

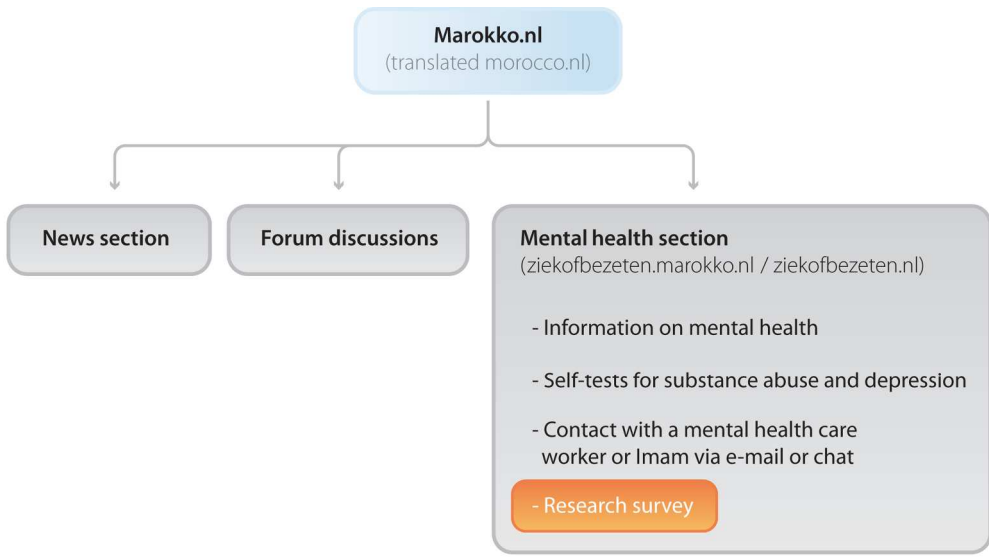


**Migrants Examined for Determinants of psychopathology through INTERNET Assessment (MEDINA) study: a cross-sectional study among visitors of an Internet community**

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2013-003980
Article Type:	Protocol
Date Submitted by the Author:	08-Sep-2013
Complete List of Authors:	van de Beek, Madelien; University of Groningen, University Medical Center Groningen, Department of Psychiatry van der Krieke, Lian; University of Groningen, University Medical Center Groningen, Department of Psychiatry Schoevers, Robert; University of Groningen, University Medical Center Groningen, Department of Psychiatry
<b>Primary Subject Heading</b>:	Mental health
Secondary Subject Heading:	Epidemiology, Sociology
Keywords:	psychopathology, social environment, migrants, Internet, PSYCHIATRY

SCHOLARONE™  
Manuscripts

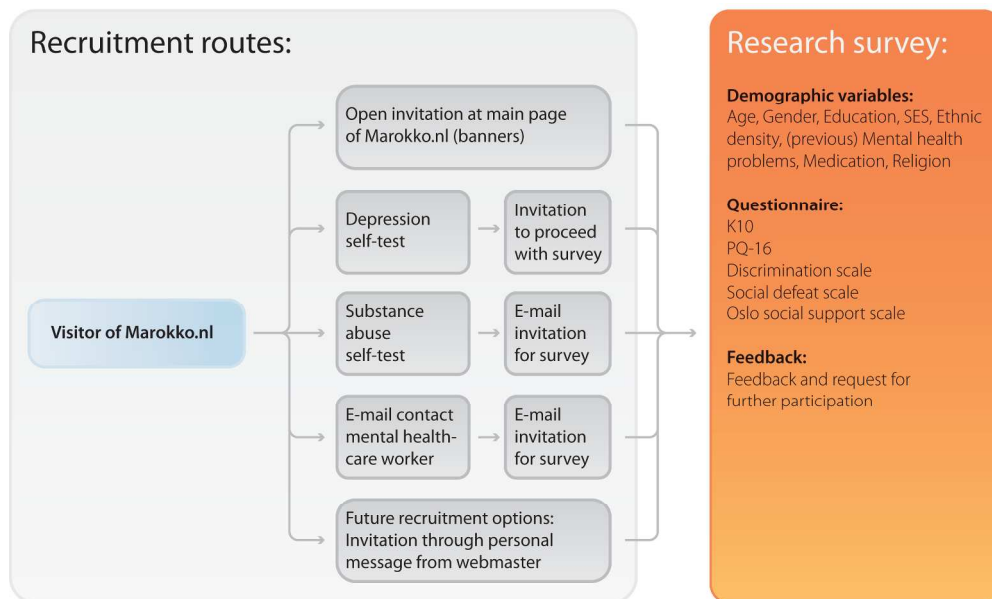
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



189x104mm (300 x 300 DPI)

review only

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



232x139mm (300 x 300 DPI)

review only

1  
2  
3 **Migrants Examined for Determinants of psychopathology through INternet**  
4  
5 **Assessment (MEDINA) study: a cross-sectional study among visitors of an**  
6  
7 **Internet community**  
8

9  
10 Madelien van de Beek, Lian van der Krieke, Robert Schoevers

11  
12  
13  
14 Madelien Hermina van de Beek (MD) (**corresponding author**)

15  
16 University of Groningen, University Medical Center Groningen,

17  
18 Department of Psychiatry, Groningen, the Netherlands

19  
20 Hanzeplein 1, Entrance 24, Room kn1.14a

21  
22 P.O. Box 30.001, 9700 RB Groningen

23  
24 Email: [m.vandebeek@dimence.nl](mailto:m.vandebeek@dimence.nl)

25  
26 Telephone: +31-6-19408029  
27  
28  
29  
30  
31

32 Lian van der Krieke (MSc)

33  
34 University of Groningen, University Medical Center Groningen,

35  
36 Department of Psychiatry, Groningen, the Netherlands

37  
38 Email: [j.a.j.van.der.krieke@umcg.nl](mailto:j.a.j.van.der.krieke@umcg.nl)  
39  
40  
41  
42

43 Prof. Robert Anton Schoevers (MD, PhD)

44  
45 University of Groningen, University Medical Center Groningen,

46  
47 Department of Psychiatry, Groningen, the Netherlands

48  
49 Email: [r.a.schoevers@umcg.nl](mailto:r.a.schoevers@umcg.nl)  
50  
51  
52

53 **Keywords:** migrants, psychopathology, social environment, Internet

54  
55 **Word count:** 3471  
56  
57  
58  
59  
60

## ABSTRACT

### *Introduction*

Migration is a risk factor for the onset of psychopathology. A range of social factors may play a role in the aetiology of psychiatric disorders in migrants. A better understanding of these associations is needed to develop preventive interventions to reduce the disease burden in the migrant population. Research among minority groups is generally time-consuming and it is difficult to recruit participants. Internet can offer interesting new possibilities to conduct research among ethnic minorities. This paper describes the design of an epidemiological study in the Moroccan-Dutch population, which will be entirely performed online. We investigate the association between social factors and psychopathology.

### *Methods and analysis*

The website Marokko.nl is visited by 70% of the young Moroccan-Dutch population in the Netherlands. This website therefore provides a unique possibility for research within this population. We will conduct a survey with online questionnaires via this website. The online survey consists of several validated short self-report questionnaires, measuring depressive and anxiety symptoms (K10), psychotic symptoms (PQ-16), and instruments measuring discrimination, social support and social defeat. Furthermore, demographic characteristics are collected. We will use univariate and multivariate methods for analysing the data.

### *Ethics and dissemination*

The local Medical Ethical Committee have assessed the study protocol and judged that the study could be conducted without their approval. Knowledge dissemination

1  
2  
3 will take place through peer-reviewed publication in scientific journals as well as  
4  
5 publication for participants on the project website.  
6

### 7 *Discussion*

8  
9 In this study we further explore the association between psychopathology and social  
10 factors within an online Moroccan-Dutch sample. The recruitment of participants via  
11 the website Marokko.nl creates a big advantage in collecting a large sample of a  
12 specific migrant population. Strengths and limitations of the methodology are  
13 discussed. Furthermore, we review the advantages and challenges of online  
14 epidemiological research methods.  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

### 27 **Strengths and limitations of this study**

#### 28 *Strengths*

- 29  
30  
31  
32 - This study uses a novel methodology, in which recruitment and data collection  
33 is performed entirely online.  
34  
35  
36 - The use of the Internet creates the opportunity to recruit many Moroccan-  
37 Dutch migrants, a population which is otherwise difficult to reach for research.  
38  
39 - We collaborate with the gatekeepers of the website Marokko.nl, which is  
40 visited by 70% of the young Moroccan-Dutch population in the Netherlands.  
41  
42  
43  
44  
45  
46

#### 47 *Limitations*

- 48  
49 - Because of Internet recruitment, we can collect a convenience sample.  
50  
51 - Due to the cross-sectional design, we cannot determine the direction of  
52 associations between variables that we investigate.  
53  
54  
55  
56  
57  
58  
59  
60

## INTRODUCTION

Across countries and cultures, migration is a risk factor for the development of psychopathology.<sup>1</sup> Psychiatric disorders are heterogeneous and they develop as a result of the interplay between a range of genetic and environmental influences<sup>2-4</sup> Gaining a better understanding of the aetiology of psychopathology, and especially of modifiable risk factors that are associated with its development, is essential because this can lead us to preventive interventions. In migrants, some aetiological risk factors remain unchanged (e.g. genetic factors) whereas others (e.g. environmental factors) may change as a result of migration. Studying the development of psychopathology in migrant populations may further increase our understanding of the role of these risk factors.<sup>5</sup>

Currently available evidence suggests that the association between migration and psychopathology is strongest for psychotic disorders. Two meta-analyses found that the relative risk for developing schizophrenia was significantly higher in the migrant population compared to the native population.<sup>6,7</sup> Interestingly, the relative risk for developing schizophrenia greatly differed between migrant subgroups, and was as high as 4.5 for second-generation migrants and 4.8 in black ethnic groups.<sup>7-9</sup> For mood disorders, Swinnen *et al* found a relative risk of 1.38 (95% CI 1.17-1.62) for migrants in a meta-analysis covering 14 studies (2 on depressive disorder, 5 on bipolar disorder and 9 on mood disorders on unspecified polarity).<sup>10</sup> Since then, other studies have confirmed the increased prevalence of depressive symptoms in migrant populations.<sup>11,12</sup> A recent study by Cantor-Graae *et al* has shown increased incidence risk ratios for all psychiatric disorders in foreign-born adoptees and second generation migrants having one foreign born parents. However, for first generation and second-

1  
2  
3 generation migrants with two foreign-born parents, the risk was only increased for  
4  
5 schizophrenia.<sup>1</sup>  
6

