepresented in mental health research and literature about ethnic differences in this field is very small (U.S. Department of Health and Human Services, 2001). In our recent meta-analysis, we found only 56 randomised controlled trials on the psychological treatment of depression in adults reporting the proportion of participants from ethnic minorities, of which none of them made distinct comparisons between ethnic populations (Ünlü Ince et al., 2014).

It is generally believed that ethnic minorities are less willing to participate in clinical research; however, very small differences between ethnic minorities and majorities are found in the willingness to participate in health research (Wendler et al., 2005). Other factors, such as higher costs associated with the recruitment, the exclusion criterion of insufficient ability to speak the second (native) language, the shortage of ethnic minority coordinators in trials, and stereotypes and myths, are considered to be important barriers for their participation (Hussain-Gambles, Atkin, & Leese, 2004).

Our study shows that recruitment of ethnic minorities is possible when appropriate recruitment strategies are applied. For example, almost 80% of our participants were recruited through the Internet (primarily on Facebook). Traditional media, such as advertisements in newspapers or banners on websites, appear not to be successful recruitment strategies for this target group, although many studies have applied this strategy successfully for recruiting participants for randomised controlled trials and studies in routine practice among the general population (Riper et al., 2009; Warmerdam et al., 2008). Flexibility and privacy of the Internet were the main reasons for respondents to agree to participate. The use of social media in research is a relatively new development, and may potentially prove more effective for recruiting ethnic minorities in research trials. The contact through social media and the visibility of the researcher seemed to lower the threshold for participation in research and for help seeking.

Although we did not find significant results from the intervention, the current trial shows that the Internet (1) is an effective way to reach hard-to-reach populations, (2) lowers the threshold to get in contact with a professional, (3) can be an effective recruitment strategy for clinical trials, and (4) is potentially an effective way to deliver cognitive behavioral therapy for ethnic minorities.

Furthermore, our participants consisted primarily of first-generation migrants who had a preference for the Turkish (native) language. Offering the intervention and assessment measures in 2 languages may have been another successful strategy to lower the threshold for study participation. Generally, participants are only included in intervention studies when they can read and speak the language of the country they live in (Hussain-Gambles et al., 2004).

Another argument for the low-access threshold of our intervention might be found in the large number of applicants with suicidal ideation (30%, 64/221). We had to exclude these applicants (51.2% of excluded group) because they are a high-risk group not suited to our guided self-help intervention. In keeping with the protocol, we referred these individuals to their primary care physician or to the online portal for suicide prevention (113Online). These applicants were primarily women (59.4%) with a mean age of 33.5 years (range 18-53). This is a rather high number when compared with those excluded because of suicidal ideation among primarily native population studies (e.g. Andersson et al., 2005; Johansson et al., 2012). The number also appears high when compared to prevalence rates at the population level. For example, in the Netherlands, 8.3% of the Dutch population has ever had suicidal ideation in their lifetime and 2.2% have attempted suicide (ten Have, Van Dorsselaer, & de Graaf, 2013). As mentioned in the introduction, young Turkish women are at increased risk of committing suicide (van Bergen et al., 2009). It seems that our study has reached a large number of this group. Future Internet research could focus more specifically on this high-risk group. These individuals experience a high burden of disease and unmet needs, but appear to be reachable by Internet. Thus, the delivery of psychotherapy through the Internet appears to be a promising way to target hard-to-reach ethnic minority groups.

L I M I T A T I O N S

This study has several limitations. First, the attrition ratio was high at posttest. We compensated for this high attrition by means of multiple imputation. Attrition was even higher at follow-up; therefore, we decided not to apply multiple imputation for this time point. Instead,

we conducted completers-only analyses. High attrition remains a common problem in Internet interventions, with rates of up to 50% (Christensen & Mackinnon, 2006; Eysenbach, 2005). Analyses showed no differences in study attrition rates at posttest between the experimental group and control group. However, at follow-up, the experimental group had a higher attrition rate than the control group. Reminders in the form of emails were sent (maximum 5 times per assessment), but this did not result in a low attrition rate for study dropout. Reasons for this high attrition rate are not known; as a result, we can only guess why this happened. It is possible that participants in the experimental group stopped with the trial after finishing the intervention. Filling in the post-treatment questionnaires might not have been regarded as an obligatory part of the trial. Furthermore, the control group was waiting to receive access to the intervention, they could have perceived filling in the questionnaires as an obligation to partake in the intervention.

Second, although we reached a relatively large number of Turkish migrants, recruitment and inclusion were challenging and complex. One of the challenges was to find an appropriate recruitment strategy. In the end, we did find one (i.e., Facebook), but we had only limited time left for recruitment because of the overall period available for this study. This could be one of the main reasons for not having been able to obtain the required sample size. Another problem was that we had to exclude most of the eligible participants for reasons such as high suicidality risk. Thus, we did not achieve the target sample size ($N=200$) during the study period, which may have resulted in an underpowered study. In turn, this may have been the reason that significant effects were not detected and it limited the generalizability of our results.

Third, our target population focused on the online population because participants were required to have access to the Internet and an email address to be included in our trial. Moreover, it is known that almost 80% of the Turkish population in the Netherlands has Internet access (Foquz Media, 2008). However, our population may have differed from most Turkish people in another way. When we look at the demographic characteristics of our sample, we notice that younger women (mean 35.2 years) with a middle to higher educational level (70%) took part. This is a higher proportion than the Turkish population in the Netherlands, of which 30.1% had at least a middle educational level (CBS, 2013). Our sample conforms to the sample characteristics of non-migrant populations in similar trials, in which women (aged 35-55 years) with higher educational levels have taken part (van Straten et al., 2008; Warmerdam et al., 2008).

Furthermore, although participants were required to have access to a computer with Internet and have an email address, we did not assess the reading and Internet comfort level of the participants. Given that most of our respondents were recruited through Facebook, we assume that respondents at least were able to understand our intervention and questionnaires. Next, respondents could choose the language in which they wanted to follow the intervention and answer the questionnaires (Turkish or Dutch).

Finally, we used only self-report assessments to measure the severity of depressive symptoms in participants. We used self-report on purpose because we wanted to keep the access barrier for study participation as low as possible. Diagnostic interviews are an extra burden for participants and it is not yet possible to conduct them through the Internet. Therefore, our study lacks a diagnosis of depression in the study participants. Research has shown that online self-report questionnaires have good validity (e.g., Donker et al., 2009) and yield scores equivalent to paper-and-pencil questionnaires (e.g., Carlbring et al., 2007).

FUTURE RESEARCH AND IMPLICATIONS

The results of this study have promising implications for the clinical field. Our study is one of the first to assess the clinical effectiveness of guided self-help interventions by Internet for Turkish migrants with depressive complaints. In addition, the guided self-help intervention for Turkish migrants in the Netherlands could also be suitable for Turkish populations in other EU countries or in Turkey itself, where guided self-help is not yet common practice. It may be a welcome intervention both for clinicians and for minorities because there is a lack of evidence-based culturally sensitive psychotherapy for ethnic minorities and there is a high threshold to these services.

Future research should replicate our findings with adequately powered samples for posttest and follow-up measurement to assess the clinical effectiveness in a robust manner. Future research should focus on monitoring participants who drop out prematurely from the study at follow-ups to evaluate the reasons for withdrawal. It is also important to evaluate the impact of culturally sensitive components in Internet interventions for ethnic minority populations with depression.

CONCLUSION

The results of this study did not show a significant effect on the reduction of depressive symptoms. However, the effect size at posttest was high, which might be an indicator of the possible effectiveness of the intervention when assessed in a larger sample and robust trial. Future research should replicate our study with adequately powered samples.

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CHAPTER 5

Reaching and recruiting Turkish migrants for a clinical trial through Facebook:
A process evaluation

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ABSTRACT

Background: Ethnic minorities are underrepresented in mental health research, especially in randomised controlled trials. Recruiting ethnic minorities is challenging and there is a need to develop effective recruitment strategies.

Methods: This study used data from a randomised controlled trial examining the effectiveness of an online guided self-help intervention for Turkish migrants with depressive symptoms. The recruitment process comprised six strategies in Dutch and Turkish: 1) a press release; 2) digital mailing; 3) the distribution of research information leaflets; 4) advertisements; 5) the Internet (in general terms); and 6) Facebook (FB). We describe the content and approach of each of the strategies and how effective they were in recruiting participants for our study. FB is evaluated in a step-by-step description of the recruitment strategy, together with its results in terms of effectiveness, specifically regarding data of FB Friends and messages received by FB Friends through FB.

Results: Results showed that a total of 287 applied for the trial. The majority of applicants were recruited through FB (75.6%, n=224), of whom 74 (33%, n=224) were included in the trial. Traditional recruitment strategies were far less successful, yielding only 16.4% (n=47) of the total of 287 applicants, of whom only 3 (3.1%) were included in the trial.

Conclusion: Traditional recruitment strategies, such as research information leaflets and advertisements in newspapers, appear ineffective in recruiting ethnic minority groups for research purposes. The use of FB proved to be a more successful method. Future research should examine the factors that account for the potential effectiveness of FB as a recruitment method for hard-to-reach populations.

INTRODUCTION

Ethnic minorities are underrepresented in mental health research, and their inclusion in clinical research has been a challenge for many researchers (Hussain-Gambles, Atkin, & Leese, 2004; Miranda, Nakamura, & Bernal, 2003; U.S. Department of Health and Human Services, 2001). Research shows that cultural characteristics are an important factor hindering the recruitment of ethnic minorities in clinical research. These characteristics include language barriers, religious beliefs and a negative attitude towards psychotherapy (Brown, Marshall, Bower, Woodham, & Waheed, 2014). However, not all of these barriers are due to cultural characteristics (Brown et al., 2014). In a systematic review, Brown and colleagues (2014) identified several barriers for participation in research by ethnic minorities. It was found that more mundane factors in the family or community, in health services and in the research process itself also play a critical role in successful recruitment. These practical issues are also often encountered when working with native populations with a low socio-economic status and are thus not exclusive to ethnic minorities. Consequently, the underrepresentation of ethnic minorities in clinical research has several negative implications such as inhibiting psychotherapy development and delivery (Brown et al., 2014). This can affect the generalizability of the study findings towards the ethnic minorities concerned.

In the past decades, several evidence-based psychotherapies have been developed in order to treat mental disorders, including depression. However, research examining the direct effect of psychotherapy in ethnic minorities is sparse (Ünlü Ince, Riper, van 't Hof, & Cuijpers, 2014). A recent meta-analysis suggested that psychotherapy is equally as effective in ethnic minorities as in native populations, after examining the ethnicity proportion of the population samples in 56 clinical trials in relation to the effect of psychotherapy (Ünlü Ince et al., 2014). Although these first findings are promising, insufficient randomised controlled trials are available to make direct comparisons between ethnic minorities and native groups. Moreover, there is still a gap between the unmet needs for treatment of ethnic minorities in both clinical and research settings. Tailor-made recruitment strategies are factors that might play an important role in filling this gap.

Although recruiting ethnic minorities in clinical research is difficult, Brown and colleagues (2014) have given several suggestions to overcome recruitment barriers. In their systematic review they suggest that the difficulty of recruiting ethnic minorities must be addressed at an early stage by modifying the protocol for research. Furthermore, human and financial resources should be expanded from the beginning of the research. It is noticeable, however, that

all nine studies in this review were conducted in the United States, indicating a lack of European research on ethnic minorities. This focus on the inclusion of ethnic minorities in the United States may be positively influenced by US guidelines and policies that mandate the inclusion of ethnic minorities in clinical research by the National Institute of Health (NIH). European countries don't have such policies yet (Bhopal, 2009). Although several suggestions are given in the systematic review, these are mainly of a generic nature and do not provide concrete methods to improve recruitment strategies among ethnic minorities. It seems therefore, that more concrete strategies need to be developed to improve the inclusion of ethnic minorities in clinical research.

An innovative way to recruit participants for research is via the Internet, which can be utilized in many forms, such as by offering online psychotherapy. For example, Internet-interventions are shown to be easily accessed, have a high level of anonymity and a low threshold for acceptability (e.g. Griffiths & Christensen, 2006; Muñoz, 2010). Numerous studies have confirmed the effectiveness of online psychological interventions in the treatment of depression in adults (Andersson & Cuijpers, 2009; Richards & Richardson, 2012). However, little is known about the effectiveness of Internet-based psychotherapies in ethnic minorities since ethnic minorities are so far underrepresented in randomised controlled trials as well (Ünlü Ince et al., 2014).

Another advantage of the Internet may be the potential to recruit larger samples at low costs (Barrera, Kelman, & Muñoz, 2014; Jones, Saksvig, Grieser, & Young, 2012; Ramo & Prochaska, 2012). Many Internet-based studies, however, continue to use more traditional recruitment methods such as newspapers and magazine advertisements, rather than the Internet itself (e.g. Alexander et al., 2008; Warmerdam, van Straten, Twisk, Riper, & Cuijpers, 2008).

The current study used data from a randomised controlled trial on the effectiveness of a web-based problem-solving therapy for Turkish migrants with depressive symptoms in the Netherlands (Ünlü Ince et al., 2013). The intervention was adapted to the specific needs of Turkish people living in the Netherlands. During the recruitment process, we faced several challenges in recruiting through traditional media, such as advertisements in Turkish newspapers. We also made use of recruitment strategies via the Internet, particularly through Facebook (FB). Because this was by far the most successful method, and is rather new, we decided to systematically describe how we used this method. We also provide some explanations for the potential success of this method in recruiting ethnic minorities for randomised controlled trials. Accordingly, we aim to contribute to the knowledge base of recruitment strategies for hard-to-reach populations, including ethnic minorities.