7  
8 Variation in the incidence of psychopathology between different ethnic groups, has  
9  
10 also been shown in the Netherlands, where the present study is situated. In 2012, the  
11  
12 largest migrant groups in the Netherlands (16.7 million inhabitants) originated from  
13  
14 Turkey (392,923; 2.3% of the total population), Morocco (362,954; 2.2% of the total  
15  
16 population), Surinam (346,797; 2.1% of the total population), and the Dutch Antilles  
17  
18 (143,992; 0.9% of the total population).<sup>13</sup>  
19

20  
21 For schizophrenia, the incidence was increased in most of the different migrant  
22  
23 groups in the Netherlands compared to the overall population, but not in all. The  
24  
25 incidence of schizophrenia appeared to be highest in the second-generation  
26  
27 Moroccan-Dutch inhabitants.<sup>14, 15</sup> Furthermore, a Dutch study has shown that  
28  
29 incidence and prevalence rates for mood disorders are highest among Turkish  
30  
31 migrants (Relative Risk 4.9), followed by Moroccan migrants (RR 3.6) and  
32  
33 Surinamese migrants (RR 1.8), while the rates in Western-European migrants were  
34  
35 comparable to the general Dutch population.<sup>16</sup> These findings replicate the results  
36  
37 from a previous Dutch study.<sup>17</sup>  
38  
39  
40  
41  
42

### 43 **Possible explanations**

44  
45 Although migrants are at increased risk to develop psychopathology, the explanation  
46  
47 for this association is still largely unknown. Previously it was hypothesized that the  
48  
49 disorder itself would be a factor in migration, because especially schizophrenia and  
50  
51 bipolar patients were believed to be more restless and rootless and therefore more  
52  
53 inclined to migrate. This 'selective migration' hypothesis was first suggested by  
54  
55 Ødegaard *et al* in 1932<sup>18</sup> but is now generally discarded, as scientific evidence cannot  
56  
57  
58  
59  
60



1  
2  
3 support it.<sup>19, 20</sup> An example of an argument against the selective migration theory is  
4  
5 the fact that the incidence of schizophrenia in second-generation migrants is  
6  
7 substantially higher compared to their parents from the first generation. This  
8  
9 phenomenon points to the importance of post-migration factors or, in other words,  
10  
11 (social) factors in the country of destination.<sup>6</sup> Social factors that are frequently  
12  
13 suggested to be associated with psychopathology in migrants are (among others):  
14  
15 discrimination, lack of social support and social defeat. Discrimination was associated  
16  
17 with psychotic symptoms in several studies.<sup>21-23</sup> Also in mood disorders, an  
18  
19 association with discrimination was found.<sup>23-26</sup> Lack of social support or isolation  
20  
21 was found to be associated with psychopathology in several studies.<sup>27, 28</sup> In the  
22  
23 original article by Gilbert *et al* in 1998, the concept of social defeat, or “being in a  
24  
25 subordinate position”<sup>9</sup> was associated with depression.<sup>29</sup> Social defeat has also been  
26  
27 hypothesized as an etiological factor for developing schizophrenia in migrant  
28  
29 populations.<sup>9</sup> Discrimination, social support and social defeat are variables we will  
30  
31 measure in this study. Furthermore, associations between demographic variables and  
32  
33 increased risk for psychopathology in migrants have also been found. As an example,  
34  
35 younger age at migration was a risk factor for psychosis in a Dutch study.<sup>30</sup> In a  
36  
37 systematic review, Shaw *et al* found that lower density of the ethnic minority  
38  
39 population in the neighbourhood was associated with higher risk of psychopathology.  
40  
41 This effect was most consistently found for psychosis and only tentative for other  
42  
43 mental disorders, due to heterogeneity and limited statistical power of the studies  
44  
45 examined.<sup>31</sup>  
46  
47  
48  
49  
50  
51  
52  
53

#### 54 **Aims of the current study**

55  
56 In the current study, we want to further explore the relationship between migration  
57  
58  
59  
60

1  
2  
3 and psychopathology, concentrating on social factors. We aim to investigate the  
4  
5 associations between psychotic symptoms and mood symptoms on the one hand and  
6  
7 discrimination, social defeat, and social support on the other. As the association  
8  
9 between social factors and psychopathology may be subgroup-specific, we focus on  
10  
11 one ethnic group: the Moroccan-Dutch population. Via the website Marokko.nl, we  
12  
13 have the unique opportunity to reach a large proportion of this population.  
14  
15

## 16 17 18 **METHODS AND ANALYSIS** 19

20 We will conduct an online survey in a cross-sectional convenience sample of the  
21  
22 Moroccan-Dutch population, using a combination of several self-report  
23  
24 questionnaires. The survey will run from 15-11-2012 to 1-5-2014.  
25  
26  
27

28  
29 *Our research questions are the following:*  
30

- 31  
32 1. How often are symptoms of depression and psychosis reported in a cross  
33  
34 sectional sample of young (age 20-35) Moroccan-Dutch participants,  
35  
36 measured by self-administered screening questionnaires?  
37
- 38  
39 2. Which environmental factors of stress or strain do the Moroccan-Dutch  
40  
41 participants report, thereby specifically focusing on social factors such as  
42  
43 discrimination, social defeat and social support?  
44
- 45  
46 3. What is the association between the symptoms of psychopathology and the  
47  
48 reported social factors?  
49

## 50 51 52 **Setting** 53

54 We will recruit participants at a unique website, which is visited by the majority of  
55  
56 Moroccan-Dutch adolescents: [www.marokko.nl](http://www.marokko.nl). This website exists for over ten  
57  
58  
59  
60

1  
2  
3 years. Of all young Moroccan-Dutch people (age 15-35) in the Netherlands 70% visit  
4  
5 this website regularly, of whom 33% visits the website weekly.<sup>32,33</sup> Marokko.nl is  
6  
7 serving as a national forum board, where everybody can start a discussion and  
8  
9 respond to it. With some exceptions, the language in these discussions is Dutch.  
10  
11 Discussions are moderated by a trained team of (mostly Moroccan-Dutch) moderators  
12  
13 who make sure the website regulations are respected. Only visitors with an account  
14  
15 can contribute to the discussion. To set up an account one has to create a pseudonym  
16  
17 and answer some questions about gender and age. This pseudonym is shown when  
18  
19 creating or replying to a discussion. Also, the account is connected to a personal email  
20  
21 box; this “personal message” system is available within the site. Because the  
22  
23 pseudonyms guarantee anonymity, members feel free to share very personal  
24  
25 information in the forum discussions. This includes personal information about  
26  
27 sensitive topics like sickness and health, (arranged) marriages, pregnancy and  
28  
29 abortion. Although mental health problems are generally a taboo in the Moroccan-  
30  
31 Dutch population, on this website many discussions cover this subject. Apparently,  
32  
33 there is a need for a platform to discuss these issues in this community.  
34  
35  
36 Despite their need for discussing mental health issues, the Moroccan-Dutch  
37  
38 population is underrepresented in preventive programs in mental health care. On the  
39  
40 Marokko.nl website, psychiatric problems are discussed, but no professional help is  
41  
42 offered. In 2012, we therefore created an add-on to the website about mental health.  
43  
44 This mental health domain of Marokko.nl is called [www.ziekofbezeten.marokko.nl](http://www.ziekofbezeten.marokko.nl)  
45  
46 (“ziek of bezeten” means: being ill or being possessed). Within this domain, we  
47  
48 supply information about psychiatric disorders, self-tests for depression and substance  
49  
50 use, and email and chat contact with mental health care workers or specially trained  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Imams.<sup>34</sup> Our research survey is nested within ziekofbezeten.nl. For a schematic  
4  
5 overview of the online environment see figure 1.  
6  
7  
8

### 9 10 **Participants & recruitment**

11 The participants in this study will be recruited from the Moroccan-Dutch population.

12  
13 Inclusion criteria for this study are:

- 14 - At least one of the parents is born in Morocco
- 15 - Having sufficient knowledge of the Dutch language
- 16 - Having internet access and being a visitor the website marokko.nl

17  
18  
19  
20  
21  
22 Exclusion criteria are:

- 23 - Age younger than 18 years

24  
25  
26  
27  
28  
29  
30 Recruitment takes places online, using the website Marokko.nl. We will recruit  
31  
32 participants in several ways, which are listed below and are shown in Figure 2. There  
33  
34 are three main recruitment routes that lead participants to our survey:

- 35 1. Advertisement via banners on Marokko.nl.
- 36 2. Via an invitation at the end of a depression self-test on the  
37 ziekofbezeten.marokko.nl domain: after filling out the depression self-test,  
38 people will be asked to participate in the survey.
- 39 3. In several places on the website ziekofbezeten.nl, visitors who are interested in  
40 participating in the study, have the opportunity to “opt-in” for research and  
41 leave an e-mail address.  
42  
43  
44  
45  
46  
47  
48  
49  
50

51  
52  
53  
54 Should these recruitment routes not result into a sufficient number of participants,  
55  
56 additional forms of recruitment can be deployed:  
57  
58  
59  
60

- Via the “personal message” function (a marokko.nl linked email service), a random subset of the registered users can be asked to participate.
- Contributors of several relevant forum discussions can be approached via “personal message” and asked to participate.
- Location of the advertisement of the study can be customized. When for example more women than men are included, the study can specifically be advertised on parts of the website where men are active.

We will track the route via which participants were recruited (anonymously), so that we can analyse the various recruitment strategies and compare the participant characteristics between these recruitment strategies.

### **Procedure**

After inclusion, participants will be asked to fill out an online survey. The first webpage will contain information about the study and informed consent. When informed consent is given, the next page will show the survey. The survey consists of questions about depressive and psychotic symptoms, discrimination, social defeat, social support, and baseline demographics. Completing all questions will take approximately 10 minutes. Furthermore, we will ask the participants if we can approach them for further research at a later time.

The last page will provide participants feedback on the questionnaires they filled out.

When scores for psychopathology are high, the advice to contact the general practitioner will be given and addresses of mental health care organisations are provided.

## Measurements & Instruments

We will ask for demographic variables, as listed in table 1. As a measurement of ethnic density, we ask for the first 4 digits of the postal code, which provides us with enough information to connect to a certain area or neighbourhood without conflicting with the participants' anonymity.

*Table 1, Demographic variables*

<b>Demographic variables</b>	<b>Operationalization</b>
<b>Age</b>	Years
<b>Gender</b>	
<b>Ethnicity</b>	Country of birth, country of birth parents
<b>Age of migration</b>	If applicable
<b>Ethnic density</b>	Postal code (first 4 figures)
<b>Previous mental health care</b>	If yes: diagnosis
<b>Previous/current medication</b>	(free text words)
<b>Social economic status</b>	Income
<b>Education</b>	(free text words)
<b>Religion</b>	How important is religion for you? (Likert scale)
<b>Substance use</b>	First 3 questions of the Drug Use Disorders Identification Test (DUDIT) + question on kind of substance used

The main part of our online survey consists of a combination of 5 short questionnaires measuring psychopathology and social factors, which are listed in table 2. The questionnaires are further described below. Table 3 shows an example of questions for each questionnaire.

*Table 2, questionnaires*

<b>Trait</b>	<b>Questionnaire</b>	<b>Items</b>	<b>Time</b>
<b>Depressive symptoms</b>	K10	10	2 min
<b>Psychotic symptoms</b>	PQ-16	16	2 min
<b>Discrimination</b>	Discrimination scale	22	2 min
<b>Social defeat</b>	Social defeat scale	16	3 min
<b>Social support</b>	Oslo social support questionnaire	3	1 min
	<b>Total time (including demographics):</b>		10 min.

Table 3, question examples

Questionnaire	Question example	Scale
<b>K10</b>	During the last month, how often did you feel tired out for no good reason?	0 – not at all ... 4 – always
<b>PQ-16</b>	I have seen things that other people apparently can't see.	True – Untrue
<b>Discrimination scale</b>	How often do you experience one of the following types of discrimination: You are being scoffed at or threatened.	0 – never ... 3 – often
<b>Social defeat scale</b>	I feel that I have not made it in life	0 – not at all ... 4 – always
<b>Oslo social support questionnaire</b>	How many people are so close to you that you can count on them if you have serious personal problems?	0 – none ... 4 – six or more

### *Psychopathology – Mood symptoms*

The Kessler Psychological Distress Scale (K10).<sup>35</sup>The questionnaire contains 10 items on a 5-point likert scale. This scale has previously been tested for the validity in the Dutch language<sup>36</sup> and for online self-administration.<sup>37</sup>Furthermore, it has previously been used in a migrant population in the Netherlands.<sup>38</sup>

### *Psychopathology – Psychotic symptoms*

The Prodromal Questionnaire-16 (PQ-16) is a short version of the Prodromal Questionnaire.<sup>39</sup>It is a self-report screening instrument for psychosis risk, with 16 true/false statements. The instrument has been developed and tested for validity in the Dutch language.<sup>40</sup>

### *Social factors – perceived discrimination*

The Everyday Discrimination Scale” consists of two subscales. Clark *et al.*<sup>41</sup>The scale showed adequate results in the appraisal of a review by Bastos *et al.*<sup>42</sup>The translation we use is previously used in the Dutch MIGROUP study (an add-on

1  
2  
3 protocol to the GROUP-study).<sup>43</sup>  
4  
5  
6

7  
8 *Social factors – social support*

9  
10 The Oslo Social Support Questionnaire was designed by Dalgard *et al.*<sup>44-46</sup> It consists  
11  
12 of only three questions and was the instrument of choice for social support on a expert  
13  
14 meeting where common instruments for mental disorders for European population  
15  
16 studies were chosen, called “EUROHIS”.<sup>47</sup> A Dutch translation of the instrument is  
17  
18 available.  
19

20  
21  
22  
23 *Social factors – social defeat*

24  
25 The most widely used instrument for measuring social defeat is the Social Defeat  
26  
27 Scale, designed by Gilbert *et al.*<sup>29,48</sup> It is a 16 item self-report scale. This instrument  
28  
29 was also included in the MIGROUP protocol<sup>43</sup> and therefore available in Dutch.  
30  
31

32  
33  
34 **Sample size calculation**

35  
36 We based the power calculations on two associations we are investigating in our  
37  
38 study: 1. The association between discrimination and depression; 2. The association  
39  
40 between discrimination and psychosis.  
41

- 42  
43 1. The power calculation for the association between depression and  
44  
45 discrimination is based on the study by Van Dijk *et al.*<sup>24</sup> In this study, around  
46  
47 50% of 153 Moroccan-Dutch and 199 Turkish-Dutch participants experienced  
48  
49 discrimination. In order to be able to detect an association with an effect size  
50  
51 measured as an Odds Ratio of at least 2, the sample size per group (with and  
52  
53 without discrimination) is 182. Based on this association, inclusion should  
54  
55 reach a minimum of 400 participants.  
56  
57  
58  
59  
60



- 1  
2  
3 2. Power calculation for detecting the association between perceived  
4 discrimination and psychotic symptoms (delusional hallucination) was based  
5 on Janssen *et al.*<sup>21</sup> This study differs from our study because it has a  
6 longitudinal design and it also includes Dutch inhabitants, not only migrants.  
7 The similarity between both studies is that they both take place in the general  
8 (healthy) population. Based on this study, for an  $\alpha=0.05$  (two-sided 0.025)  
9 and  $\beta=0.20$  (Power 80%) to detect an association with an Odds Ratio of at  
10 least 2, N had to be at least over 864 participants.  
11  
12  
13  
14  
15  
16  
17  
18  
19

20 Based on the power calculation for the association between discrimination and  
21 psychosis, we decided to include 1000 participants.  
22  
23  
24  
25  
26

## 27 **Data analysis**

### 28 *Descriptive statistics*

29  
30 In this study, we investigate the association between social factors (independent  
31 variables) and psychopathology (dependent variable) and we correct for relevant  
32 social-demographic variables (confounding variables). The dependent variable  
33 psychopathology will be divided into psychotic symptoms and psychological distress  
34 (depressive and anxiety symptoms). Using cut-off scores for the specific  
35 questionnaires, we consider psychopathology as a binary variable (yes/no psychotic  
36 disorder; yes/no psychological distress)  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48

### 49 *Univariate analysis*

50 Association between social factors and psychopathology will first be described in  
51 percentages, subdivided by socio-demographic variables (e.g. gender, age, socio-  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 economic status, ethnicity). We will use Chi-square test for categorical and t-tests for  
4  
5 continuous variables to identify significant associations between these variables.  
6  
7

### 8 9 *Multivariate analysis*

10 After univariate analysis, we will use a regression model (possibly Poisson  
11  
12 regression) to investigate the association between psychopathology and the social  
13  
14 factors, correcting for confounders. The exact regression model we will choose is  
15  
16 partly dependent on the incidence of psychopathology in our sample. We consider the  
17  
18 Poisson regression model, because we expect that the occurrence of psychopathology  
19  
20 will not be high in our non-clinical sample.  
21  
22  
23  
24  
25  
26

## 27 **ETHICS AND DISSEMINATION**

### 28 29 **Informed consent and data security**

30  
31 When entering the survey, participants are asked for informed consent. They can give  
32  
33 their consent by checking a box. In addition, participants will be asked to check a box  
34  
35 to confirm that his or her age is above 18. When both boxes are checked, participants  
36  
37 can click on 'next' and the first page of survey is displayed. A unique research  
38  
39 identification number will then be created for each participant, which is used for data  
40  
41 filing and handling. All recorded personal information (like pseudonym on the  
42  
43 website, name or email address) will be coded. IP-addresses will not be recorded.  
44  
45 For the online questionnaire, we use the service of Qualtrics.<sup>49</sup> In this online service,  
46  
47 we can design the entire survey and link it to the ziekofbezeten-domain of Marokko.nl  
48  
49 (so it can be opened from this website). They guarantee good safety measurements for  
50  
51 data storage and handling. For online data transport, the safety is comparable with  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Internet banking. The researchers remain owner of the data and can download it for  
4  
5 analysis. The user-account of the researcher is secured by username and password.<sup>50</sup>  
6  
7

### 8 9 10 **Ethical considerations**

11 The Medical Ethical Committee of the UMCG have assessed the study protocol and  
12  
13 judged that the study could be conducted without their approval.  
14  
15

### 16 17 18 **Dissemination**

19  
20 We aim to present the study results at conferences and one or more scientific  
21  
22 publications in peer-reviewed journals. After publication, results of the study will also  
23  
24 be published on ziekofbezeten.nl, to inform study participants and other interested  
25  
26 people about the results.  
27  
28  
29  
30  
31

### 32 33 **DISCUSSION**

34  
35 This study protocol is a result of new possibilities the Internet creates for  
36  
37 epidemiological research. We describe an online survey in the Moroccan-Dutch  
38  
39 population, a target group that is hard to reach for researchers and health care workers  
40  
41 through traditional means, but which is very actively participating in a range of social  
42  
43 exchanges on the website Marokko.nl. The methodology of online research is rather  
44  
45 new in psychiatric epidemiology and has many advantages. Research within an online  
46  
47 community offers the possibility to reach large numbers of the study population with  
48  
49 relatively simple means at affordable costs.<sup>51,52</sup> Online questionnaires have a more  
50  
51 structured format, therefore reducing the risk of skipping questions or making  
52  
53 errors by the participants.<sup>53</sup> Questions can be customised, based on previous answers,  
54  
55 saving time for the participant. Furthermore, there is no data entry by the researcher,  
56  
57  
58  
59  
60

1  
2  
3 which saves time and reduces data entry errors.<sup>54</sup> Like in our study, online  
4  
5 recruitment can provide unique access to groups that are otherwise difficult to reach.

6  
7 51, 54, 55

8  
9  
10 An important aspect in this study is that it is designed in close collaboration with the  
11  
12 Marokko.nl gatekeepers, who are familiar with or part of the Moroccan-Dutch target  
13  
14 population. This enhances the survey design, reduces non-response and secures  
15  
16 efficient recruitment strategies within the website.

17  
18 Although the Internet creates new and exciting possibilities in epidemiological  
19  
20 research, there are also new challenges and possible limitations. With online research,  
21  
22 recruiting a probability sample is difficult or even impossible and response rates  
23  
24 cannot always be calculated.<sup>55</sup> However, non-probability or convenience samples can  
25  
26 also generate important information. Two studies investigated ecstasy use with  
27  
28 different sampling strategies to compare probability versus non-probability samples.  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
56, 57 They concluded that the two samples were to a great extent comparable in terms  
of demographic and drug use characteristics. The samples differed slightly on  
employment status,<sup>56, 57</sup> recent use of drugs other than ecstasy, and how the ecstasy  
was obtained.<sup>57</sup> The authors suggest that the differences were due to different  
recruitment strategies. Another study used probability and non-probability samples in  
a study of elderly patients with end stage renal disease and their spouses. Although  
there were some differences on religion and ethnicity, most demographic  
characteristics were comparable.<sup>58</sup> In our design, we recruit a convenience sample  
within a well-described population of which the overall size within the population is  
known. We will therefore be able to compare the demographic characteristics in our  
sample with the characteristics of the entire Moroccan Dutch population.