This paper will provide a detailed description of the recruitment process and the effectiveness of each recruitment strategy applied during the trial. We will do this by: 1) describing the recruitment strategies used; 2) evaluating the effectiveness of each recruitment strategy; 3) providing a step-by-step description of the use of FB as a recruitment strategy; and finally 4) exploring the recruitment process through FB in terms of users (“Friends”) and messages received by “Friends”.

METHODS

BACKGROUND INFORMATION ABOUT THE MAIN STUDY

This study used data from a randomised controlled trial examining the effectiveness of an online guided self-help intervention for Turkish migrants with depressive symptoms (Ünlü Ince et al., 2013). In brief, participants were recruited among the Turkish migrant population and included when they met the following inclusion criteria: 1) 18 years or older; 2) depressive symptoms; 3) access to a computer with Internet and an e-mail address and 4) a Turkish background (meaning the participant and/or at least one parent were born in Turkey).

Participants with suicidal ideations were excluded. We applied a strict protocol for study inclusion of participants, including the exclusion of suicidal participants. Contact with individuals who were potentially at risk for suicide is a feature of many RCTs and independent of the recruitment strategy applied (i.e. not FB specific). This protocol was approved by an independent Medical Ethics Committee (METc VUmc) as written in the protocol paper of the study (Ünlü, Riper, Van Straten, & Cuijpers, 2010). The exclusion procedure steps were as following: suicidality was assessed in two steps as part of the online screening. First, the suicide item on the Beck Depression Inventory II (BDI-II) was presented (Beck & Steer, 1987; Beck, Steer, & Brown, 1996). Second, if the response was affirmative, the suicide risk was measured with the suicidality section of the Mini International Neuropsychiatric Interview (MINI; Engeler, 2004; Lecrubier et al., 1997; Sheehan et al., 1998; Van Vliet & De Beurs, 2007). Participants with a moderate or high risk were advised to contact their general practitioner and were also referred to the online portal for suicide prevention (www.113online.nl).

People could show their interest in the study by sending an e-mail to the researcher to obtain further instructions for the screening. A detailed description of the study procedure and the results of the trial have been published elsewhere (Ünlü et al., 2010; Ünlü Ince et al., 2013).

THE RECRUITMENT STRATEGIES

The recruitment of participants for the randomised controlled study took place from June 2010 to March, 2012. Six strategies were applied during this recruitment process, in Dutch as well as in Turkish (shown in table 1). These were 1) a press release; 2) digital mailing; 3) the distribution of research information leaflets; 4) advertisements; 5) the Internet (in general terms); and 6) Facebook. Five of these six strategies can be characterized as ‘regular strategies’ meaning that they are well known and frequently used strategies to engage study participants (e.g. Van Ballegooijen et al., 2013; Warmerdam et al., 2008).

As these strategies appeared not to be effective in recruiting Turkish individuals for our study, we explored a rather new method, i.e. recruiting participants through Facebook (FB).

We will describe all these above-mentioned strategies in more detail, by focusing on (1) the content and approach of each one and (2) how effective they were in recruiting participants in our study. FB will be also evaluated not only in a step-by-step description of the recruitment strategy, and its results, but also by presenting data in terms of Friends and messages received by Friends through FB.

Table 1. *The recruitment procedure in terms of strategy, applicants and final inclusion.*

Type of recruitment strategy	Details of recruitment activity	Total applicants ^a N=287 (n, %)	Total included participants N=96 (n, %)
1. Press release		2 (0.7%)	2 (2.1%)
	1 press release in Dutch		
	1 news article in Dutch newspaper	1	1
	1 news article on the website of a Dutch national centre for intercultural healthcare	1	1
	2 radio interviews (national and regional radio broadcasting stations)	0	0
	request to send 30 research leaflets by a small Dutch centre for life, health and care	0	0
2. Digital mailing		15 (5%) ^b	0
	Personal network of the researcher		0
	All psychology students of the faculty of Psychology and Education (VU)		0
	85 e-mails to key persons in (intercultural) health care teams/organisations		0
	30 Turkish migrant related organisations	1	0
	40 Turkish migrant related websites	2	0
	2 Turkish migrant related websites placed an announcement online		0
3. Distribution of research information leaflets		27 (10.6%)	0
	1000 research information leaflets distributed among 5 regional mental health services; 7 health practitioner offices; 20 Turkish religious or socially oriented organisations; and 2 mosques		
4. Advertisements		0	0
	1 advertisement in a European version of a Turkish newspaper	A small banner for 45 days (215 Euro)	0
	1 advertisement on Facebook	A small banner in 4 formats for 20 days (400 Euro)	0
5. Internet (in general)		3 (1.0%)	1 (1.0%)
	Visits to Turkish migrant and health-related forums	45 announcements placed on Internet forums	3
	Use of Twitter (social networking website) shared	5 tweets (short posts shared with public)	0
6. Facebook (research profile and fan page)		224 (75.6%)	74 (77%)

^a Only n=2 (0.7%) of participants included in the trial identified their recruitment channel. Furthermore, 14 participants (4.9%) indicated that they found out about the trial through friends or family.

^b These participants were recruited by e-mail, however, they did not specify the exact source of the e-mail.

DESCRIPTION OF THE RECRUITMENT PROCEDURE

1 . P R E S S R E L E A S E

The recruitment of participants started with a press release in Dutch published by the communications department of our university. This strategy is often successful in engaging participants for research on Internet-based guided and unguided interventions for common mental disorders (e.g. Van Ballegooijen et al., 2013; van Spijker, van Straten, & Kerkhof, 2014). The press release contained a brief description on the study and information on participation possibilities for Turkish persons with depressive complaints. Press agencies could use the press release either for publication or as means to contact the researcher for further information about the study.

2 . R E C R U I T M E N T T H R O U G H D I R E C T E M A I L I N G

E-mails with information about the research project and a call for participants in Dutch and Turkish were disseminated among several networks. This strategy was applied in parallel to the press release. The e-mails were disseminated within the personal professional network of the researcher (BÜI), among psychology students at the faculty of Psychology and Education of our university, key persons in (intercultural) health care teams/organisations in the Netherlands (a total of 85), Turkish migrant advocacy organisations, (a total of 30) and Turkish migrant related websites (a total of 40). We also asked whether these organisations could forward the e-mail to their network or potentially interested people.

3 . T H E D I S T R I B U T I O N O F R E S E A R C H I N F O R M A T I O N L E A F L E T S

We prepared leaflets (both in the Dutch and Turkish languages) containing detailed information about the research project and a call for Turkish individuals with depressive complaints to participate. These leaflets were distributed in person (BÜI) among several organisations, including five regional mental health services, seven general health practitioner offices in the Amsterdam region, twenty Turkish religious or socially oriented organisations and two mosques in the Amsterdam region. Furthermore, we distributed research information leaflets by mail among Turkish people through the municipality of Zaandam. In total, we distributed 1000 information leaflets.

4 . A D V E R T I S E M E N T S

Recruiting volunteer study participants from the community through advertisements in (regional) newspapers is an often applied and successful strategy for public health studies (e.g. Warmerdam et al., 2008). As we targeted people in the Turkish community, we decided to place an advertisement about the research project in a European version of a Turkish newspaper. This advertisement contained a small banner in print that was published for 45 days in the newspaper.

5 . R E C R U I T M E N T T H R O U G H T H E I N T E R N E T (I N G E N - E R A L T E R M S)

The recruitment strategies as described above were not very successful. Therefore, we extended our strategy by visiting Internet forums where we thought we could approach potential participants more directly. This is a relatively new recruitment strategy (Koo & Skinner, 2005). Forty-five Turkish and health-related discussion forums (public and closed) were visited. An open (or public) discussion forum is characterized by an open exchange of messages that can be seen by everyone and a closed (or semi-closed) forum requires registration or approval by the administrator. The principal investigator (BÜI) created personal accounts and placed announcements about the research project in appropriate discussion board topics (such as advertisements or research). In addition, a Twitter (a social networking website) account was created and five tweets (short post that is shared online with everyone) were posted. One post was re-tweeted (shared) by three followers (those who are able to see the posts on Twitter).

6 . R E C R U I T M E N T O F S T U D Y P A R T I C I P A N T S T H R O U G H F B

FB was initially designed for college students (Ellison, Steinfield, & Lampe, 2007) but became one of the currently most popular and largest social networking sites (eBizMBA, 2014). It provides a virtual world to keep users in touch with their friends by sharing personal information such as messages, photos, videos and links. Users may utilize it for interaction with people they are connected with (private) and people they are not connected with (public).

In order to join the site, participants need to create a personal profile, and be registered in the database of FB users. Then it is possible to get connected with other people who are

registered on FB as well. In order to get in contact with other FB members, so called 'Friends', one needs to send a friend request and when the friend confirms this request one is befriended (and vice versa). Users are allowed to befriend up to 5000 FB members.

FB can also be used for commercial and business purposes by creating adverts, which are shown to potentially interested people on FB.

Our first activity on Facebook began with an advertisement. It consisted of a banner in four formats, in Turkish and Dutch with a picture of either a man or woman, published on Facebook for 20 days (cost: 400 Euro). After clicking on the banner, people were directed to the research website with detailed information about the project.

The recruitment methods were extended by using FB actively, in the last 15 months of the study from January 2011 to March 2012. The principal investigator (BÜI) registered on FB by creating a personal profile of the research project (figure 1 shows a screenshot of this profile). The personal profile contains several components, which are separately manageable by the user. The main component is the Timeline, which is comparable with a virtual blackboard. This is the place where all posts, such as messages, photos and videos are shared by the user with their friends. This is also the area where users can choose to share personal information such as demographic details, personal interests, and favorite activities, which are visible on the profile in fixed boxes. Short posts that are shared about what the user thinks, feels or does are also presented on the Timeline. These posts are known as status updates. Friends are also able to leave messages on the Timeline of other friends or a comment on a post that is already shared. Furthermore, it is possible to show your interest in posts by clicking on "like".

Besides the Timeline, FB provides other communication channels to stay in contact with friends. Not only private messages can be sent to other users (to communicate in a more private setting), but also chat conversations can take place when friends are online at the same time (or if at least one is online). It is even possible to set up a video call with friends after installing a plug-in on the computer.

Finally, it is possible to stay in contact with public figures, organisations, businesses or common-interest topics, which are registered as groups or (fan) pages. These are, in contrast to personal profiles, visible to everyone on the Internet regardless of being friends on FB (see figure 3 for a screenshot of the fan page of our project). Fan pages have limited options compared to research profiles, which can only be liked or where posts can be exchanged.

The researcher (BÜI) started the recruitment procedure by creating a personal profile

and a fan page of the research project on FB (shown in figures 1 and 3). The researcher shared details about the project, such as the research website, contact information, pictures from the intervention and information leaflets to download. Then, these FB profile and fan page were made public in order to make it visible to anyone who clicks on the research profile. Figure 2 shows a screenshot of the status updates that were shared on the Timeline of the research profile.

To promote the research project, we joined several FB groups related to Turkish migrants and Turkish groups focusing on (general) health and psychology in Dutch and Turkish. These groups can be found by typing relevant terms in the search box on FB, which results in several suggestions matching the search. Announcements and information about the research project were shared in these groups by writing messages on the Timeline of the groups. These messages were public to everyone who joined these groups.



Figure 1. Screenshot of the research profile on Facebook.

The image shows three Facebook status updates from a page named 'Psikolog Psikoloji'. Each update includes a profile picture, the page name, the date, and the text of the post. The first post is dated 7 September 2011 and says 'Başvurular devam etmektedir. Siz de katılabilirsiniz. Bekliyoruz.' with 7 likes and 8 comments. The second post is dated 31 August 2011 and says 'Profesyonel psikolog desteği ile 5 haftada kendizi daha iyi hissedebilirsiniz. İnternet kursumuza siz de katılın! Kursumuz ücretsizdir. Başvurularınızı bekliyoruz.' with 10 likes. The third post is dated 22 August 2011 and says 'İnternet üzerinden verilen kursumuz tamamen ücretsizdir. Kendi kendine bir şey yapmak isteyen herkesi davet ediyoruz. Başvurularınızı bekliyoruz.' with 13 likes and 16 comments. Each post has a row of interaction buttons: 'Unlike · Comment · Promote · Share'.

Psikolog Psikoloji
7 September 2011

Başvurular devam etmektedir. Siz de katılabilirsiniz. Bekliyoruz.

Unlike · Comment · Promote · Share 7 8

More posts from 31 August to 7 September ▾

Psikolog Psikoloji
31 August 2011

Profesyonel psikolog desteği ile 5 haftada kendizi daha iyi hissedebilirsiniz. İnternet kursumuza siz de katılın! Kursumuz ücretsizdir. Başvurularınızı bekliyoruz.

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Figure 2. Screenshot of the status updates.