1  
2  
3 An important limitation of our recruitment strategy is that people with psychological  
4 complaints may be more interested in participating in the study, and may thus be  
5 overrepresented. By using and recording different recruitment methods (such as the  
6 depression self-test and advertisement on Marokko.nl), we can get an idea whether  
7 participants with specific characteristics may enter the study in different ways, which  
8 is helpful in determining the impact of such factors on outcome.  
9

10  
11 Another possible limitation is our use of a cross-sectional design, that may show  
12 associations between variables, but does not reveal causal and temporal relations.  
13

14 However, the results of this study will serve as the basis for future prospective  
15 research in which causality can be more closely studied. We will ask participants  
16 consent to approach them at a later moment. With a follow-up measurement with the  
17 same design and instruments, we can create a prospective cohort.  
18

19 Using only self-report information could be another possible limitation of the study.  
20

21 We have no other source to check demographic variables, the notification of  
22 symptoms and the absence or presence of social factors. This may lead to participants  
23 exaggerating (or underreporting) their symptoms in order to see how this influences  
24 the feedback they are given. However, earlier research suggests that the anonymity of  
25 online self-report questionnaires can also result in more open and honest answers to  
26 sensitive questions compared to questionnaires that are used by an interviewer,<sup>53-55</sup>  
27 and there is no risk for interviewer bias.<sup>54</sup>  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

### **Acknowledgments**

We thank Lude Franke for his help in designing the figures.

### **Authors' contributions**

RS conceptualised and initiated the website ziekofbezeten. MvdB and RS designed the study. MvdB wrote the manuscript. LvdK and RS contributed to, and critically revised the manuscript. All authors read and approved the final version of the manuscript.

### **Funding**

The website ziekofbezeten.nl was built with financial support of the “Innovatiefonds Zorgverzekeraars”, the “Skanfonds” and “Stichting Voorzorg Utrecht”. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### **Competing interests**

None declared.

## REFERENCES

1. Cantor-Graae E, Pedersen CB. Full spectrum of psychiatric disorders related to foreign migration: a danish population-based cohort study. *JAMA Psychiatry* 2013;**70**:427-35  
doi:10.1001/jamapsychiatry.2013.441.
2. van Os J, Kenis G, Rutten BP. The environment and schizophrenia. *Nature* 2010;**468**:203-12  
doi:10.1038/nature09563.
3. Wichers M, Schrijvers D, Geschwind N, et al. Mechanisms of gene-environment interactions in depression: evidence that genes potentiate multiple sources of adversity. *Psychol Med* 2009;**39**:1077-86  
doi:10.1017/S0033291708004388.
4. Kendler KS. The dappled nature of causes of psychiatric illness: replacing the organic-functional/hardware-software dichotomy with empirically based pluralism. *Mol Psychiatry* 2012;**17**:377-88 doi:10.1038/mp.2011.182.
5. McGrath JJ, Lawlor DA. The search for modifiable risk factors for schizophrenia. *Am J Psychiatry* 2011;**168**:1235-8 doi:10.1176/appi.ajp.2011.11081300.
6. Bourque F, van der Ven E, Malla A. A meta-analysis of the risk for psychotic disorders among first- and second-generation immigrants. *Psychol Med* 2011;**41**:897-910 doi:10.1017/S0033291710001406.
7. Cantor-Graae E, Selten JP. Schizophrenia and migration: a meta-analysis and review. *Am J Psychiatry* 2005;**162**:12-24 doi:10.1176/appi.ajp.162.1.12.
8. Harrison G. Searching for the causes of schizophrenia: the role of migrant studies. *Schizophr Bull* 1990;**16**:663-71.
9. Selten JP, Cantor-Graae E. Social defeat: risk factor for schizophrenia?. *Br J Psychiatry* 2005;**187**:101-2 doi:10.1192/bjp.187.2.101.
10. Swinnen SG, Selten JP. Mood disorders and migration: meta-analysis. *Br J Psychiatry* 2007;**190**:6-10 doi:10.1192/bjp.bp.105.020800.

- 1  
2  
3 11. Missinne S, Bracke P. Depressive symptoms among immigrants and ethnic minorities: a population  
4 based study in 23 European countries. *Soc Psychiatry Psychiatr Epidemiol* 2012;**47**:97-109  
5  
6 doi:10.1007/s00127-010-0321-0.  
7  
8  
9  
10 12. Levecque K, Lodewyckx I, Vranken J. Depression and generalised anxiety in the general  
11 population in Belgium: a comparison between native and immigrant groups. *J Affect Disord*  
12 2007;**97**:229-39 doi:10.1016/j.jad.2006.06.022.  
13  
14  
15  
16 13. Available at:  
17  
18 <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=37325&D1=a&D2=0&D3=0&D4=0&D5=0-1,3,137,152,220,237&D6=l&HD=130312-1304&HDR=T&STB=G1,G2,G3,G4,G5>.  
19  
20  
21  
22  
23 14. Selten JP, Sijben N. First admission rates for schizophrenia in immigrants to The Netherlands. The  
24 Dutch National Register. *Soc Psychiatry Psychiatr Epidemiol* 1994;**29**:71-7 .  
25  
26  
27  
28 15. Veling W, Selten JP, Veen N, et al. Incidence of schizophrenia among ethnic minorities in the  
29 Netherlands: a four-year first-contact study. *Schizophr Res* 2006;**86**:189-93  
30  
31 doi:10.1016/j.schres.2006.06.010.  
32  
33  
34 16. Selten JP, Laan W, Kupka R, et al. Risk of psychiatric treatment for mood disorders and psychotic  
35 disorders among migrants and Dutch nationals in Utrecht, The Netherlands. *Soc Psychiatry Psychiatr*  
36  
37 *Epidemiol* 2012;**47**:271-8 doi: 10.1007/s00127-010-0335-7.  
38  
39  
40  
41 17. de Wit MA, Tuinebreijer WC, Dekker J, et al. Depressive and anxiety disorders in different ethnic  
42 groups: a population based study among native Dutch, and Turkish, Moroccan and Surinamese  
43 migrants in Amsterdam. *Soc Psychiatry Psychiatr Epidemiol* 2008;**43**:905-12 doi:10.1007/s00127-008-  
44  
45 0382-5.  
46  
47  
48  
49 18. Odegaard O. Emigration and insanity: a study of mental disease among Norwegian-born population  
50 in Minnesota. *Acta Psychiatrica Et Neurologica Scandinavia* 1932;**7**:1-206.  
51  
52  
53  
54 19. Selten JP, Cantor-Graae E, Slaets J, et al. Odegaard's selection hypothesis revisited: schizophrenia  
55 in Surinamese immigrants to The Netherlands. *Am J Psychiatry* 2002;**159**:669-71 .  
56  
57  
58  
59  
60