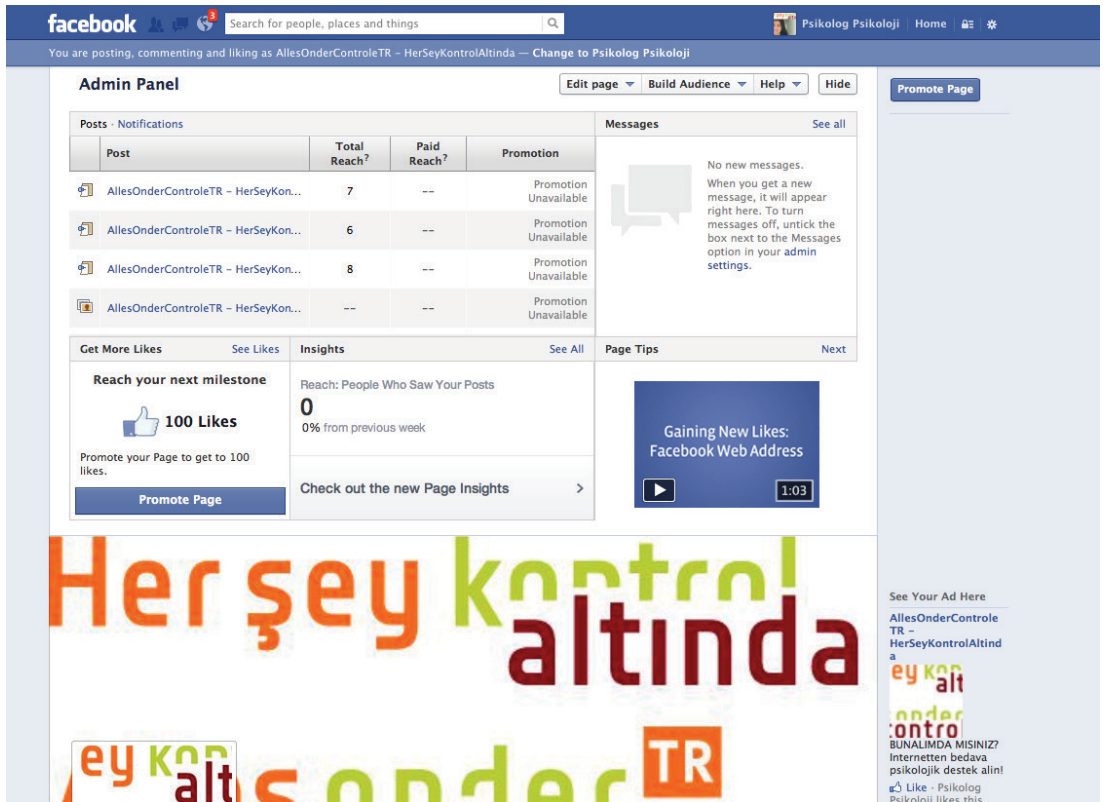


Figure 3. Screenshot of the Facebook Page.

DATA - COLLECTION ON FB

Socio-demographic information on the FB Friends was extracted from their personal profiles (described in detail in a separate section), in so far as this was filled in and shared with FB Friends. Socio-demographic information included a) gender; b) age; c) education (we categorized education as follows: low level, none to at most 6 years of primary schooling; middle education, up to 10 years of schooling; and higher education, up to 18 years of education); d) country of birth; and e) country of residence.

RESULTS

1. PRESS RELEASE

The press release was picked up pro-actively by several media and relevant stakeholder organisations, which resulted in several requests for interviews with the principal investigator and/or requests for more detailed information. One Dutch regional newspaper published a

news article about the research project. Furthermore, a Dutch national center for intercultural healthcare organisation published a news article about the project on their website as did some psychologists with Turkish individuals among their clients. Two Dutch radio broadcasting stations, one oriented towards ethnic minorities and one regional station, interviewed the principal researcher (BÜI) on the project as well. In addition, a small Dutch center for life, health and care asked us to send (30) research information leaflets for dissemination among Turkish visitors in their waiting room. Contrary to our experiences with previous trials (e.g. Van Ballegooijen et al., 2013) this recruitment strategy was not very successful, since it yielded only two (!) people applying for the trial. Both of these participants were included in the trial (shown in table 1).

2 . R E C R U I T M E N T T H R O U G H D I R E C T E M A I L I N G

We do not know how many of the recruitment emails were actually forwarded to interested people. At least five Dutch mental health care organisations and two Turkish migrant related websites published an announcement about our research project on their website as a consequence of our direct mailing strategy.

This recruitment strategy was, however, not successful either. Only 15 people sent an e-mail with a request to apply for the trial (5% of the total 287 applicants) and none of them met the inclusion criteria. Three had a low depression severity, six applicants had a suicidal risk and six did not return the informed consent form.

3 . T H E D I S T R I B U T I O N O F R E S E A R C H I N F O R M A T I O N L E A F L E T S

This more directly and regionally targeted recruitment strategy yielded somewhat better results. A total of 27 participants applied for the trial by sending an e-mail to the researcher, comprising 10.6% of all applicants ($n = 287$). However, none of these applicants were included in the trial, due to several reasons. Three had a low depression score on the CES-D, four applicants had a suicidal risk, five did not fill in the baseline assessment and two declined to participate.

4 . A D V E R T I S E M E N T S

The result of this recruitment strategy was unexpectedly disappointing — no applications for participation in the study were received.

5 . R E C R U I T M E N T T H R O U G H T H E I N T E R N E T (I N G E N E R A L T E R M S)

A total of 3 people applied for the trial as a result of the Internet discussion forums. Unfortunately, these individuals did not provide details of the websites they had visited or where they had noticed the information about the study. Only one of these applicants was successfully included in the trial.

In the following sections, a detailed description of the recruitment method applied on FB will be given. This method was by far the most effective of the strategies in terms of reaching and recruiting participants for the trial. We will present the FB recruitment activities and results in the following four sections: the research profile, Friends on FB, characteristics of Friends who contacted the researcher and the content of the messages or conversations on FB. The banner as a recruitment strategy was not successful either as it resulted in no applications for study participation.

6 . R E C R U I T M E N T O F S T U D Y P A R T I C I P A N T S T H R O U G H F B

The banner as a recruitment strategy was not successful either as it resulted in no applications for study participation.

T H E R E S E A R C H P R O F I L E

At the start, this method did not appear to be successful in reaching and recruiting participants for the trial, since we did not receive any applications. Therefore, as a next step, people from these groups were invited at random to join our research project fan page, and friend requests (about 700) were sent by the researcher, of which 584 were accepted. Subsequently, friends of our friends list and other people from Facebook started to add our research profile

as a friend, which resulted in 3308 friends on the research profile by the end of the trial. The fan page received 45 likes by the end of the trial.

F R I E N D S O N F B

Figure 4 shows the flowchart of the FB Friends activity on Facebook. The personal profile attained a total of 3308 friends. We categorized these friends into three groups according to the 90-9-1 principle (Arthur, 2006; Nielsen, 2006; van Mierlo, 2014). This principle is based on the activity of people on social networking sites. It assumes that 90% of people just observe and don't participate. These are called Lurkers. 9% contribute occasionally and are labeled Contributors; and 1% are the most active users, creating new content, and are known as Superusers. The Lurkers on our profile were those who didn't show any activity on our profile or page; the Contributors were friends who only commented or liked posts or status updates; and Superusers consisted of those who contacted the researcher directly.

The Superusers group comprised 348 friends who contacted the researcher by sending a message on FB. 139 of these applied to participate. The Contributors group consisted of 440 friends, of whom 332 "liked" status updates or posts and 108 commented on a total of 36 status updates shared by the researcher on the Timeline. 28 friends from the Contributors group applied for the trial. Finally, the Lurkers group showed no action on our profile; however 57 of these applied for the research project directly by sending an e-mail to the researcher (figure 4).

FB yielded 224 applicants in total. However, only 74 were included in the trial. Of the excluded applicants, 10 were excluded due to low depression severity, 46 due to suicidal risk, 30 did not return the informed consent, 4 declined to participate and 60 did not fill in the baseline assessment.

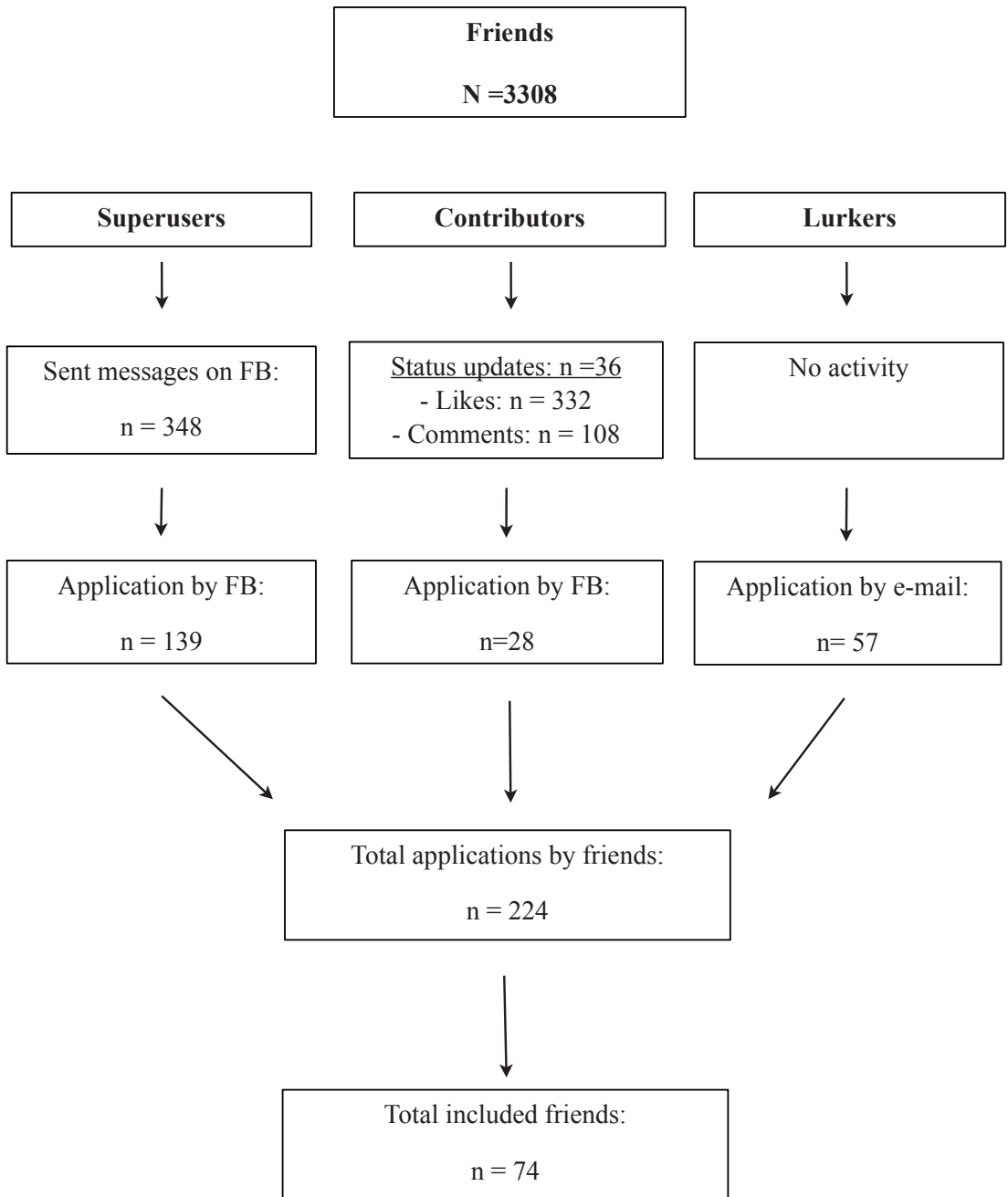


Figure 4. Flowchart of the applications via Facebook.

CHARACTERISTICS OF FRIENDS WHO CONTACTED THE RESEARCHER ON FACEBOOK (SUPERUSERS)

The recruitment strategy on FB changed into an interactive situation in which friends started to contact the researcher by sending messages on FB. Not everyone sent a message, however. The Superusers group consisted of 348 friends, as shown in table 2.

In order to describe the socio-demographic characteristics of the Superusers, we used the demographic details shared on the FB profiles of these friends. This information is visible after clicking the profile details of a friend. This information is, however, not shared by everyone, nor it is always complete (resulting in missing data). Therefore, only those demographic details that were available were used in our analyses.

Of the 348 friends (Superusers) who sent us a message, 46.0% (n= 160) were male and 36.2% (n= 126) were female (17.8%; n = 62 was unknown) as shown in table 2. The mean age was 34.95 (SD = 10.33) with a range of 17–63, based on the information of 85 friends. The educational level was high for 16.7% (n=58) of our FB friends, average for 8.0% (n=28) and low for 0.9% (n=3) friends (74.4%, n=259 was unknown). The largest group of friends who sent us a message were from the Netherlands (20.7%; n = 72) and from Turkey (17.8%; n = 62). Other European countries such as Germany (13.8%), Belgium (3.4%) and France (3.4%) were also represented in our sample. However, this information was missing for 63.8% (n= 127) of our friends.

Table 2. Characteristics of the people who sent a message on Facebook (Superusers).

		Total Sample N= 348 (n, %)
Gender		
	female	126 (36.2%)
	male	160 (46.0%)
	unknown	62 (17.8%)
Age (M, SD)^a		34.95 (10.33)
Education		
	low	3 (.9%)
	middle	28 (8.0%)
	high	58 (16.7%)
	unknown	259 (74.4%)
Country of residence		
	the Netherlands	72 (20.7%)
	Germany	48 (13.8%)
	Belgium	12 (3.4%)
	France	12 (3.4%)
	Turkey	62 (17.8%)
	Other	15 (4.3%)
	unknown	127 (36.5)
Country of origin		
	the Netherlands	9 (2.6%)
	Turkey	107 (30.7%)
	Other	10 (2.9%)
	<i>unknown</i>	222 (63.8%)
Reason for message		
	Application for trial	139 (35.3%)
	Psychological problems	34 (8.6%)
	Making Acquaintance	78 (19.8%)
	Invitation to an event	42 (10.7%)
	Other	101 (25.6%)

^a The mean age is based on the data of 85 individuals. The age of 263 individuals is unknown.