- 1  
2  
3 20. Morgan C, Charalambides M, Hutchinson G, et al. Migration, ethnicity, and psychosis: toward a  
4 sociodevelopmental model. *Schizophr Bull* 2010;**36**:655-64 doi:10.1093/schbul/sbq051.  
5  
6  
7  
8 21. Janssen I, Hanssen M, Bak M, et al. Discrimination and delusional ideation. *Br J Psychiatry*  
9  
10 2003;**182**:71-6.  
11  
12 22. Veling W, Selten JP, Susser E, et al. Discrimination and the incidence of psychotic disorders  
13 among ethnic minorities in The Netherlands. *Int J Epidemiol* 2007;**36**:761-8 doi:10.1093/ije/dym085.  
14  
15  
16  
17 23. Karlsen S, Nazroo JY, McKenzie K, et al. Racism, psychosis and common mental disorder among  
18 ethnic minority groups in England. *Psychol Med* 2005;**35**:1795-803 doi:10.1017/S0033291705005830.  
19  
20  
21  
22 24. van Dijk TK, Agyemang C, de Wit M, et al. The relationship between perceived discrimination and  
23 depressive symptoms among young Turkish-Dutch and Moroccan-Dutch. *Eur J Public Health*  
24 2011;**21**:477-83 doi:10.1093/eurpub/ckq093.  
25  
26  
27  
28 25. Wamala S, Bostrom G, Nyqvist K. Perceived discrimination and psychological distress in Sweden.  
29 *Br J Psychiatry* 2007;**190**:75-6 doi:10.1192/bjp.bp.105.021188.  
30  
31  
32  
33 26. Gee GC, Spencer M, Chen J, et al. The association between self-reported racial discrimination and  
34 12-month DSM-IV mental disorders among Asian Americans nationwide. *Soc Sci Med* 2007;**64**:1984-  
35 96 doi:10.1016/j.socscimed.2007.02.013.  
36  
37  
38  
39 27. Cantor-Graae E. The contribution of social factors to the development of schizophrenia: a review of  
40 recent findings. *Can J Psychiatry* 2007;**52**:277-86.  
41  
42  
43  
44 28. Kuo BC, Chong V, Joseph J. Depression and its psychosocial correlates among older Asian  
45 immigrants in North America: a critical review of two decades' research. *J Aging Health* 2008;**20**:615-  
46 52.  
47  
48  
49  
50  
51  
52 29. Gilbert P, Allan S. The role of defeat and entrapment (arrested flight) in depression: an exploration  
53 of an evolutionary view. *Psychol Med* 1998;**28**:585-98.  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 30. Veling W, Hoek H, Selten J, et al. Age at migration and future risk of psychotic disorders among  
4 immigrants in the Netherlands: a 7-year incidence study. *Am J Psychiatry* 2011;**168**:1278-85  
5  
6 doi:10.1176/appi.ajp.2011.11010110.  
7  
8  
9  
10 31. Shaw RJ, Atkin K, Bécarea L, et al. Impact of ethnic density on adult mental disorders: narrative  
11 review. *The British Journal of Psychiatry* 2012;**201**:11-9 doi:10.1192/bjp.bp.110.083675.  
12  
13  
14 32. Verheggen PP, Moha AA, Gomes C, Romer R. 'Beraken van Nieuwe Nederlanders'; Bereik van  
15 cultuurgebonden media; 2007. Report No.: L1166.  
16  
17  
18 33. Available at: <http://www.urbanconnect.nl/index.php?nav=static&pagina=Marokko.nl>.  
19  
20  
21  
22 34. Van de Beek M, Van der Krieke L, Schoevers R. An online platform on mental health problems for  
23 the Moroccan-Dutch community in the Netherlands. *In Press* 2013.  
24  
25  
26  
27 35. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences  
28 and trends in non-specific psychological distress. *Psychol Med* 2002;**32**:959-76 .  
29  
30  
31  
32 36. Donker T, Comijs H, Cuijpers P, et al. The validity of the Dutch K10 and extended K10 screening  
33 scales for depressive and anxiety disorders. *Psychiatry Res* 2010;**176**:45-50  
34  
35 doi:10.1016/j.psychres.2009.01.012.  
36  
37  
38  
39 37. Donker T, van Straten A, Marks I, et al. Brief self-rated screening for depression on the Internet. *J*  
40 *Affect Disord* 2010;**122**:253-9 doi:10.1016/j.jad.2009.07.013.  
41  
42  
43  
44 38. Fassaert T, De Wit MA, Tuinebreijer WC, et al. Psychometric properties of an interviewer-  
45 administered version of the Kessler Psychological Distress scale (K10) among Dutch, Moroccan and  
46 Turkish respondents. *Int J Methods Psychiatr Res* 2009;**18**:159-68 doi:10.1002/mpr.288.  
47  
48  
49  
50 39. Loewy RL, Bearden CE, Johnson JK, et al. The prodromal questionnaire (PQ): Preliminary  
51 validation of a self-report screening measure for prodromal and psychotic syndromes. *Schizophr Res*  
52 2005;**79**:117-25 .  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 40. Ising HK, Veling W, Loewy RL, et al. The validity of the 16-item version of the Prodromal  
4 Questionnaire (PQ-16) to screen for ultra high risk of developing psychosis in the general help-seeking  
5 population. *Schizophr Bull* 2012;**38**:1288-96 doi:10.1093/schbul/sbs068; 10.1093/schbul/sbs068.  
6  
7  
8  
9  
10 41. Clark R, Coleman AP, Novak JD. Brief report: Initial psychometric properties of the everyday  
11 discrimination scale in black adolescents. *J Adolesc* 2004;**27**:363-8  
12 doi:10.1016/j.adolescence.2003.09.004.  
13  
14  
15  
16 42. Bastos JL, Celeste RK, Faerstein E, et al. Racial discrimination and health: A systematic review of  
17 scales with a focus on their psychometric properties. *Soc Sci Med* 2010;**70**:1091-9  
18 doi:10.1016/j.socscimed.2009.12.020.  
19  
20  
21  
22  
23 43. Selten JP, Havenaar JM. Migratie en Niet-Affectieve Psychose<br />Add-on study bij protocol  
24 "kwetsbaarheid en veerkracht bij niet-affectieve psychose". ; 2004.  
25  
26  
27  
28 44. Dowrick C, Casey P, Dalgard O, et al. Outcomes of Depression International Network (ODIN).  
29 Background, methods and field trials. ODIN Group. *Br J Psychiatry* 1998;**172**:359-63 .  
30  
31  
32  
33 45. Dalgard OS, Thapa SB, Hauff E, et al. Immigration, lack of control and psychological distress:  
34 findings from the Oslo Health Study. *Scand J Psychol* 2006;**47**:551-8 doi:10.1111/j.1467-  
35 9450.2006.00546.x.  
36  
37  
38  
39 46. Syed H, Dalgard O, Dalen I, et al. Psychosocial factors and distress: a comparison between ethnic  
40 Norwegians and ethnic Pakistanis in Oslo, Norway. *BMC Public Health* 2006;**6**:182-  
41 doi:10.1186/1471-2458-6-182.  
42  
43  
44  
45  
46 47. Meltzer H. Development of a common instrument for mental health. In: Nosikov A, Gudex C,  
47 editors. EUROHIS: Developing Common instruments for Health Surveys Amsterdam: IOS Press;  
48 2003.  
49  
50  
51  
52  
53 48. Taylor PJ, Gooding P, Wood AM, et al. The role of defeat and entrapment in depression, anxiety,  
54 and suicide. *Psychol Bull* 2011;**137**:391-420 doi:10.1037/a0022935.  
55  
56  
57  
58 49. Available at: [www.qualtrics.com](http://www.qualtrics.com).  
59  
60

- 1  
2  
3 50. Hite K. Qualtrics Security White Paper, Why should I trust Qualtrics with my sensitive data? ;  
4  
5 2011. Report No.: version 2.0.  
6  
7  
8 51. Wright KB. Researching Internet-based populations: Advantages and disadvantages of online  
9  
10 survey research, online questionnaire authoring software packages, and web survey services. *Journal of*  
11  
12 *Computer-Mediated Communication* 2006;**10**:00 doi:10.1111/j.1083-6101.2005.tb00259.x.  
13  
14  
15 52. Ekman A, Litton JE. New times, new needs; e-epidemiology. *Eur J Epidemiol* 2007;**22**:285-92  
16  
17 doi:10.1007/s10654-007-9119-0.  
18  
19  
20 53. van Gelder MM, Bretveld RW, Roeleveld N. Web-based questionnaires: the future in  
21  
22 epidemiology?. *Am J Epidemiol* 2010;**172**:1292-8 doi:10.1093/aje/kwq291.  
23  
24  
25 54. Rhodes SD, Bowie DA, Hergenrather KC. Collecting behavioural data using the world wide web:  
26  
27 considerations for researchers. *Journal of Epidemiology and Community Health* 2003;**57**:68-73  
28  
29 doi:10.1136/jech.57.1.68.  
30  
31  
32 55. Van Selm M, Jankowski N. Conducting Online Surveys. *Quality & Quantity* 2006;**40**:435-56  
33  
34 doi:10.1007/s11135-005-8081-8.  
35  
36  
37 56. Topp L, Barker B, Degenhardt L. The external validity of results derived from ecstasy users  
38  
39 recruited using purposive sampling strategies. *Drug Alcohol Depend* 2004;**73**:33-40  
40  
41 doi:10.1016/j.drugalcdep.2003.09.001.  
42  
43  
44 57. Miller PG, Johnston J, Dunn M, et al. Comparing Probability and Non-Probability Sampling  
45  
46 Methods in Ecstasy Research: Implications for the Internet as a Research Tool. *Subst use Misuse*  
47  
48 2010;**45**:437-50 doi:10.3109/10826080903452470.  
49  
50  
51 58. Feild L, Pruchno RA, Bewley J, et al. Using Probability vs. Nonprobability Sampling to Identify  
52  
53 Hard-to-Access Participants for Health-Related Research. *Journal of Aging and Health* 2006;**18**:565-  
54  
55 83 doi:10.1177/0898264306291420.  
56  
57  
58  
59  
60

## Figure Legends

*Figure 1, online environment of the study*

*Figure 2, recruitment strategy and survey design*

For peer review only



**Migrants Examined for Determinants of psychopathology through INTERNET Assessment (MEDINA) study: a cross-sectional study among visitors of an Internet community**

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2013-003980.R1
Article Type:	Protocol
Date Submitted by the Author:	30-Nov-2013
Complete List of Authors:	van de Beek, Madelien; University of Groningen, University Medical Center Groningen, Department of Psychiatry van der Krieke, Lian; University of Groningen, University Medical Center Groningen, Department of Psychiatry Schoevers, Robert; University of Groningen, University Medical Center Groningen, Department of Psychiatry
<b>Primary Subject Heading</b>:	Mental health
Secondary Subject Heading:	Epidemiology, Sociology
Keywords:	psychopathology, social environment, migrants, Internet, PSYCHIATRY

SCHOLARONE™  
Manuscripts

1  
2  
3 **Migrants Examined for Determinants of psychopathology through INternet**  
4  
5 **Assessment (MEDINA) study: a cross-sectional study among visitors of an**  
6  
7 **Internet community**  
8

9  
10 Madelien van de Beek, Lian van der Krieke, Robert Schoevers  
11

12  
13  
14 Madelien Hermina van de Beek (MD) (**corresponding author**)  
15

16 University of Groningen, University Medical Center Groningen,  
17

18 Department of Psychiatry, Groningen, the Netherlands  
19

20  
21 Hanzeplein 1, Entrance 24, Room kn1.14a  
22

23 P.O. Box 30.001, 9700 RB Groningen  
24

25 Email: [m.vandebeek@dimence.nl](mailto:m.vandebeek@dimence.nl)  
26

27 Telephone: +31-6-19408029  
28  
29

30  
31  
32 Lian van der Krieke (MSc)  
33

34 University of Groningen, University Medical Center Groningen,  
35

36 Department of Psychiatry, Groningen, the Netherlands  
37

38 Email: [j.a.j.van.der.krieke@umcg.nl](mailto:j.a.j.van.der.krieke@umcg.nl)  
39  
40

41  
42  
43 Prof. Robert Anton Schoevers (MD, PhD)  
44

45 University of Groningen, University Medical Center Groningen,  
46

47 Department of Psychiatry, Groningen, the Netherlands  
48

49 Email: [r.a.schoevers@umcg.nl](mailto:r.a.schoevers@umcg.nl)  
50  
51

52  
53 **Keywords:** migrants, psychopathology, social environment, Internet  
54

55  
56 **Word count:** 3692  
57  
58  
59  
60

## ABSTRACT

### *Introduction*

Migration is a risk factor for the onset of psychopathology. A range of social factors may play a role in the aetiology of psychiatric disorders in migrants. A better understanding of these associations is needed to develop preventive interventions to reduce the disease burden in the migrant population. Research among minority groups is generally time-consuming and it is difficult to recruit participants. Internet can offer interesting new possibilities to conduct research among ethnic minorities. This paper describes the design of an epidemiological study in the Moroccan-Dutch population, which will be entirely performed online. We investigate the association between social factors and psychopathology.

### *Methods and analysis*

The website Marokko.nl is visited by 70% of the young Moroccan-Dutch population in the Netherlands. This website therefore provides a unique possibility for research within this population. We will conduct a survey with online questionnaires via this website. The online survey consists of several validated short self-report questionnaires, measuring depressive and anxiety symptoms (K10), psychotic symptoms (PQ-16), and instruments measuring discrimination, social support and social defeat. Furthermore, demographic characteristics are collected. We will use univariate and multivariate methods for analysing the data.

### *Ethics and dissemination*

The local Medical Ethical Committee have assessed the study protocol and judged that the study could be conducted without their approval. Knowledge dissemination



1  
2  
3 will take place through peer-reviewed publication in scientific journals as well as  
4  
5 publication for participants on the project website.  
6

### 7 8 *Discussion*

9  
10 In this study we further explore the association between psychopathology and social  
11 factors within an online Moroccan-Dutch sample. The recruitment of participants via  
12 the website Marokko.nl creates a big advantage in collecting a large sample of a  
13 specific migrant population. Strengths and limitations of the methodology are  
14 discussed. Furthermore, we review the advantages and challenges of online  
15 epidemiological research methods.  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

### 27 **Strengths and limitations of this study**

#### 28 *Strengths*

- 29  
30  
31  
32 - This study uses a novel methodology, in which recruitment and data collection  
33 is performed entirely online.  
34  
35  
36 - The use of the Internet creates the opportunity to recruit many Moroccan-  
37 Dutch migrants, a population which is otherwise difficult to reach for research.  
38  
39 - We collaborate with the gatekeepers of the website Marokko.nl, which is  
40 visited by 70% of the young Moroccan-Dutch population in the Netherlands.  
41  
42  
43  
44  
45  
46

#### 47 *Limitations*

- 48  
49 - Because of Internet recruitment, we collect a convenience sample, with the  
50 risk of selection bias.  
51  
52 - Due to the cross-sectional design, we cannot determine the direction of  
53 associations between variables that we investigate.  
54  
55  
56  
57  
58  
59  
60

## INTRODUCTION

Across countries and cultures, migration is a risk factor for the development of psychopathology.<sup>1</sup> Psychiatric disorders are heterogeneous and they develop as a result of the interplay between a range of genetic and environmental influences.<sup>2-4</sup> Gaining a better understanding of the aetiology of psychopathology, and especially of modifiable risk factors that are associated with its development, is essential because this can lead us to preventive interventions. In migrants, some aetiological risk factors remain unchanged (e.g. genetic factors) whereas others (e.g. environmental factors) may change as a result of migration. Studying the development of psychopathology in migrant populations may further increase our understanding of the role of these risk factors.<sup>5</sup>

Currently available evidence suggests that the association between migration and psychopathology is strongest for psychotic disorders. Two meta-analyses found that the relative risk for developing schizophrenia was significantly higher in the migrant population compared to the native population.<sup>6,7</sup> Interestingly, the relative risk for developing schizophrenia greatly differed between migrant subgroups, and was as high as 4.5 for second-generation migrants and 4.8 in black ethnic groups.<sup>7-9</sup> For mood disorders, Swinnen *et al.* found a relative risk of 1.38 (95% CI 1.17-1.62) for migrants in a meta-analysis covering 14 studies (2 on depressive disorder, 5 on bipolar disorder and 9 on mood disorders on unspecified polarity).<sup>10</sup> Since then, other studies have confirmed the increased prevalence of depressive symptoms in migrant populations.<sup>11,12</sup> A recent study by Cantor-Graae *et al.* has shown increased incidence risk ratios for all psychiatric disorders in foreign-born adoptees and second generation migrants having one foreign born parents. However, for first generation and second-

1  
2  
3 generation migrants with two foreign-born parents, the risk was only increased for  
4  
5 schizophrenia.<sup>1</sup>  
6

7  
8 Variation in the incidence of psychopathology between different ethnic groups has  
9  
10 also been shown in the Netherlands, where the present study is situated. In 2012, the  
11  
12 largest migrant groups in the Netherlands (16.7 million inhabitants) originated from  
13  
14 Turkey (392,923; 2.3% of the total population), Morocco (362,954; 2.2% of the total  
15  
16 population), Surinam (346,797; 2.1% of the total population), and the Dutch Antilles  
17  
18 (143,992; 0.9% of the total population).<sup>13</sup> For schizophrenia, the incidence was  
19  
20 increased in most of the different migrant groups in the Netherlands compared to the  
21  
22 overall population, but not in all. The incidence of schizophrenia appeared to be  
23  
24 highest in the second-generation Moroccan-Dutch inhabitants.<sup>14, 15</sup> Furthermore, a  
25  
26 Dutch study has shown that incidence and prevalence rates for mood disorders are  
27  
28 highest among Turkish migrants (Relative Risk 4.9), followed by Moroccan migrants  
29  
30 (RR 3.6) and Surinamese migrants (RR 1.8), while the rates in Western-European  
31  
32 migrants were comparable to the general Dutch population.<sup>16</sup> These findings replicate  
33  
34 the results from a previous Dutch study.<sup>17</sup>  
35  
36  
37  
38  
39

#### 40 41 **Possible explanations**

42  
43 Although migrants are at increased risk to develop psychopathology, the explanation  
44  
45 for this association is still largely unknown. Previously, it was hypothesized that the  
46  
47 disorder itself would be a factor in migration, because especially schizophrenia and  
48  
49 bipolar patients were believed to be more restless and rootless and therefore more  
50  
51 inclined to migrate. This 'selective migration' hypothesis was first suggested by  
52  
53 Ødegaard *et al.* in 1932<sup>18</sup> but is now generally discarded, as scientific evidence cannot  
54  
55 support it.<sup>19, 20</sup> An example of an argument against the selective migration theory is  
56  
57  
58  
59  
60

1  
2  
3 the fact that the incidence of schizophrenia in second-generation migrants is  
4 substantially higher compared to their parents from the first generation. This  
5 phenomenon points to the importance of post-migration factors or, in other words,  
6 (social) factors in the country of destination.<sup>6</sup> Social factors that are frequently  
7 suggested to be associated with psychopathology in migrants are (among others):  
8 discrimination, lack of social support and social defeat. Discrimination was associated  
9 with psychotic symptoms in several studies.<sup>21-23</sup> Also in mood disorders, an  
10 association with discrimination was found.<sup>23-26</sup> Lack of social support or isolation was  
11 found to be associated with psychopathology in several studies.<sup>27,28</sup> In the original  
12 article by Gilbert *et al.* in 1998, the concept of social defeat, or “being in a  
13 subordinate position”<sup>9</sup> was associated with depression.<sup>29</sup> Social defeat has also been  
14 hypothesized as an etiological factor for developing schizophrenia in migrant  
15 populations.<sup>9</sup> Discrimination, social support and social defeat are variables we will  
16 measure in this study. Furthermore, associations between demographic variables and  
17 increased risk for psychopathology in migrants have also been found. As an example,  
18 younger age at migration was a risk factor for psychosis in a Dutch study.<sup>30</sup> In a  
19 systematic review, Shaw *et al.* found that lower density of the ethnic minority  
20 population in the neighbourhood was associated with higher risk of psychopathology.  
21 This effect was most consistently found for psychosis and only tentative for other  
22 mental disorders, due to heterogeneity and limited statistical power of the studies  
23 examined.<sup>31</sup>

### 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

#### **Aims of the current study**

In the current study, we want to further explore the relationship between migration and psychopathology, concentrating on social factors. We aim to investigate the

1  
2  
3 associations between psychotic symptoms and mood symptoms on the one hand and  
4  
5 discrimination, social defeat, and social support on the other. As the association  
6  
7 between social factors and psychopathology may be subgroup-specific, we focus on  
8  
9 one ethnic group: the Moroccan-Dutch population. This population is relatively hard  
10  
11 to reach for researchers and mental health care workers. A previous population-based  
12  
13 study in several ethnic groups in the Netherlands reported response rates of 30.2% for  
14  
15 Dutch participants compared to 20.8% for Moroccan-Dutch participants.<sup>17</sup> A research  
16  
17 report of the Dutch government in the year 2000 states that Moroccan-Dutch patients  
18  
19 are underrepresented in the mental health care system.<sup>32</sup> However, since the majority  
20  
21 of young Moroccan-Dutch individuals actively visit the website Marokko.nl, we have  
22  
23 a unique opportunity to reach this population.  
24  
25  
26  
27  
28

## 29 **METHODS AND ANALYSIS**

30  
31 We will conduct an online survey in a cross-sectional convenience sample of the  
32  
33 Moroccan-Dutch population, using a combination of several self-report  
34  
35 questionnaires. The survey will run from 15-11-2012 to 1-5-2014.  
36  
37

38 *Our research questions are the following:*

- 39  
40 1. How often are symptoms of depression and psychosis reported in a cross  
41  
42 sectional sample of young (age 18-35) Moroccan-Dutch participants,  
43  
44 measured by self-administered screening questionnaires?  
45  
46
- 47  
48 2. Which environmental factors of stress or strain do the Moroccan-Dutch  
49  
50 participants report, thereby specifically focusing on social factors such as  
51  
52 discrimination, social defeat and social support?  
53  
54
- 55  
56 3. What is the association between the symptoms of psychopathology and the  
57  
58 reported social factors?  
59  
60

## Setting

We will recruit participants at a unique website, which is visited by the majority of Moroccan-Dutch adolescents: [www.marokko.nl](http://www.marokko.nl). This website exists for over ten years. Of all young Moroccan-Dutch people (age 15-35) in the Netherlands 70% visit this website regularly, of whom 33% visits the website weekly.<sup>33, 34</sup> Marokko.nl is serving as a national forum board, where everybody can start a discussion and respond to it. With some exceptions, the language in these discussions is Dutch.

Discussions are moderated by a trained team of (mostly Moroccan-Dutch) moderators who make sure the website regulations are respected. Only visitors with an account can contribute to the discussion. To set up an account, one has to create a pseudonym and answer some questions about gender and age. This pseudonym is shown when creating or replying to a discussion. Also, the account is connected to a personal email box; this “personal message” system is available within the site. Because the pseudonyms guarantee anonymity, members feel free to share very personal information in the forum discussions. This includes personal information about sensitive topics like sickness and health, (arranged) marriages, pregnancy and abortion. Although mental health problems are generally a taboo in the Moroccan-Dutch population, on this website many discussions cover this subject. Apparently, there is a need for a platform to discuss these issues in this community.