THE CONTENT OF THE MESSAGES OR CONVERSATIONS ON FB BY SUPERUSERS

During the recruitment period, the researcher was online for a couple of hours weekly, in order to be visible and reachable for friends. However, not everyone who sent a message to the researcher applied for the trial. In fact, the reasons for contacting us on FB were varied, as shown in table 2. We categorized the reasons for messaging into five groups: 1) application for the trial (n = 139); 2) psychological problems (n = 34); 3) getting acquainted (n = 78); 4) invitation to an event (n= 42) and 5) other reasons (n= 101).

The main reason for our FB friends to contact the researcher was to apply for the trial (35.3%, n= 139). The following is an example of a conversation with a woman who applied for the trial:

Friend: Hello, how are you? I want to get acquainted with you.

Researcher: Hello [First Name], thank you. I am [First Name] from the VU University and work as a researcher and lecturer. Did you look at our research website?

Friend: No. My name is [First Name]. I have been living in the Netherlands for 2 years.

Researcher: Nice to meet you [First Name].

Friend: What is your name? What is your project about?

Researcher: You can get detailed information about our project on our research website: [Research Website].

Friend: Okay, I'll take a look. Are there any costs to participate?

Researcher: No, there are no costs.

Friend: I want to participate. I have sent an e-mail, I would be happy if you can help me.

Another 19.8% (n= 78) of the friends wanted to get acquainted/be befriended with the researcher. The following is an example of message from a man who added us as a friend:

Friend: Warm greetings from Cologne, I wish you a happy holiday.

Another 8.6% (n = 34) of the friends contacted the researcher because they wanted to talk about their personal psychological problems. These problems ranged from depressive complaints to family problems and suicidal ideations. The following section is an example of a message exchange (due to the time delay between the messages, this was an asynchronous chat conversation) with a woman who had suicidal ideations:

Friend: Hello

Researcher: Hello, how are you?

Friend: Thank you, how are you? It's hard to reach you, I guess

Researcher: It can take some time to respond to the messages on Facebook, but if you want you can contact us by phone or e-mail. Did you take a look at our website?

Friend: I'm writing from my mobile. I am tired of life and I turn in upon myself continuously. I think about committing suicide very often. I have poisoned myself several times, it's impossible to go to a psychologist — please help me I would be happy if you would help me.

Researcher: Ms. [First Name] Thank you for sharing your problems with me. I guess you are going through a hard time. I would love to help you, however our project is not geared towards this kind of problem. I would advise you to go to your general practitioner or doctor to get professional help for your problems.

Friend: Thank you for your advice. I will contact my general practitioner.

Inviting the researcher to a Turkish event was another reason for contact, accounting for 10.7% (n=42) of the messages. Invitations varied from film events, theater performances, concerts and meetings, to religious conferences. An example of such an invitation message is as follows:

Friend: On Thursday [Date], [Title] a hilarious theater performance by [Names]. Don't miss it!

The rest of the 101 friends (25.6%) who contacted the researcher had other reasons,

including advertising, invitations to join an FB group on migrant related topics, expressing thanks for setting up this project and searching for a Turkish doctor (for physical complaints).

THE FINAL INCLUSION OF PARTICIPANTS

The entire recruitment process yielded a total of 287 Turkish people applying for participation in the trial (shown in table 1). The five regular recruitment strategies resulted in a total of 47 applicants, of whom only 3 were successfully included in the trial. The FB recruitment strategy resulted in 224 applicants, of whom 74 were included. Two applicants did not specify their recruitment channel; both were excluded because of suicidal risk. Finally, 14 applicants who applied for the trial indicated that friends or family had referred them. Of this group, only 8 people were included. The reasons for exclusion were suicidal risk ($n=5$), failure to return the informed consent ($n = 2$) and not completing the baseline assessment ($n= 1$).

DISCUSSION

The current study was part of a randomised controlled trial studying the effectiveness of a web-based problem solving therapy for Turkish migrants with depressive symptoms in the Netherlands. The results of this study showed that the majority of the applicants were recruited via Internet, mainly through FB (75.6%, $n=224$), of whom 74 (77%) were included in the trial. Traditional recruitment strategies such as the distribution of research leaflets in Turkish organisations and clinics and advertisements in a Turkish newspaper were not successful, accounting for only 16.4% ($n = 47$) of the total ($n = 287$) applicants, and only 3 (3.1%) were included in the trial.

Recruitment for this study was not an easy task, both in terms of obtaining the required number of participants and the time needed to assess their suitability for inclusion. Our study thus confirms that the recruitment of ethnic minorities for clinical trials is a multifaceted challenge. We applied several known as well as innovative strategies such as using FB for recruitment purposes. Traditional recruitment strategies were less successful for this target group, even when both languages (Dutch and Turkish) were used. This is in contrast to many randomised controlled Internet trials, in which traditional recruitment strategies are often used effectively to recruit participants from the general population (e.g. van Bastelaar, Cuijpers, Pouter, Riper, & Snoek, 2011; Warmerdam et al., 2008). However, the proportion of ethnic minorities in these Internet trials was low.

The proportion of ethnic minorities in this trial was also low. Several reasons could underlie the limited effectiveness of most of the recruitment strategies applied in our randomised controlled trial (Ünlü Ince et al., 2013). First, we do not know what the level of exposure of potential participants was of the recruitment strategies applied, with the exception of FB: a total of 3308 people became friends, of whom 224 applied for the trial to take part. It is possible that during recruitment, Turkish migrants were not able to read our invitation to participate or if they had read it, they could have been of the opinion that they were not depressed. Furthermore, fear of stigma might also have influenced the willingness to take part in our trial. For example, Turkish migrants in Germany who were more depressed were found to experience stigmatizing concerns (Heredia Montesinos et al., 2012). It might also be that the Turkish persons we have reached with the more traditional recruitment strategies were not in favor of Internet-based interventions or study participation. Given that the prevalence of depression treatment seeking and study participation of Turkish migrants is hindered by many obstacles, it might have been that Internet-based treatment and study participation were not attractive for this group neither.

C O M P A R I S O N W I T H P R I O R W O R K

Our study shows that recruiting ethnic minorities for randomised controlled studies is possible but not without difficulties in terms of the time and effort needed. FB might be a potentially effective method to recruit research participants through the Internet (Barrera et al., 2014; Jones et al., 2012; Ramo & Prochaska, 2012). It is a widely used social-networking website with more than 1.2 billion active users (Facebook, 2014). Registration on FB is free, personal profiles can be created, users can communicate and share information with other users. However, FB has rarely been used as a recruitment strategy for studies involving ethnic minorities (Barrera et al., 2014).

Two studies that have made use of FB mainly used advertising campaigns targeting children (Mychasiuk & Benzies, 2012) and patients with diabetes (Greene, Choudhry, Kilabuk, & Shrank, 2011). One study focused on college students by opening a fan page on FB to communicate with study participants who were already included in the study and chose to subscribe to the fan page (Berry & Bass, 2012). Another study used FB to locate study participants for a follow-up study of adolescent girls (Jones et al., 2012). However, none of these focused particularly on ethnic minorities.

Other studies show that the Internet in general is potentially effective as a recruitment strategy among ethnic minorities, however, these studies did not use FB specifically (e.g. Bar-

rera et al., 2014; Ramo & Prochaska, 2012). For example, Barrera and colleagues (2014) used Google AdWord campaigns in Spanish and English to recruit pregnant women with post-partum depression for a randomised controlled trial in the US. This strategy led to 6745 applications from pregnant women and a total of 176,295 clicks by Web users in general, resulting in 2575 included participants. In that study, the majority of the applicants were Spanish-speaking women from Latin America.

Our results also showed that many friends on FB contacted the researcher by message on FB. Most of these were males, and were highly educated and living in the Netherlands. This is of interest as with other recruitment strategies females are in the majority. It is also in contrast to the included sample of participants, of whom 59 were female (62%) and 37 male (38%). Our trial reached a wider geographical area than initially intended, showing the power of the Internet. Ethnic minorities, who are known to be a hard-to-reach population (Miranda et al., 2003; U.S. Department of Health and Human Services, 2001), seem to become visible and reachable by using FB for research. One possible explanation for the success of FB as a recruitment strategy is the lower threshold for getting in contact with the researcher. Research shows that the willingness to become friends on FB increases when the profile photo is displayed (Wang, Moon, Kwon, Evans, & Stefanone, 2010), as was the case with our FB research profile.

Furthermore, offering the option to choose between two languages (Dutch or Turkish) may have been another possible factor in the success of FB. Since the majority of the participants in the main trial consisted of first-generation migrants who preferred the Turkish language, this may have lowered the threshold to take part in the trial (Ünlü Ince et al., 2013). While many participants are only included in intervention studies if they read and speak the language of the country they live in (Hussain-Gambles et al., 2004), our results show that the use of the native language of ethnic minorities seems to play an important part in overcoming this barrier.

Finally, a large proportion of the people who applied to partake in the trial were unfortunately excluded. The main reason was the suicidal risk among 29% of the applicants who completed the screening (n=221); these were mainly women (59.4%), aged 33.5 years on average. This exclusion rate due to suicidal risk is in contrast with native population studies (e.g. Andersson et al., 2005; Johansson et al., 2012). It seems therefore that FB is a potentially effective recruitment channel for reaching a high-risk group that is generally hard to reach.

L I M I T A T I O N S

The study findings are limited in several ways. First, we could not obtain complete demographic information from our Friends on FB. Many of them did not share this on their profile. Second, it was not possible to verify the accuracy of the demographic characteristics shared on the FB profiles. Third, we were not able to compare participants recruited by traditional methods with those recruited by the Internet in terms of demographic characteristics and depressive complaints since not everyone completed the screening. Fourth, the representativeness of the sample recruited by FB is hard to determine. The included participants comprised mainly young women (mean 35.2 years) with a middle to higher educational level. This is a higher proportion of this group compared to the general Turkish population in the Netherlands (CBS, 2013), however, it is in line with characteristics of study samples in non-migrant population trials (van Straten, Cuijpers, & Smits, 2008; Warmerdam et al., 2008). Finally, although FB was shown to be a more successful recruitment method than traditional ones, we did not achieve the intended sample size of 200 participants, owing to limited time and resources.

F U T U R E R E S E A R C H A N D I M P L I C A T I O N S

The results of this study have promising implications for future research and clinical fields. The use of Internet, particularly FB, seems to be an effective way to target hard-to-reach populations. The Internet seems also to lower the threshold to contact a professional by message or chat. Furthermore, it can be an effective recruitment strategy in clinical trials in ethnic minority groups. Future research studies may consider Internet and FB as potential recruitment methods and make their research visible and reachable for target groups.

C O N C L U S I O N

Traditional recruitment strategies, such as the distribution of information leaflets and placing advertisements in newspapers, appear ineffective strategies to recruit ethnic minority groups for research purposes. The use of the Internet proved to be more effective, specifically FB was a more successful method to reach and recruit Turkish participants for a clinical trial. Future research should examine the factors that account for the potential effectiveness of FB as a recruitment method for hard-to-reach populations.

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CHAPTER 6

The relationship between acculturation strategies and depressive and anxiety disorders in Turkish migrants in the Netherlands

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ABSTRACT

Background: Turkish migrants in the Netherlands have a high prevalence of depressive and/or anxiety disorders. Acculturation has been shown to be related to higher levels of psychological distress, although it is not clear whether this also holds for depressive and anxiety disorders in Turkish migrants. This study aims to clarify the relationship between acculturation strategies (integration, assimilation, separation and marginalization) and the prevalence of depressive and anxiety disorders as well as utilisation of GP care among Turkish migrants.

Methods: Existing data from an epidemiological study conducted among Dutch, Turkish and Moroccan inhabitants of Amsterdam were re-examined. Four scales of acculturation strategies were created in combination with the bi-dimensional approach of acculturation by factor analysis. The Lowlands Acculturation Scale and the Composite International Diagnostic Interview were used to assess acculturation and mood and anxiety disorders. Socio-demographic variables, depressive, anxiety and co-morbidity of both disorders and the use of health care services were associated with the four acculturation strategies by means of Chi-Squared and Likelihood tests. Three two-step logistic regression analyses were performed to control for possible, confounding variables.

Results: The sample consisted of 210 Turkish migrants. Significant associations were found between the acculturation strategies and age ($p=.00$), education ($p=.00$), daily occupation ($p=.00$) and having a long-term relationship ($p=.03$). A significant association was found between acculturation strategies and depressive disorders ($p=.049$): integration was associated with a lower risk of depression, separation with a higher risk. Using the axis separately, participation in Dutch society showed a significant relationship with a decreased risk of depressive, anxiety and co-morbidity of both disorders ($OR=.15$; $95\% CI=.02 - .98$). Non-participation showed no significant association. No association was found between the acculturation strategies and uptake of GP care.

Conclusion: Turkish migrants who integrate may have a lower risk of developing a depressive disorder. Participation in Dutch culture is associated with a decreased risk of depressive, anxiety and co-morbidity of both disorders. Further research should focus on the assessment of acculturation in the detection of depression.

INTRODUCTION

Research shows that the prevalence of depressive symptoms is significantly higher among adult ethnic minorities than among native populations in Europe (Missinne & Bracke, 2012). In the Netherlands, it was found that Turkish migrants, one of the largest ethnic minorities in the Netherlands, have a significantly higher 1-month prevalence of depressive and/or anxiety disorders (18.7%) in comparison with Dutch (6.6%) as well as other ethnic minorities such as Moroccans (9.8%) (de Wit et al., 2008). Moreover, Turkish women especially, have a higher risk of prevalence of these affective disorders. However, in an international comparison study, it was shown that the 1-month prevalence of depressive and anxiety disorders for Turkish nationals living in Turkey was 3.1% (Andrade et al., 2003). It seems thus that the higher prevalence of depression among Turkish migrants may be related to migration.