Despite their need for discussing mental health issues, the Moroccan-Dutch population is underrepresented in preventive programs in mental health care. On the Marokko.nl website, psychiatric problems are discussed, but no professional help is offered. In 2012, we therefore created an add-on to the website about mental health. This mental health domain of Marokko.nl is called [www.ziekofbezeten.marokko.nl](http://www.ziekofbezeten.marokko.nl)

1  
2  
3 (“ziek of bezeten” means: being ill or being possessed). Within this domain, we  
4  
5 supply information about psychiatric disorders, self-tests for depression and substance  
6  
7 use, and email and chat contact with mental health care workers or specially trained  
8  
9 Imams.<sup>35</sup> Our research survey is nested within ziekofbezeten.nl. For a schematic  
10  
11 overview of the online environment see figure 1.  
12  
13

## 14 15 16 **Participants & recruitment**

17  
18 The participants in this study will be recruited from the Moroccan-Dutch population.  
19

20  
21 Inclusion criteria for this study are:

- 22 - At least one of the parents is born in Morocco
- 23 - Having sufficient knowledge of the Dutch language
- 24 - Having internet access and being a visitor the website marokko.nl

25  
26  
27  
28  
29  
30 Exclusion criteria are:

- 31 - Age younger than 18 years

32  
33  
34 Recruitment takes places online, using the website Marokko.nl. We will recruit  
35  
36 participants in several ways, which are listed below and are shown in Figure 2. There  
37  
38 are three main recruitment routes that lead participants to our survey:  
39

- 40 1. Advertisement via banners on Marokko.nl.
- 41  
42 2. Via an invitation at the end of a depression self-test on the  
43  
44 ziekofbezeten.marokko.nl domain: after filling out the depression self-test,  
45  
46 people will be asked to participate in the survey.  
47  
48
- 49 3. In several places on the website ziekofbezeten.nl, visitors who are interested in  
50  
51 participating in the study, have the opportunity to “opt-in” for research and  
52  
53 leave an e-mail address.  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Should these recruitment routes not result into a sufficient number of participants,  
4  
5 additional forms of recruitment can be deployed:  
6

- 7 - Via the “personal message” function (a marokko.nl linked email service), a  
8 random subset of the registered users can be asked to participate.  
9
- 10 - Contributors of several relevant forum discussions can be approached via  
11 “personal message” and asked to participate.  
12
- 13 - Location of the advertisement of the study can be customized. When for  
14 example more women than men are included, the study can specifically be  
15 advertised on parts of the website where men are active.  
16  
17  
18  
19  
20  
21

22 We will track the route via which participants were recruited (anonymously), so that  
23 we can analyse the various recruitment strategies and compare the participant  
24 characteristics between these recruitment strategies.  
25  
26  
27  
28

### 29 30 31 **Procedure**

32 After inclusion, participants will be asked to fill out an online survey. The first  
33 webpage will contain information about the study and informed consent. When  
34 informed consent is given, the next page will show the survey. The survey consists of  
35 questions about depressive and psychotic symptoms, discrimination, social defeat,  
36 social support, and baseline demographics. Completing all questions will take  
37 approximately 10 minutes. Furthermore, we will ask the participants if we can  
38 approach them for further research at a later time. The last page will provide  
39 participants feedback on the questionnaires they filled out. When scores for  
40 psychopathology are high, the advice to contact the general practitioner will be given  
41 and addresses of mental health care organisations are provided.  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



## Measurements & Instruments

We will ask for demographic variables, as listed in table 1. As a measurement of ethnic density, we ask for the first 4 digits of the postal code, which provides us with enough information to connect to a certain area or neighbourhood without conflicting with the participants' anonymity.

*Table 1, Demographic variables*

Demographic variables	Operationalization
Age	Years
Gender	Male/female
Ethnicity	Country of birth, country of birth parents
Age of migration	If applicable
Ethnic density	Postal code (first 4 figures)
Previous mental health care	If yes: diagnosis
Previous/current medication	(free text words)
Social economic status	Income
Education	(free text words)
Religion	How important is religion for you? (Likert scale)
Substance use	First 3 questions of the Drug Use Disorders Identification Test (DUDIT) + question on kind of substance used

The main part of our online survey consists of a combination of 5 short questionnaires measuring psychopathology and social factors, which are listed in table 2. The questionnaires are further described below. Table 3 shows an example of questions for each questionnaire.

*Table 2, questionnaires*

Trait	Questionnaire	Items	Time
Depressive symptoms	K10	10	2 min
Psychotic symptoms	PQ-16	16	2 min
Discrimination	Discrimination scale	22	2 min
Social defeat	Social defeat scale	16	3 min
Social support	Oslo social support questionnaire	3	1 min
<b>Total time (including demographics):</b>			<b>10 min.</b>

Table 3, question examples

Questionnaire	Question example	Scale
<b>K10</b>	During the last month, how often did you feel tired out for no good reason?	0 – not at all ... 4 – always
<b>PQ-16</b>	I have seen things that other people apparently can't see.	True – Untrue
<b>Discrimination scale</b>	How often do you experience one of the following types of discrimination: You are being scoffed at or threatened.	0 – never ... 3 – often
<b>Social defeat scale</b>	I feel that I have not made it in life	0 – not at all ... 4 – always
<b>Oslo social support questionnaire</b>	How many people are so close to you that you can count on them if you have serious personal problems?	0 – none ... 4 – six or more

### *Psychopathology – Mood symptoms*

The Kessler Psychological Distress Scale (K10)<sup>36</sup> is a short questionnaire measuring mood and anxiety symptoms. It contains 10 items on a 5-point likert scale. This scale has previously been tested for the validity in the Dutch language<sup>37</sup> and for online self-administration.<sup>38</sup> Furthermore, it has previously been used in a migrant population in the Netherlands.<sup>39</sup>

### *Psychopathology – Psychotic symptoms*

The Prodromal Questionnaire-16 (PQ-16) is a short version of the Prodromal Questionnaire.<sup>40</sup> It is a self-report screening instrument for psychosis risk, with 16 true/false statements. The instrument has been developed and tested for validity in the Dutch language.<sup>41</sup> Although this instrument has not been specifically validated in Moroccan-Dutch participants, the sample in which it has been studied in previous research was ethnically diverse.<sup>42, 43</sup>

### *Social factors – perceived discrimination*

1  
2  
3 Discrimination is measured with a combination of two subscales: the ‘everyday  
4 discrimination scale’ and the ‘major experiences of discrimination scale’<sup>44-46</sup> The  
5 instrument showed adequate results in the appraisal of a review by Bastos *et al.*<sup>47</sup> The  
6 translation we use is previously used in the Dutch MIGROUP study (an add-on  
7 protocol to the GROUP-study).<sup>48</sup>  
8  
9

#### 10 11 12 13 14 15 16 *Social factors – social support*

17 The Oslo Social Support Questionnaire was designed by Dalgard *et al.*<sup>49-51</sup> It consists  
18 of only three questions and was the instrument of choice for social support on an  
19 expert meeting where common instruments for mental disorders for European  
20 population studies were chosen, called “EUROHIS”.<sup>52</sup> A Dutch translation of the  
21 instrument is available.  
22  
23  
24  
25  
26  
27  
28

#### 29 30 31 32 *Social factors – social defeat*

33 The most widely used instrument for measuring social defeat is the Social Defeat  
34 Scale, designed by Gilbert *et al.*<sup>29, 53</sup> It is a 16 item self-report scale. This instrument  
35 was also included in the MIGROUP protocol<sup>48</sup> and therefore available in Dutch.  
36  
37  
38  
39  
40  
41  
42

#### 43 **Sample size calculation**

44 We based the power calculations on two associations we are investigating in our  
45 study: 1. The association between discrimination and depression; 2. The association  
46 between discrimination and psychosis.  
47  
48  
49  
50

- 51 1. The power calculation for the association between depression and  
52 discrimination is based on the study by Van Dijk *et al.*<sup>24</sup> In this study, around  
53 50% of 153 Moroccan-Dutch and 199 Turkish-Dutch participants experienced  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 discrimination. In order to be able to detect an association with an effect size  
4 measured as an Odds Ratio of at least 2, the sample size per group (with and  
5 without discrimination) is 182. Based on this association, inclusion should  
6 reach a minimum of 400 participants.  
7  
8  
9

- 10  
11  
12 2. Power calculation for detecting the association between perceived  
13 discrimination and psychotic symptoms (delusional hallucination) was based  
14 on Janssen *et al.*<sup>21</sup> This study differs from our study because it has a  
15 longitudinal design and it also includes Dutch inhabitants, not only migrants.  
16  
17 The similarity between both studies is that they both take place in the general  
18 (healthy) population. Based on this study, for an  $\alpha= 0.05$  (two-sided 0.025)  
19 and  $\beta= 0.20$  (Power 80%) to detect an association with an Odds Ratio of at  
20 least 2, N had to be at least over 864 participants.  
21  
22  
23  
24  
25  
26  
27  
28

29  
30 Based on the power calculation for the association between discrimination and  
31 psychosis, we aim to include 1000 participants.  
32  
33  
34  
35

## 36 **Data analysis**

### 37 *Descriptive statistics*

38  
39 We will describe the socio-demographic variables in our sample and will compare  
40 them with those of other studies on psychopathology with Moroccan-Dutch  
41 participants. We will investigate the association between social factors (independent  
42 variables) and psychopathology (dependent variable) and we correct for relevant  
43 social-demographic variables (confounding variables). The dependent variable  
44 psychopathology will be divided into psychotic symptoms and psychological distress  
45 (depressive and anxiety symptoms). Using cut-off scores for the specific  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 questionnaires, we consider psychopathology as a binary variable (yes/no psychotic  
4  
5 disorder; yes/no psychological distress)  
6  
7

### 8 9 *Univariate analysis*

10 Association between social factors and psychopathology will first be described in  
11  
12 percentages, subdivided by socio-demographic variables (e.g. gender, age, socio-  
13  
14 economic status, ethnicity). We will use Chi-square test for categorical and t-tests for  
15  
16 continuous variables to identify significant associations between these variables. We  
17  
18 will take gender differences in our sample into account in our analysis, since previous  
19  
20 studies in the Moroccan-Dutch population have shown large differences in  
21  
22 psychopathology rates between men en women.<sup>14, 17</sup>  
23  
24  
25  
26  
27  
28

### 29 *Multivariate analysis*

30 After univariate analysis, we will use a regression model (possibly Poisson  
31  
32 regression) to investigate the association between psychopathology and the social  
33  
34 factors, correcting for confounders. The exact regression model we will choose is  
35  
36 partly dependent on the incidence of psychopathology in our sample. We consider the  
37  
38 Poisson regression model, because we expect that the occurrence of psychopathology  
39  
40 will not be high in our non-clinical sample.  
41  
42  
43  
44  
45  
46

## 47 **ETHICS AND DISSEMINATION**

### 48 **Informed consent and data security**

49 When entering the survey, participants are asked for informed consent. They can give  
50  
51 their consent by checking a box. In addition, participants will be asked to check a box  
52  
53 to confirm that his or her age is above 18. When both boxes are checked, participants  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 can click on 'next' and the first page of survey is displayed. A unique research  
4  
5 identification number will then be created for each participant, which is used for data  
6  
7 filing and handling. All recorded personal information (like pseudonym on the  
8  
9 website, name or email address) will be coded. IP-addresses will not be recorded.  
10  
11 For the online questionnaire, we use the service of Qualtrics.<sup>54</sup> In this online service,  
12  
13 we can design the entire survey and link it to the ziekofbezeten-domain of Marokko.nl  
14  
15 (so it can be opened from this website). They guarantee good safety measurements for  
16  
17 data storage and handling. For online data transport, the safety is comparable with  
18  
19 Internet banking. The researchers remain owner of the data and can download it for  
20  
21 analysis. The user-account of the researcher is secured by username and password.<sup>55</sup>  
22  
23  
24  
25  
26