While the Turkish population is at an increased higher risk for developing depression in comparison to other ethnic groups (Moroccan and Dutch), this is comparable with research concerning ethnic minorities in general. For example, in a European study in 23 countries, it was found that depressive symptoms were more prevalent among immigrants and ethnic minorities than among native populations (Missinne & Bracke, 2012). A possible explanation for this higher risk may be lower socio-economic status and discrimination perceived by ethnic minorities in their host countries (Missinne & Bracke, 2012). This increased risk for developing depression, therefore, is probably generalizable to many ethnic minority groups, including Turkish migrants in the Netherlands.

One of the first definitions of acculturation was given by Redfield and colleagues (1936, page 149) in 1936 as “the changes that occur in the ethnic cultural patterns when groups or individuals with different cultures come into continuous contact with each other”. Later in 1980, Berry (1980) applied this definition as a basis for his bi-dimensional model in which he defines acculturation as a) the degree of participation in the host culture by migrants and b) the degree of maintenance of their own ethnic culture. These two dimensions can vary independently of each other and can lead to four acculturation strategies according to Berry (2003). The first strategy can be described as *integration*, the combination of maintenance of the ethnic culture and participation in the host culture. *Assimilation* is the second strategy, which consists of participation in the host culture, but rejection of the original ethnic culture. Third, *separation* (or *segregation*) implies maintenance of the ethnic culture, but no participation in the host culture; and finally *marginalization*, when both the host and ethnic cultures are rejected.

In the past decades, alternative definitions have been given to acculturation, such as a second-culture acquisition (Rudmin, 2009, p. 106) or enculturation (Weinreich, 2009). Both of these conceptualizations are viewing acculturation uni-dimensional, as one particular culture (Berry, 2009). When viewing acculturation in a one-dimensional manner, the migrant chooses either to adapt the host culture or to maintain the ethnic culture. However, this one-dimensional approach neglects the dynamic of acculturation. According to the very first definitions of acculturation by Redfield, acculturation includes the interplay or transmission of one or more cultures, which is a criterion for acculturation nowadays (Berry, 2009). The bi-dimensional model posits the independency of the two cultural orientations, which is shown to be a more valid approach of acculturation (Ryder, Alden, & Paulhus, 2000). Therefore, its assessment by defining it in acculturation strategies has become an essential feature of acculturation (e.g. Berry, 2009; Chirkov, 2009a, 2009b).

The integration strategy has often been associated with better psychological outcomes in comparison with the other three acculturation strategies. For example, migrants who are better integrated in the host culture show higher self-esteem, more pro-social behaviours and less depressive symptoms (e.g. Chen, Benet-Martínez, & Harris Bond, 2008; Schwartz, Zamboanga, & Jarvis, 2007). In a recent meta-analysis by Gupta and colleagues (2013) based on 38 studies on Asian Americans, it was found that participation in the American culture was related to lower depression scores among Asian Americans. Furthermore, they found that maintenance of the Asian culture had a negative but non-significant relationship with depression scores. Although acculturation was measured according to a bi-dimensional model (participation in the host country or maintenance of the ethnic culture), the combination of both strategies was not analysed by Gupta and colleagues (2013).

Most research on ethnic minorities and mental health shows a negative association between acculturation and mental health. For example, in a study among Korean immigrants in the USA, self-reported language proficiency of English (which is part of the adaptation dimension) was shown to be related with depression (Bernstein, Park, Shin, Cho, & Park, 2011). Furthermore, integration has been shown to be associated with lower mental health problems in Black male adolescents in the UK (Bhui, Lenguerrand, Maynard, Stansfeld, & Harding, 2012). In Chinese American students, it was found that maintenance of the ethnic (Chinese) culture was related to fewer depressive symptoms (Juang & Cookston, 2009).

However, there are also examples of studies in which this association hasn't been found. For example, Beirens and Fontaine (Beirens & Fontaine, 2010) evaluated differences in well-be-

ing in Turkish immigrants in Belgium, Turkish majority members (in Turkey) and Belgian majority members. Results showed no relationships were found between adaptation and maintenance (which were the only two acculturation dimensions) and sadness, anxiety nor with anger.

In the Netherlands, it was found that having fewer skills to enable participation in the host culture is generally related to more psychological distress (Kamperman, Komproe, & De Jong, 2003; Knipscheer & Kleber, 2006, 2007). This association was also confirmed for Turkish migrants, for example, by Fassaert and colleagues (2011). However, previous Dutch studies have not analysed acculturation according to the aforementioned four acculturation strategies (e.g. Fassaert, de Wit, et al., 2009; Fassaert, Hesselink, & Verhoeff, 2009; Fassaert et al., 2011; Kamperman et al., 2003; Knipscheer & Kleber, 2006, 2007). It is not yet clear whether the acculturation strategies are associated with affective disorders in Turkish migrants in the Netherlands. Since the literature shows that an integration strategy is related to lower levels of psychological distress in migrants, it is important to evaluate this explicitly in order to improve our understanding of the relationship between acculturation strategies and the prevalence of affective disorders among migrants.

In addition, ethnic minorities seem generally to receive less help from mental health care services than native citizens of Western countries (Leong & Kalibatseva, 2011; U.S. Department of Health and Human Services, 2001). One of the reasons for this lower uptake is that ethnic minorities seek mental health care often at a later and at a more advanced stages of their mental health problems (Leong & Kalibatseva, 2011; U.S. Department of Health and Human Services, 2001). Moreover, ethnic minorities have a higher chance of dropping out from psychological treatment prematurely (Trujillo, 2008). Although Dutch national data is lacking, there are signals that the dropout rate is twice as high in ethnic minorities in mental health care compared to native Dutch people in the Netherlands (Hilderink, van 't Land, & Smits, 2009). Research also shows that the perceived need for mental health care is higher for Turkish migrants than in Moroccan and Dutch people (Fassaert, et al., 2009). This may be related to their higher levels of mental distress and their less often met need perceived by Turkish migrants (Fassaert, et al., 2009).

Several studies suggest that greater participation in the host culture is associated with higher general health service use (e.g. Arcia, Skinner, Bailey, & Correa, 2001; Kamperman, Komproe, & De Jong, 2007). Earlier Dutch research found a significantly positive association between communication in Dutch and the use of care from General Practitioners (GPs) among

Turkish men in the Netherlands (Fassaert, et al., 2009). However, an association between the four acculturation strategies and GP-care uptake by migrants was also not studied in the study of Fassaert and colleagues (2009).

We therefore decided to examine the relationship between the four acculturation strategies (integration, assimilation, separation and marginalization) and mental health in terms of prevalence of depression and anxiety disorders in Turkish migrants living in Amsterdam as well as the association between these strategies and GP-care uptake. For this purpose we re-examined existing data from the General Health Monitor of Amsterdam of 2005 (e.g. Ujic-Voortman et al., 2009). Using the bi-dimensional framework of acculturation, we hypothesized that 1) higher integration is associated with lower prevalences of depression and anxiety disorders and 2) higher integration is associated with higher GP-care uptake.

METHODS

THE AMSTERDAM HEALTH MONITOR

The Amsterdam Health Monitor (AHM) consists of cross-sectional health surveys conducted by the public health service of Amsterdam (GGD). These surveys are performed periodically (every four years) in order to monitor the general health of the population living in Amsterdam and are representative for the population. Data for the current study were derived from the survey conducted in 2005, which was a (follow-up) study of the AHM of 2004 (GGD Amsterdam), stratified by age and ethnicity, and specifically aimed at studying mental health. The follow-up consisted of structured (diagnostic) interviews conducted by trained bilingual lay interviewers.

The first phase of the survey included 1449 respondents from the four largest ethnic minority groups (479 Dutch, 374 Moroccan, 454 Turkish and 142 Surinamese or Antillean). All of these respondents were asked for a second approach, without mentioning the topic of the study, one year after the first phase. This second phase (follow-up, one year after the first phase) consisted of a structured interview conducted by bilingual interviewers. A total of 1210 respondents gave permission to be approached for the follow-up study by invitation letter for a home visit by the interviewer. Appointments could be changed by telephone, up to 8 attempts. The interviews took place between February and June 2005, while summer vacation, Christmas and Ramadan were avoided. The interviews could be held in Dutch, Turkish, Moroccan or Berber, depending on the preference of the respondent. The interviewers were intensively

trained and coached before and during data-collection. The interviews were also recorded in order to check and coach the researchers. After completing the interviews, these were checked for consistency and completeness.

The second phase resulted in 812 respondents, of whom 321 were Dutch, 191 Moroccan, 213 Turkish and 87 Surinamese or Antillean. All the study procedures were approved by the ethics commission of the Amsterdam Academic Medical Center. For more detailed information about the recruitment, procedures and details, we refer to previous AHM publications (de Wit et al., 2008; Fassaert, de Wit, et al., 2009; Fassaert et al., 2011). For the current study, we selected the data of the Turkish group, comprising 210 respondents with complete information (table 1).

Table 1. *Characteristics of the Turkish group from the AHM of 2005.*

		Turkish migrants N=210	
		n	%
Gender	Male	126	60.0
	Female	84	40.0
Age (M,SD)		47.4	14.2
	18 - 35	44	21.0
	36 - 49	74	35.2
	≥ 50	92	43.8
Education level ^a	None or primary school	103	49.0
	Middle education.	35	16.7
	Higher education	48	22.9
Daily occupation	Yes, job/student	60	28.6
	No, unemployed.	150	81.4
Partnership ^b	Yes, partner	169	80.5
	No, single	38	18.1
Acculturation ^c	Integration	41	19.5
	Assimilation	44	21.0
	Separation	87	41.4
	Marginalization	24	11.4
Depression and dysthymia (1-month)		36	17.1
Anxiety disorders (1-month)		21	10.0
Comorbidity		14	6.7
Amount of the contacts with GP ^d	No contact (0)	58	27.6
	Low (0-3)	90	42.9
	High (>3)	61	29.0

Note. Results are based on the completers only sample due to varying attrition rates on measurements. Numbers do not add up to 210, because not all participants answered all the questions. Missing values are noted in superscript: ^a: n=24; ^b: n=3; ^c: n=14 and ^d: n=59.

M E A S U R E S

The structured diagnostic interview consisted of several translated instruments, of which we selected only the following sections: demographic information, the Lowlands Acculturation Scale and the Composite International Diagnostic Interview and the use of health care services. The questionnaire was translated into Turkish by official translators. A back translation to Dutch was performed by another translator and checked by the researchers. Any inconsistencies with the original were discussed with both translators and adjusted. The interviewers also reported back when they had difficulties with the translation, and then together a standard was chosen. Of the acculturation scale (LAS) and the measurement of anxiety and depression (CIDI) official Turkish translations were available and used in this study.

S O C I O - D E M O G R A P H I C V A R I A B L E S

Socio-demographic information included gender, age (18-35 years, 36-49 and 50 years and older), level of education (none, to at most 6 years of primary schooling; up to 10 years of schooling including middle education; up to 18 years of schooling including higher education), daily occupation (employed for more than 12 hours a week; a student; or no job) and partnership status (having a long-term relationship or partner). Turkish ethnicity was defined as when the respondent or at least one of his/her parents was born in Turkey. First and second generation migrants were taken together as one group. These items were translated from Dutch to Turkish and back to Dutch by professional translators.

A C C U L T U R A T I O N

The level of acculturation was measured with the Lowlands Acculturation Scale (LAS), which was used in the AHM of 2005 (Mooren, Knipscheer, Kamperman, Kleber, & Komproe, 2001). The validated Turkish translation was used (Mooren et al., 2001). It consists of 25 items that are rated on 6-point Likert-type scales, ranging from 'totally disagree' to 'totally agree'. The LAS can be divided into 5 subscales: Skills, Traditions, Social Integration, Values and Norms; and Feelings of Loss.

However, for the purpose of the research question addressed in this paper, we did not use the original scales of the LAS. We developed four new acculturation strategy scales based on the items of the LAS questionnaire (integration, assimilation, separation and marginalization) in two steps:

First, following the two-dimensionality theory of Berry (1980, 2003), two new scales were developed for the questionnaire. These scales were: participation and contact in the host culture (Participation) and maintenance of the ethnic culture (Maintenance). The two-dimensionality of the items on the LAS questionnaire was created by explorative factor analysis (principal component analysis) with a two-factor solution, based on the respondents of the AHM 2005. However, eight items concerning emancipation were excluded from further analyses because it was not possible to determine how this scale was associated with acculturation, due to the lack of information about emancipation in the ethnic Dutch and Turkish cultures. The two factors, participation and maintenance, were yielded with the rotation solution, as shown in table 2. The participation factor accounted for 16.9% of the item variance, and the maintenance factor accounted for 21.6% of the item variance. With a cut-off point of .40 for the loadings (Stevens, 2002), only 3 items were excluded from both factors. In order to fit the LAS items to the scales, some items (items 10, 11, 13, 16 and 17) were recoded by adjusting the range of the response options, so that higher scores indicated lower levels of maintenance or participation. Internal consistency for the Participation and Maintenance scales of the LAS were good, with Cronbach's alpha indicating strong reliability for both of the scales - each .86.

Table 2. *Factor loadings of the items on the LAS.*

Items	Factors	
	Participation	Maintenance
Participation items		
11. I find Dutch difficult, so I'm not motivated to learn	.67	.30
15. I am misunderstood when I speak Dutch	.70	.26
16. I have difficulties understanding the Dutch language	.80	.36
17. I have to depend on other people to show me how things are done here	.77	.22
20. I must learn how certain tasks are done, such as renting an apartment	.51	.25
Maintenance items		
2. I prefer to listen to Turkish music	.15	.53
4. I prefer to eat Turkish food	.17	.59
6. I consider it important to pass our traditions on to the next (future) generation	.04	.61
8. It is important to me to celebrate the Turkish traditional feast in the Netherlands	.11	.56
10. I belong here less than I belong to my homeland	.24	.50
12. When I go out, I usually go to places where I can meet people from my home country	.33	.52
13. Even though I am living here, it does not feel like my country	.32	.44
14. Most of my friends have the same cultural background as I do	.32	.60
22. My country of origin is always on my mind and in my memories	.11	.64
24. I miss the people I left behind in my original country	.21	.67
25. I feel homesick	.26	.65
No Factor items		
5. I have frequent contact with Dutch people	.26	-.19
7. In my experience encounters with the Dutch are fine	-.17	.07
18. I am familiar with the Dutch politics	-.29	-.11

Note. Factor loadings above .40 are presented in bold.

Second, in order to combine participation (low or high) and maintenance (low or high) to create the four acculturation strategies, the medians of the two scales were used as the cut-off scores indicating high (higher or equal to the median) and low (lower than the median) levels of participation or maintenance. Choosing a median split instead of a continuous measure was based on the fact that the distribution of the dimensions was not normal distributed, and therefore the dimensions could not be validly included as continuous measures and were therefore dichotomized. This also made it feasible to compare the four strategies instead of two separate dimensions. The median for participation was 20.0 (range: 5-30) and for maintenance it was 50.0 (range: 25-66).

This resulted in four scales of acculturation strategies: the scale integration was composed of the combination of high participation and high maintenance. The scale assimilation was composed of the combination of high participation and low maintenance. The scale separation consisted of low participation and high maintenance. Finally, the scale marginalization was the combination of lower levels of both participation and maintenance.

ANXIETY AND DEPRESSIVE DISORDERS

The Composite International Diagnostic Interview (CIDI 2.1) was used to establish the presence of depressive and anxiety disorders (World Health Organization, 1997). Depressive disorders included major depressive disorder and dysthymia; anxiety disorders included social phobia, agoraphobia, panic disorders and generalised anxiety disorders. All disorders were coded according to the DSM-IV criteria (American Psychiatric Association, 1994). The WHO Turkish version of the CIDI was used and was conducted by trained lay interviewers.

USE OF HEALTH CARE SERVICES

The outcome measure for health services utilisation was evaluated in terms of contacts with a General Practitioner (GP) by a self-report measure. Contacts were defined as consulting hours, telephone contacts, number of consultations with the GP for general health in the 6 months preceding the interview. A distinction was made between low and high number of contacts (0 to 3 versus more than 3 contacts).

ANALYSES

Socio-demographic variables, depressive disorder, anxiety disorders, co-morbidity and the use of health care services were analysed in terms of associations with acculturation strategies. To assess the significance of an association between these variables and the acculturation strategies, Pearson's Chi-Squared test was used. For cross tabulations with low cell frequencies (<5) the Likelihood ratio test was performed. Acculturation was also analysed in terms of a division in two general dimension (participation in the Dutch society and non-participation in the Dutch society) in order to explore one specific cultural attitude. To control for possible confounding variables, we conducted three two-step logistic regression analyses, with the binary (yes/no) psychopathology variables (depression/dysthymia, anxiety and comorbidity) as dependent variables. In step 1 of the analysis, we entered the five socio-demographic variables listed as an independent variable (Model 1). In step 2, we added the four acculturation variables (Model 2). Next, a Chi-Squared test of the log likelihood of model 1 versus model 2 was used to test the relationship between acculturation and psychopathology, taking into account the effects of socio-demographic variables. Associations were considered statistically significant if $p < .05$. All analyses were conducted in SPSS 20.0.

RESULTS

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

The sample consisted of 210 Turkish migrants, as shown in table 1. More than half of the migrants were male (60%) and most were over 36 years of age (79%). Almost half of the participants had only primary education and 80% were unemployed. Likewise, 80% were in a long-term partnership.

The 1-month prevalence of depression and dysthymic disorders was 17.1%, while the 1-month prevalence of anxiety disorders was 10%. The prevalence of co-morbidity of both disorders was high, namely 6.7%. Almost half of the participants (42.9%) reported 0 to 3 contacts with their GP for their general health in the last 6 months, of whom 64.4% ($n=58$) had no contact at all. Finally, 29% had contact with their GP on more than 3 occasions.

ACCULTURATION AND DEMOGRAPHIC CHARACTERISTICS

Several associations were found between acculturation strategies and demographic characteristics, as shown in table 3. Results show that age (Likelihood ratio=40.79, $p<.001$), education (Likelihood ratio=59.51, $p<.001$), daily occupation ($\chi^2 (4) = 32.22$, $p<.001$) and partnership status ($\chi^2 (3) = 9.12$, $p=.03$) were significantly associated with acculturation. Gender did not show an association with acculturation ($\chi^2 (3) = 6.20$, $p=.10$).

Table 3 also illustrates the proportions of demographic characteristics of migrants in the four acculturation strategies. The acculturation scale separation had the highest percentage of migrants (41.4%, $n=87$) and marginalization had the lowest percentage of migrants (11.4%, $n=24$).

The integration scale consisted mainly of migrants who were aged between 18 and 35 (34.1%, $n=14$) and 50 years or older (34.1%, $n=14$) and unemployed (65.9%, $n=27$). The assimilation scale included migrants with slightly different characteristics than for the integration scale, namely those aged between 18 and 35 (45.5%, $n=20$), were employed or were students (59.1%, $n=26$).

The separation scale comprised migrants with a different profile than the previous scales, i.e. 54.0% ($n=47$) were older migrants, 55.2% ($n=48$) were female, 70.1% ($n=61$) had a lower educational level and 87.4% ($n=76$) were unemployed. The marginalization scale had a similar profile of migrants to those in the separation scale, with the exception of the relationship status. In the separation scale 33.3% of the migrants ($n=8$) had no relationship.

Table 3. Associations between acculturation strategies and demographic characteristics, mood/anxiety disorders and contact with GP (n, %).

Demographic characteristics		Acculturation strategies				Statistics	
		Integration n=41	Assimilation n=44	Separation n=87	Marginalization n=24	Chi-Squared	df
Age						40.79 ^a ***	6
	18-35	14 (34.1%)	20 (45.5%)	8 (9.2%)	0 (0%)		
	36-49	13 (31.7%)	15 (34.1%)	32 (36.8%)	10 (41.7%)		
	≥ 50	14 (34.1%)	9 (20.5%)	47 (54.0%)	14 (58.3%)		
Gender						6.20	3
	Female	26 (63.4%)	31 (70.5%)	48 (55.2%)	10 (41.7%)		
	Male	15 (36.6%)	13 (29.5%)	39 (44.8%)	14 (58.3%)		
Education ^b						59.51 ^a ***	6
	low	15 (36.6%)	8 (18.2%)	61 (70.1%)	13 (54.2%)		
	middle	7 (17.1%)	15 (34.1%)	8 (9.2%)	2 (8.3%)		
	high	16 (39.0%)	19 (43.2%)	4 (4.6%)	7 (29.2%)		
Daily pursuits ^c						32.22***	3
	Job/student	14 (34.1%)	26 (59.1%)	11 (12.6%)	5 (20.8%)		
	Unemployed	27 (65.9%)	18 (40.9%)	76 (87.4%)	19 (79.2%)		
Partnership ^d						9.12*	3
	Yes, partner	34 (82.9%)	32 (72.7%)	75 (86.2%)	16 (66.7%)		
	No, single	7 (17.1%)	12 (27.3%)	9 (10.3%)	8 (33.3%)		
<i>Mood/anxiety disorders</i>							
<i>Depression/ Dysthymia</i>							
	Yes	2 (4.9%)	8 (18.2%)	20 (23.0%)	5 (20.8%)	7.85*	3
	No	39 (95.1%)	36 (81.8%)	67 (77.0%)	19 (79.2%)		
<i>Anxiety disorders</i>							
	Yes	2 (4.9%)	2 (4.5%)	12 (13.8%)	5 (20.8%)	6.85	3
	No	39 (95.1%)	42 (95.5%)	75 (86.2%)	19 (79.2%)		
<i>Co-morbidity</i>							
	Yes	1 (2.4%)	1 (2.3%)	10 (11.5%)	2 (8.3%)	6.08	3
	No	40 (97.6%)	43 (97.7%)	77 (88.5%)	22 (91.7%)		
<i>Contact with GP</i>							
<i>Frequency of contacts^e</i>							
	Low (0-3)	16 (39.0%)	23 (52.3%)	35 (40.2%)	11 (45.8%)	3.73	3
	High (>3)	9 (22.0%)	9 (20.5%)	32 (36.8%)	8 (33.3%)		

Note. ^a =The Likelihood Ratio Value is provided due to low cell frequency (<5). Results are shown based on the completers only sample due to varying attrition rates on measurements. Numbers do not add up to 210, because not all participants answered all the questions. Missing values are noted in superscript:

^b: n=35; ^c: n=14; ^d: n=17 and ^e: n=67.

* = p < .05; ** = p < .01; *** = p < .000

ACCULTURATION AND DEPRESSIVE / ANXIETY DISORDERS

Table 3 also presents the results of the association between acculturation and depressive and anxiety disorders. Acculturation was significantly associated with depressive disorders (Likelihood ratio=7.85, $p=.049$), but not with anxiety disorders (Likelihood ratio=6.85, $p=.08$) nor with co-morbidity of these disorders (Likelihood ratio=6.08, $p=.11$).

Migrants who had a depression diagnosis ($n=36$) were mainly represented in the separation scale ($n=20$), while the integration scale had the lowest number of migrants with depression ($n=2$).

ACCULTURATION AND ANXIETY / DEPRESSIVE DISORDERS CONTROLLED FOR SOCIO-DEMOGRAPHY

Tables 4 and 5 present the results of the three regression analyses we conducted in order to control for possible cofounders. Results were similar to the results of the original analyses presented in table 3. Accounting for the effects of socio-demographic variables, acculturation strategies were related to depression, but not to anxiety although the relationship with anxiety approached significance ($p=.055$). Risk of depression was significantly lower among those adopting an integration strategy (OR=.15; 95% CI=.02-.98).

Table 4. *The association between acculturation and 1-month prevalence of mood/anxiety disorders, controlling for socio-demographic variables.*

	-2 Log Likelihood		Statistic	Chi-Square	
	Model 1	Model 2		df	P-Value
Depression/Dysthymia	153.05	145.18	7.87	3	.049
Anxiety disorders	109.67	102.08	7.59	3	.055
Co-morbidity	82.86	76.81	6.05	3	.11

Note. Results are based on the completers-only sample. Model 1: includes the five socio-demographic variables as an independent variable. Model 2: acculturation was added as a variable.

Table 5. *The association between acculturation and 1-month prevalence of mood/anxiety disorders, controlling for socio-demographic variables.*

	-2 Log Likelihood		Statistic	Chi-Square	
	Model 1	Model 2		df	P-Value
Depression/Dysthymia	153.05	145.18	7.87	3	.049
Anxiety disorders	109.67	102.08	7.59	3	.055
Co-morbidity	82.86	76.81	6.05	3	.11

Note. Results are based on the completers-only sample. Model 1: includes the five socio-demographic variables as an independent variable. Model 2: acculturation was added as a variable.

COMBINING ACCULTURATION STRATEGIES

Additional analyses were performed on the basis of a division into two combined acculturation strategies: (1) participation in the host culture consisting of integration and assimilation and (2) non-participation in the Dutch society consisting of separation and marginalization, shown in table 6. The two combined strategy categories showed no significant association with depressive disorders, however there was a trend towards statistical significance ($\chi^2(1) = 3.80, p=.051$).

For anxiety disorders there was a significant association between the two acculturation categories (Likelihood ratio=4.61, $p=.03$). Finally, co-morbidity likewise showed a significant association between the two general acculturation strategies (Likelihood ratio=4.00, $p=.02$). For all three measures of psychopathology results showed a higher prevalence among those with a non-participatory strategy.

Next, we focused on the same regression analysis method to examine the relationship between acculturation strategies (divided into two general categories) and psychopathology (comparing participation to non-participation). As shown in table 5, the acculturation-strategy category of participation did relate to each of the three measures of psychopathology.

Participation was associated with decreased risk of depression (OR=.30, 95% CI=.10 - .89), anxiety (OR=.13, 95% CI=.03- .66) and co-morbidity (OR=.12, 95% CI=.02 - .90).

ACCULTURATION AND THE USE OF HEALTH CARE SERVICES

As presented in table 3, acculturation did not show an association with the frequency of contacting the General Practitioner ($\chi^2 (3) = 3.73, p=.29$).

Table 6. *Acculturation strategies in two categories and 1-month prevalence of mood/anxiety disorders (n, %)*

	<u>Acculturation strategies</u>		<u>Statistics</u> Chi-Squared	df
	Participation n=85	Non-participation n=111		
Depression/Dysthymia			3.80	1
Yes	10 (11.8%)	25 (22.5%)		
No	75 (88.2%)	86 (77.5%)		
Anxiety disorders			4.61 ^a *	1
Yes	4 (4.7%)	17 (15.3%)		
No	81 (95.3%)	94 (84.7%)		
Co-morbidity			4.00 ^a *	1
Yes	2 (2.4%)	12 (14.1%)		
No	83 (97.6%)	99 (89.2%)		

Note. Results are based on the completers-only sample. a = The Likelihood Ratio Value is provided due to low cell frequency (<5); * = $p < .05$; ** = $p < .01$ and *** = $p < .000$

DISCUSSION

In this paper, the relationship between four acculturation strategies (integration, assimilation, separation and marginalization) and depressive/anxiety disorders among Turkish migrants living in Amsterdam was examined. For this purpose we used existing data from the General Health Monitor of Amsterdam, dating from 2005 (de Wit et al., 2008; Fassaert et al., 2009; Fassaert et al., 2011; Ujic-Voortman et al., 2009).

Results showed that age, education, daily occupation and partnership status were significantly associated with acculturation. We also found a significant association between the acculturation strategies and depressive disorders. Migrants who adopted the integration strategy had a significantly lower risk of depression compared to those with one of the other three strategies. There was no association between any of the four acculturation strategies and the frequency of contacting the General Practitioner.

When the four acculturation strategies were combined into two categories (defined as either participation in the Dutch culture (integration and assimilation) or non-participation in the Dutch society (separation and marginalization), our results suggest that participation in the host country seems to be associated with lower risk of depressive and anxiety disorders and co-morbidity of both these disorders.

It is noteworthy to mention that the migrants included in the study have a high level of unemployment (over 80%) across all acculturation strategies. The unemployment rate in our sample was much higher than found in the general Turkish population in the Netherlands, which was 14.8% in 2005 (CBS, 2005). This means that our results are mainly indicative for unemployed Turkish migrants. Furthermore, migrants who applied a participatory strategy (integration and assimilation) were often young, female and higher educated, while those in the non-participating strategy (separation and marginalization) comprised mainly migrants aged 50 or older, who were lower educated. Several studies have shown that a low socio-economic status (SES) is a risk factor for developing mental health disorders in general and also for developing depression (e.g. Everson, Maty, Lynch, & Kaplan, 2002; Lorant et al., 2007; Lorant et al., 2003). Although, after correction for the socio-economic variables the association were still significant, we could not examine whether the association might be different within different levels of SES.

COMPARISON WITH PRIOR WORK

Our results are in line with the general finding that an integration strategy among migrants is associated with better psychological outcomes as found in the studies by Chen and colleagues (2008) and Schwartz and colleagues (2007). These authors found that migrants who hold an integration strategy experience higher self-esteem and less depressive symptoms. Moreover, the two combined acculturation strategies (participation in the host country and non-participation in the host country) seem to be independent mechanisms, as participation is associated with depression while non-participation is not, corresponding to the independent bi-dimensional theory of Berry (1980; 2003).

There are number of possible explanations for the lower risk of depression among migrants with participatory acculturation strategies. Earlier research showed that migrants who have integrated into the host society, have cultural knowledge about the host society, are better able to control the degree of contact and have positive cultural group attitudes. All these factors may contribute to minimising cultural distance between migrants and their host society (Ward, 1996; Ward & Kennedy, 1993). In turn, integration may enable migrants to manage their daily life in the host society better and therefore lower their risk of depression. Since integration involves a positive multicultural attitude (Berry & Kalin, 1995) that enables migrants to manage daily life in a new context, it is likely that these behaviours play a role in a decreased prevalence of depression in Turkish migrants who adopt such a strategy.

Finally, our results showed no association with the acculturation strategies and uptake of GP care and thereby confirmed the generic analysis of acculturation and GP care uptake by Fassaert and colleagues (2009). However, our results are not in line with earlier research (e.g. Arcia et al., 2001; Kamperman et al., 2007) which showed that participatory strategies were associated with higher use of general health care services. For example, having higher levels of skills to participate in Dutch society was related to greater use of health care by migrants in the Netherlands (Kamperman et al., 2007). It thus seems that Turkish migrants make use of GP services to the same degree, regardless of their acculturation strategy.

LIMITATIONS

This study has several limitations. First, the definitions of immigrants/migrants will undoubtedly have affected the results. First and second generation immigrants were taken as equal groups in the analysis, because the number of second generation migrants in the study

was too small (n=16) to study this group separately. Therefore, these results mainly represent first generation migrants. Yet, it is likely that each of these groups will experience the process of acculturation through different (path)ways, which were not monitored. Second, the cross-cultural validity of the four created acculturation strategy scales was not tested, although the new scales showed good reliability (e.g. Cronbach's alpha was .86 for both scales). The small size of the groups distinguished by acculturation strategy resulted in low power to detect possible associations and differences. We found several associations, however, not all were significant. Furthermore, the absence of the cross-cultural validity of the CIDI is also an important limitation. Fourth, the theoretical conceptualisation of acculturation is complex. We adopted the bi-dimensional model of Berry (1980; 2003), however, acculturation does not take place in a 'vacuum'. Acculturation is a dynamic process that encompasses not only certain life domains, but also contextual, political, economic and social factors that require further exploration (Ouarasse & van de Vijver, 2005). It was beyond the scope of our study to include all these factors in our analyses. Furthermore, the response rate over the first and second phases was 26%. It is not clear why the response was that low. However, despite efforts put into reaching and recruiting ethnic minorities, it seems that this low response rate is the highest possible response to be attained in ethnic minorities (de Graaf, ten Have, Van Dorsselaer, Schoemaker, & Beekman, 2005; de Wit et al., 2008). There may have been a selective response, which is a limitation. However, the response rate of the Turkish group was similar to the other ethnic minorities in the data (Moroccan, Antillean and Surinamese), suggesting that in case of selective response this was similar in all the ethnic minority groups. Finally, the cross-sectional design of the study restricts the causality of the associations.

IMPLICATIONS AND FUTURE RESEARCH

The finding that integration may play an important role in a lower risk of developing depression is also of importance for public health policy makers, clinicians as well as for researchers. Supporting immigrants in the process of adjustment to the host society, while encouraging ethno-cultural maintenance at the same time, is an important task for the Dutch society as well as for ethnic minorities themselves. This process can be aided through several pathways, including educational and public health policies, such as implementing acculturation in prevention programs. Although integration has been found to be related to a lower risk of depression, its causality and implications for prevention and clinical practice should be examined in more detail for example the potentials of including it as component in screening

or treatment strategies. Awareness by practitioners and professionals of the acculturation strategies of ethnic minorities should be promoted in order to optimize health services for mental health problems. This study shows that integration as acculturation strategy may be related to a lower risk of depression in comparison to the other acculturation strategies among Turkish migrants. The assessment of the acculturation strategies migrants adopt may be useful in identifying high risk profiles of migrants who are at increased risk for depression. From a public health perspective it may thus be advised to include types of acculturation strategies in screening procedures for depression. It is also of importance to examine what factors are affecting the relationship between integration and depressive disorders and whether these also hold for the employed Turkish migrant population. Moreover, future research should also explore the influence of socio-economic status on the relationship between acculturation and depression.

CONCLUSION

Turkish migrants who participate in Dutch society, while at the same time maintaining their ethnic culture, may have a lower risk of developing a depressive disorder compared to those who adopt other acculturation strategies. Participation in Dutch culture is associated with a decreased risk of depression/dysthymia, anxiety and co-morbidity of both disorders. No association was found between the acculturation strategies and GP care. Future research should focus on the assessment of acculturation in the detection of depression.

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CHAPTER 7

General discussion

INTRODUCTION

The overarching goal of this thesis was to improve the understanding of the clinical impact of face-to-face and Internet-based psychological treatments for depression in ethnic minorities. In order to study this, the following research questions were investigated:

- 1) What is the effectiveness of psychotherapy in the treatment of depression in ethnic minorities?
- 2) Is Internet-based problem-solving therapy for depressive symptoms among Turkish migrants feasible and clinically effective?
- 3) What are effective recruitment strategies to include ethnic minorities in research trials?
- 4) What is the relationship between depression and acculturation strategies (i.e., integration, assimilation, separation and marginalization) among Turkish migrants in the Netherlands?

In this final chapter, the overall findings are summarized, study limitations are described and the results are compared with prior research findings. Next, implications for clinical practice are discussed and pointers for future research are sketched.

KEY FINDINGS AND PREVIOUS RESEARCH

THE EFFECTIVENESS OF PSYCHOLOGICAL TREATMENTS FOR DEPRESSION IN ETHNIC MINORITIES

Various types of psychological treatments, such as cognitive behavioral therapy (Churchill et al., 2002; S. G. Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012) and problem solving therapy (Cuijpers, Van Straten, & Warmerdam, 2007), have proven effective in the treatment of depression in adults. The Surgeon General (U.S. Department of Health and Human Services) has, however, reported a lack of evidence for these therapies in ethnic minorities due to their underrepresentation in clinical research as well as in routine practice (Leong & Kalibatseva, 2011; Santiago & Miranda, 2014; U.S. Department of Health and Human Services, 2001). This lack of knowledge highlights the importance of a long overdue research question: “Is evidence-based psychotherapy effective for ethnic-minority populations as well?”

In order to answer this question, a meta-analysis (Chapter 2) was conducted to study the association between ethnicity and the effect size of randomised controlled trials investigating

the effectiveness of psychological treatments for depression, including cognitive-behavioral therapy, interpersonal psychotherapy, problem-solving therapy, nondirective supportive therapy, behavioral activation therapy, psychodynamic therapy and other types of psychotherapy. There were, however, only a small number of RCTs available that targeted depressed ethnic minorities solely with the aim of evaluating the effects of psychotherapies compared to controls (only seven studies were found containing direct comparisons with varying ethnic populations). Therefore a more indirect association was examined, by looking at the proportion of ethnic minority participants in the overall sample in RCTs and the effect sizes for depression assessed by meta-regression analysis. After selecting and examining 56 RCTs, the results showed a moderate effect size ($g=.50$) for psychotherapy compared to a control group for the overall sample. It was also found that ethnicity was not a moderating variable, suggesting that psychotherapy is equally as effective in ethnic minorities as in native populations.

This finding is in line with early assumptions that evidence-based psychotherapy is generalizable across ethnic minority groups (Miranda et al., 2005). It thus seems that cultural differences play a less important role in differentiating the impact of psychotherapy. This potentially minor role of culture in relation to the impact of evidence based psychotherapies for depression was also found in a meta-analysis comprising 17 studies of psychotherapy for depression and anxiety in low- and middle-income countries. A large effect size was found (Cohen's $d=1.02$) for psychotherapies in low-income countries, which was comparable to effect sizes found in high-income countries (Van 't Hof, Cuijpers, Waheed, & Stein, 2011). This shows that psychotherapy may be generalizable to various cultural contexts. Furthermore, the moderate effect size found in our meta-analysis is comparable to other meta-analyses of psychotherapies for depression (e.g. Hofmann & Smits, 2008; van Straten, Geraedts, Verdonck-de Leeuw, Andersson, & Cuijpers, 2010) showing similar treatment effects in native populations.

Although the results from Chapter 2 are promising, ethnic minority populations are still highly underrepresented in clinical research despite the fact that some progress has been made regarding the inclusion of ethnic minorities in clinical research in recent decades (Santiago & Miranda, 2014). The lack of both randomised controlled trials, however with sufficient participants from ethnic minority groups in clinical trials and RCTs that focus specifically on ethnic minorities in terms of direct comparisons shows the need to assess the evidence of psychotherapies for depression for ethnic minority groups in a more robust manner (Santiago & Miranda, 2014). Such evidence may lessen disparities in mental health care for ethnic minority populations as well, since they often make less use of mental health services than the indigenous

population (e.g. Alegría et al., 2008; Jeanne Miranda & Cooper, 2004).

One possible way to increase access to depression treatment among ethnic minorities is the use of Internet. In order to explore this option, a web-based guided self-help treatment was developed and evaluated for a particular ethnic minority group - Turkish migrants in the Netherlands.

WEB - BASED PROBLEM - SOLVING THERAPY IN TURKISH MIGRANTS

Chapter 3, contained a description of the study protocol of a randomised controlled trial evaluating the effectiveness of a web-based, culturally sensitive, problem-solving therapy (PST) for Turkish migrants with depressive complaints compared to a wait-list control group. An evidence-based PST intervention (Alles Onder Controle; van Straten, Cuijpers, & Smits, 2008) that was previously shown to be effective was used in the current RCT. However, not much is known about its effectiveness in ethnic minorities and nor were sufficient ethnic minorities included in the original trial (van Straten et al., 2008). Therefore, this intervention was culturally adapted in terms of language (Dutch and Turkish), the use of culture-specific cases and problems according to the worldview of the Turkish target group and culture-specific examples of persons with similar problems.

There is as yet limited data from RCTs that assess the effectiveness of Internet-based psychotherapies for ethnic minorities. The systematic review of Dorstyn and colleagues (2013) is one of the few reviews available. This review comprises eight studies that evaluated the effectiveness of psychological interventions for depression via Internet and telephone in ethnic minorities (Dorstyn, Saniotis, & Sobhanian, 2013). Four studies focused on depression treatment through the Internet (including CBT, supportive counseling and audio-visual communication). Only three of these showed significantly high effect sizes for treating depression (ranging from $d=.83$ to $d=1.17$; Choi et al., 2012; Chong & Moreno, 2012; Moreno, Chong, Dumbauld, Humke, & Byreddy, 2012) compared to control groups (including care-as-usual and a wait-list control group) - showing feasibility and possible effectiveness of Internet-based psychotherapy among ethnic minorities. None of these trials tested the clinical effectiveness of problem-solving therapy through the Internet as was undertaken in the context of this study.

The adapted Internet intervention was subsequently evaluated in terms of clinical effectiveness and reported on in Chapter 4. A total of 96 Turkish migrants were randomised to

the experimental group (n=49) or to a wait-list group (n=47). There was no significant difference between the two groups on depression outcome at post-test (with a moderate effect size ($d=.37$). However, the high effect size of $d=1.13$ at follow-up for depression shows the possible effectiveness of the intervention. This lack of impact on an ITT basis was probably due to an underpowered sample (Hackshaw & Kirkwood, 2011).

This finding differed from the study results of the original version of AOC, which found a significantly moderate effect size ($d=.50$; van Straten et al., 2008). It differed as well from meta-analyses that show that PST is an effective intervention for treating depression when offered online (Andersson & Cuijpers, 2009; Richards & Richardson, 2012), as well as offline (Bell & D'Zurilla, 2009; Cuijpers et al., 2007) with effect sizes in the range of $d=.34 - d=.83$.

In addition to the clinical outcomes from the RCT on PST (Chapter 4), another outcome of this study is of interest as well, namely the recruitment strategies used. In the next chapter, the recruitment strategies applied in the RCT trial are evaluated showing how the engagement of ethnic minorities in clinical research may be increased by making use of digital social networks.

REACHING AND RECRUITING ETHNIC MINORITIES

The inclusion of ethnic minorities in clinical research and trials is challenging for many research projects (Hussain-Gambles, Atkin, & Leese, 2004; Miranda, Nakamura, & Bernal, 2003; U.S. Department of Health and Human Services, 2001). This applied also to the RCT in this thesis (Chapter 3 and 4).

In Chapter 5, the applied recruitment strategies of the RCT are evaluated. These comprised a total of six strategies, including (1) a press release; (2) digital mailing, (3) the distribution of research information leaflets, (4) newspaper advertisements, (5) the Internet (in general terms) and (6) Facebook (FB). A total of 287 persons showed an interest in participating in the trial) and three quarters of these applicants were recruited through FB (75.6%, n=224). Subsequently 74 out of the 96 included participants were recruited via FB (77% out of n=96). Traditional recruitment strategies were thus far less successful.

When we evaluate the effectiveness of recruitment strategies for RCTs on Internet-delivered depression treatment among general populations, we see that traditional recruitment strategies have generally been much more successful than the social network approach (e.g. Bolier et al., 2013; van Bastelaar, Pouwer, Cuijpers, Riper, & Snoek, 2011; Warmerdam, van

Straten, Twisk, Riper, & Cuijpers, 2008). However, none of these traditional strategies applied in these studies were successful in recruiting appreciable proportions of ethnic minorities. Moreover, the use of FB is also a relatively new strategy since it has been so far mainly used in studies conducted among native populations (targeting college students, adolescent girls, children and patients with diabetes) by means of advertisements and fan pages (Berry & Bass, 2012; Greene, Choudhry, Kilabuk, & Shrank, 2011; Jones, Saksvig, Grieser, & Young, 2012; Mychasiuk & Benzies, 2012). Moreover, a recent survey conducted among health policy researchers in the US showed that social media is perceived to be incompatible with research and that it is an unfamiliar way of communicating about their research (Grande et al., 2014). Our study results are thus in contrast to these latter findings.

Beside the effectiveness of the recruitment strategies applied during the trial, there was a major difference between the number of applications ($n=287$) and the final inclusion ($n=96$), which is also worth mentioning. A large proportion of the applicants was excluded, mainly due to suicidal risk - sixty-four out of the total of 221 participants (29%). Women (59.4%) accounted for almost two thirds of this potentially suicidal group, with an average age of 33.5 years. This is a fairly high number of potentially suicidal trial participants when compared with studies in native populations studies (e.g. 2.2% in Johansson et al., 2012 and 22.4% in Anderson et al., 2005). It also compares unfavorably with national prevalence rates in the general population, which has a rate of 8.3% in the general Dutch population and 9.2% in females (ten Have, Van Dorsselaer, & de Graaf, 2013).

The interest expressed by this large number of applicants may also have another explanation. Participants in clinical research are generally only included if they are sufficiently proficient in the language of the country of residence (Hussain-Gambles et al., 2004). The participants in the RCT (Chapter 4) were primarily first-generation migrants, preferring the Turkish language for study information and study participation. The barrier to participation was probably lowered as Dutch language incompetencies did not play a role. It might not have been FB as such that explains the recruitment success but the language issue as well.

Dealing with daily life in another cultural environment can be hard for ethnic minorities especially when depression is present. Clinical research on ethnic minorities is not only sparse in the field of randomised controlled trials, but also in general population studies such as epidemiological cohort studies (Missinne & Bracke, 2012). In the next section, such an epidemiological study is described and used for an exploration of the relationship between depression and acculturation strategies.

ACCULTURATION AND DEPRESSION

There are several strategies a migrant can use for dealing with living in another cultural environment. The combination of the degree of participation in a host culture and the degree of maintenance of the ethnic culture of a migrant can be divided in four such strategies according to Berry (1980; 2003). These strategies are labeled by Berry as acculturation strategies, which are (1) integration, (2) assimilation, (3) separation and (4) marginalization. It is often found that the integration strategy yields better health outcomes when compared to the other acculturation strategies, such as fewer depressive symptoms, higher self-esteem and more pro-social behaviors among ethnic minorities (Chen, Benet-Martínez, & Harris Bond, 2008; Schwartz, Zamboanga, & Jarvis, 2007). When acculturation strategies are viewed in one dimension (participation in the host country or maintenance of the ethnic culture), participation in the host country has also been found to be related to fewer depressive symptoms (Gupta, Leong, Valentine, & Canada, 2013). Less is known, however, about the relationship between acculturation strategies and mood and anxiety disorders in Turkish migrants in the Netherlands.

In order to explore this relationship, Chapter 6 reviewed existing data from the General Health Monitor (GHM) of Amsterdam, 2005 (e.g. Ujic-Voortman et al., 2009). An existing questionnaire (Lowlands Acculturation Scale) was re-created by means of four scales of the acculturation strategies by factor analysis. A total of 210 Turkish migrants were selected for further analyses from the GHM study. Results showed a significant association between integration and a lower risk of depression and an association between separation and a higher risk of depression among Turkish migrants. When the cultural strategies are analyzed in terms of participation (integration and assimilation strategies together) or non-participation (separation and marginalization strategies together), the results showed that participation in Dutch society was significantly associated with a decreased risk of depression and anxiety and co-morbidity of both disorders (OR=.15; 95% CI=.02 - .98). Non-participation showed no significant association with these disorders, nor with the uptake of GP care, showing no relationship between the degree of non-participation and the prevalence of the disorders.

These results are in line with other studies where integration as a strategy has been found to be associated with fewer psychological complaints (Chen et al., 2008; Schwartz et al., 2007). A recent study of migration populations in 20 European countries showed that this association is due to barriers that are experienced to socioeconomic integration and perceived discrimination (Levecque & Van Rossem, 2014). This finding was applicable for both European and non-European first-generation migrants (Levecque & Van Rossem, 2014). The finding of no

association between the acculturation strategies and the uptake of GP care is not in line with previous work. For example, it was shown that participation in the host culture was positively associated with the use of general health care services (Arcia, Skinner, Bailey, & Correa, 2001; Kamperman, Komproe, & De Jong, 2007). Our results suggested that Turkish migrants, regardless of which acculturation strategy they adopt, make equal use of GP services.

LIMITATIONS

The results of this PhD thesis have some significant limitations.

First, the terms *ethnicity* and *migrant* are complex. These can cover a variety of concepts such as historical, sociological, religious, linguistic and national elements making it difficult to arrive at an overarching definition. Although definitions were given in Chapter 2 (ethnic minorities in 5 categories), and in Chapters 3, 4, 5 and 6 (Turkish background if the individual or if one of his or her parents was born in Turkey), no distinctions were made on the basis of cultural and ethnic variety within ethnic (migrant) population. This oversimplification limited us to making distinctions between subgroups within an ethnic group (such as first and second generation migrants) in relation to the effects of psychotherapy.

Even if ethnic minorities are clearly defined, their representation in clinical trials is small. In Chapter 2, the meta-analysis was conducted on the basis of RCTs that included ethnic minorities. However, due to the limited availability of studies with large samples of ethnic minorities, indirect comparisons were examined by using the proportions of ethnic minority populations of the study samples.

Chapters 3 and 4 focused on the web-based PST intervention for Turkish migrants. The intended number of participants wasn't reached in the time available for the completion of the study, despite the successful use of FB at the end of the recruitment phase. This led to an underpowered sample. Moreover, the attrition rate at post-test and follow-up assessments was high, which also limited our application of intention-to-treat analyses at follow-up. However, high attrition rates are generally found in Internet interventions (Christensen & Mackinnon, 2006; Eysenbach, 2005). The reason for these high attrition rates is not known, but it may be possible that this varied from 'easy in to easy out' to more positive interpretations that drop-out may have been partly due to an improvement in participants before the end of study (Christensen & Mackinnon, 2006; Eysenbach, 2005). It is therefore important to replicate the trial with a sufficiently powered sample. Moreover, the trial was solely based on self-report assessments

of depression. In order to increase our understanding of the effectiveness of the intervention, more formats of depression assessment could be applied, including diagnostic interviews at pre-test. These limitations should be seen in the context of the trial being one of the first to examine the effectiveness of a web-based PST for ethnic minorities, thus explaining some of the difficulties experienced in this study.

Furthermore, the trial (Chapters 3, 4 and 5) included mostly participants recruited by FB, who have access to and are able to use the Internet. It is possible that this sample comprises a subgroup of the overall Turkish population, thereby limiting the generalizability to the total Turkish population in the Netherlands. The trial comprised mainly younger Turkish women (mean age of 35 years) with middle to higher education (70%). This is likely a different population to the average Turkish population in the Netherlands, of which only 30.1% has at least a middle educational level (CBS, 2013).

Evaluation of the recruitment strategies showed that FB was more effective than other traditional strategies (Chapter 5). It was, however, not possible to obtain complete demographic information regarding the applicants from each of the recruitment channels, including *Friends* on FB. This information would have been useful in determining the differences and effectiveness of each recruitment strategy according to the preferences and characteristics of the participants.

Chapter 6 examined the relationship between acculturation strategies and depression. The adaptation of an existing questionnaire by creating new scales with the original items, without testing the cross-cultural validity of these new scales was an important limitation. However, the reliability of the new scales was shown to be good indicating that the scales have probably measured what they were supposed to measure.

IMPLICATIONS FOR CLINICAL PRACTICE

The results of this thesis lead to several implications for clinical practice. The positive finding from the meta-analysis (Chapter 2), suggesting that there is no reason to assume that psychotherapy, such as CBT and PST, works differently in ethnic minorities in the treatment of depression, is promising. Evidence-based psychotherapies in clinical practice might therefore be an appropriate way to treat depression in ethnic minorities in routine practice. Given the high percentage of participants who opt for their native language (Turkish), more attention should be paid to the importance of this in psychotherapy.

Furthermore, offering PST through the Internet might lower the threshold for ethnic minorities to participate in such interventions. The Internet, especially FB, is possibly an effective way to target ethnic minority populations, which can be used in early preventive programs. Furthermore, the option to offer PST in Turkish might be a welcome addition for clinicians as well as for Turkish clients.

It is generally believed that ethnic minorities are hard-to-reach populations. However, as shown in Chapter 4, target subgroups are reachable when appropriate recruitment strategies are applied. FB might not only be an effective recruitment method in research, but may also aid in lowering the threshold for seeking professional mental health care.

Finally, the results from Chapter 6 show that the assessment of acculturation strategies may be a valuable additional component in screening for depression. High-risk profiles may be identified and also used for therapeutic goals.

IMPLICATIONS FOR FUTURE RESEARCH

This thesis has thrown up a number of research questions, which could be explored in the future. Chapter 2 shows that the question whether psychotherapy is effective could be approached by examining how the delivery of psychotherapy for ethnic minorities in terms of access could be improved. Important research topics are also: how to improve recruitment methods and how to develop culturally sensitive approaches to inclusion. Furthermore, RCTs with sufficient samples of ethnic minority groups are needed in order to make direct comparisons between sub-groups of ethnic (minority) groups.

Replicating our RCT will give a more reliable insight into the effectiveness of the web-based intervention. It is also important to include the target group early in the trial process, for example by organizing focus groups to obtain more insight into their needs and expectations, by means of qualitative studies. Furthermore, it is valuable to monitor and evaluate the reasons why participants drop out from the trial and treatment. Understanding the working mechanisms of culturally adapted interventions is another significant strand for future research.

Future research should more often include Internet, especially social media such as Facebook, (Chapter 5). Facebook might not only be used as a recruitment strategy, but also as a way to be visible and reachable for the target group. Research specifically targeting suicidal young women who can potentially be recruited through FB deserves further exploration. These women are hard-to-reach populations with high risk for depression and suicide and show consider-

able unmet needs (e.g. van Bergen, Smit, van Balkom, & Saharso, 2009).

The results from Chapter 6 point to the need for examining the specific factors affecting the relationship between integration and depressive disorders. Future research should also pay attention to the influence of socio-economic status on the relationship between acculturation and depression.

CONCLUSION

The effectiveness of online and offline psychotherapy in ethnic minorities is promising. Improved mental health can be gained through the recruitment and delivery of psychotherapy by Internet. This thesis is one of the first studies to have specifically focused on the impact of Internet-delivered psychotherapy among ethnic migrants. It thus provides an important contribution to the as yet limited number of studies that target ethnic minorities by means of randomised controlled trials. The thesis gives concrete indications for the recruitment and treatment of depressed ethnic minorities and yields implications for clinical practice and questions for future research.

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