### 27 **Ethical considerations**

28  
29 The Medical Ethical Committee of the UMCG have assessed the study protocol and  
30  
31 judged that the study could be conducted without their approval.  
32  
33  
34  
35

### 36 **Dissemination**

37  
38 We aim to present the study results at conferences and in one or more scientific  
39  
40 publications in peer-reviewed journals. After publication, results of the study will also  
41  
42 be published on ziekofbezeten.nl, to inform study participants and other interested  
43  
44 people about the results.  
45  
46  
47  
48  
49

### 50 **DISCUSSION**

51  
52 This study protocol is a result of new possibilities the Internet creates for  
53  
54 epidemiological research. We describe an online survey in the Moroccan-Dutch  
55  
56 population, a target group that is hard to reach for researchers and health care workers  
57  
58  
59  
60

1  
2  
3 through traditional means, but which is very actively participating in a range of social  
4 exchanges on the website Marokko.nl. The methodology of online research is rather  
5 new in psychiatric epidemiology and has many advantages. Research within an online  
6 community offers the possibility to reach large numbers of the study population with  
7 relatively simple means at affordable costs.<sup>56, 57</sup> Online questionnaires have a more  
8 structured format, therefore reducing the risk of skipping questions or making  
9 errors by the participants.<sup>58</sup> Questions can be customised, based on previous answers,  
10 saving time for the participant. Furthermore, there is no data entry by the researcher,  
11 which saves time and reduces data entry errors.<sup>59</sup> Like in our study, online recruitment  
12 can provide unique access to groups that are otherwise difficult to reach.<sup>56, 59, 60</sup>  
13  
14 An important aspect in this study is that it is designed in close collaboration with the  
15 Marokko.nl gatekeepers, who are familiar with or part of the Moroccan-Dutch target  
16 population. This enhances the survey design, reduces non-response and secures  
17 efficient recruitment strategies within the website.  
18  
19

20  
21 Although the Internet creates new and exciting possibilities in epidemiological  
22 research, there are also new challenges and possible limitations. With online research,  
23 recruiting a probability sample is difficult or even impossible and response rates  
24 cannot always be calculated.<sup>60</sup>  
25  
26

27  
28 In a non-probability or convenience sample, there is a possible risk of selection bias,  
29 which is one of the major limitations of our study. Recruitment via a convenience  
30 sample is entirely dependent of people who are willing to volunteer. Therefore, the  
31 probability that people who, for example, fear stigmatization are less likely to  
32 participate in research focusing on mental illness. However, this may be partly  
33 countered by the fact that the internet-survey allows participants to stay anonymous.  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 This is supported by the fact that mental illnesses are frequently and openly discussed  
4 on Marokko.nl.  
5

6  
7 However, non-probability or convenience samples can also generate important  
8 information. Two studies investigated ecstasy use with different sampling strategies to  
9 compare probability versus non-probability samples.<sup>61, 62</sup> They concluded that the two  
10 samples were to a great extent comparable in terms of demographic and drug use  
11 characteristics. The samples differed slightly on employment status,<sup>61, 62</sup> recent use of  
12 drugs other than ecstasy, and how the ecstasy was obtained.<sup>62</sup> The authors suggest that  
13 the differences were due to different recruitment strategies. Another study used  
14 probability and non-probability samples in a study of elderly patients with end stage  
15 renal disease and their spouses. Although there were some differences on religion and  
16 ethnicity, most demographic characteristics were comparable.<sup>63</sup> In our design, we  
17 recruit a convenience sample within a well-described population of which the overall  
18 size within the population is known. We will therefore be able to compare the  
19 demographic characteristics in our sample with the characteristics of the entire  
20 Moroccan Dutch population.  
21

22  
23 An important limitation of our recruitment strategy is that people with psychological  
24 complaints may be more interested in participating in the study, and may thus be  
25 overrepresented. More specifically, recruitment via the depression self-test might  
26 encourage people with depressive complaints to participate in particular. By using and  
27 recording different recruitment methods (such as the depression self-test and  
28 advertisement on Marokko.nl), we can investigate the effects of the recruitment  
29 strategy on the outcome variables. Depending on these differences, we might need to  
30 correct for it in our analyses.  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 Another possible limitation is our use of a cross-sectional design, that may show  
4 associations between variables, but does not reveal causal and temporal relations.  
5  
6

7 However, the results of this study will serve as the basis for future research, in which  
8 temporal relations can be more closely studied. We will ask participants' consent to  
9 approach them at a later moment. We consider performing a follow-up measurement  
10 with the same design and instruments. If we will be able to reach enough participants,  
11 we can create a prospective cohort.  
12  
13

14 Using only self-report information could be another possible limitation of the study.  
15  
16

17 We have no other source to check demographic variables, the notification of  
18 symptoms and the absence or presence of social factors. This may lead to participants  
19 exaggerating (or underreporting) their symptoms in order to see how this influences  
20 the feedback they are given. However, earlier research suggests that the anonymity of  
21 online self-report questionnaires can also result in more open and honest answers to  
22 sensitive questions compared to questionnaires that are used by an interviewer,<sup>58-60</sup>  
23 and there is no risk for interviewer bias.<sup>59</sup>  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Acknowledgments

We thank Lude Franke for his help in designing the figures.

## Authors' contributions

RS conceptualised and initiated the website ziekofbezeten. MvdB and RS designed the study. MvdB wrote the manuscript. LvdK and RS contributed to, and critically revised the manuscript. All authors read and approved the final version of the manuscript.

## Funding

The website ziekofbezeten.nl was built with financial support of the “Innovatiefonds Zorgverzekeraars”, the “Skanfonds” and “Stichting Voorzorg Utrecht”. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Competing interests

None declared.

## REFERENCES

1. Cantor-Graae E, Pedersen CB. Full spectrum of psychiatric disorders related to foreign migration: a danish population-based cohort study. *JAMA Psychiatry* 2013;**70**:427-35 doi:10.1001/jamapsychiatry.2013.441; 10.1001/jamapsychiatry.2013.441.
2. van Os J, Kenis G, Rutten BP. The environment and schizophrenia. *Nature* 2010;**468**:203-12 doi:10.1038/nature09563; 10.1038/nature09563.
3. Wichers M, Schrijvers D, Geschwind N, et al. Mechanisms of gene-environment interactions in depression: evidence that genes potentiate multiple sources of adversity. *Psychol Med* 2009;**39**:1077-86 doi:10.1017/S0033291708004388; 10.1017/S0033291708004388.
4. Kendler KS. The dappled nature of causes of psychiatric illness: replacing the organic-functional/hardware-software dichotomy with empirically based pluralism. *Mol Psychiatry* 2012;**17**:377-88 doi:10.1038/mp.2011.182.
5. McGrath JJ, Lawlor DA. The search for modifiable risk factors for schizophrenia. *Am J Psychiatry* 2011;**168**:1235-8 doi:10.1176/appi.ajp.2011.11081300.
6. Bourque F, van der Ven E, Malla A. A meta-analysis of the risk for psychotic disorders among first- and second-generation immigrants. *Psychol Med* 2011;**41**:897-910 doi:10.1017/S0033291710001406.
7. Cantor-Graae E, Selten JP. Schizophrenia and migration: a meta-analysis and review. *Am J Psychiatry* 2005;**162**:12-24 doi:10.1176/appi.ajp.162.1.12.
8. Harrison G. Searching for the causes of schizophrenia: the role of migrant studies. *Schizophr Bull* 1990;**16**:663-71.

- 1  
2  
3 9. Selten JP, Cantor-Graae E. Social defeat: risk factor for schizophrenia?. *Br J Psychiatry*  
4  
5 2005;**187**:101-2 doi:10.1192/bjp.187.2.101.  
6  
7  
8 10. Swinnen SG, Selten JP. Mood disorders and migration: meta-analysis. *Br J Psychiatry*  
9  
10 2007;**190**:6-10 doi:10.1192/bjp.bp.105.020800.  
11  
12  
13 11. Missinne S, Bracke P. Depressive symptoms among immigrants and ethnic minorities: a  
14  
15 population based study in 23 European countries. *Soc Psychiatry Psychiatr Epidemiol*  
16  
17 2012;**47**:97-109 doi:10.1007/s00127-010-0321-0.  
18  
19  
20 12. Levecque K, Lodewyckx I, Vranken J. Depression and generalised anxiety in the general  
21  
22 population in Belgium: a comparison between native and immigrant groups. *J Affect Disord*  
23  
24 2007;**97**:229-39 doi:10.1016/j.jad.2006.06.022.  
25  
26  
27  
28 13. Available at:  
29  
30 <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=37325&D1=a&D2=0&D3=0&D4=0&D5=0-1,3,137,152,220,237&D6=l&HD=130312-1304&HDR=T&STB=G1,G2,G3,G4,G5>.  
31  
32  
33  
34  
35  
36  
37 14. Selten JP, Sijben N. First admission rates for schizophrenia in immigrants to The  
38  
39 Netherlands. The Dutch National Register. *Soc Psychiatry Psychiatr Epidemiol* 1994;**29**:71-7.  
40  
41  
42 15. Veling W, Selten JP, Veen N, et al. Incidence of schizophrenia among ethnic minorities in  
43  
44 the Netherlands: a four-year first-contact study. *Schizophr Res* 2006;**86**:189-93  
45  
46 doi:10.1016/j.schres.2006.06.010.  
47  
48  
49 16. Selten JP, Laan W, Kupka R, et al. Risk of psychiatric treatment for mood disorders and  
50  
51 psychotic disorders among migrants and Dutch nationals in Utrecht, The Netherlands. *Soc*  
52  
53 *Psychiatry Psychiatr Epidemiol* 2012;**47**:271-8 doi:10.1007/s00127-010-0335-7;  
54  
55 10.1007/s00127-010-0335-7.  
56  
57  
58  
59  
60

- 1  
2  
3 17. de Wit MA, Tuinebreijer WC, Dekker J, et al. Depressive and anxiety disorders in  
4 different ethnic groups: a population based study among native Dutch, and Turkish,  
5 Moroccan and Surinamese migrants in Amsterdam. *Soc Psychiatry Psychiatr Epidemiol*  
6 2008;**43**:905-12 doi:10.1007/s00127-008-0382-5.  
7  
8  
9  
10  
11  
12 18. Odegaard O. Emigration and insanity: a study of mental disease among Norwegian-born  
13 population in Minnesota. *Acta Psychiatrica Et Neurologica Scandinavia* 1932;**7**:1-206.  
14  
15  
16  
17 19. Selten JP, Cantor-Graae E, Slaets J, et al. Odegaard's selection hypothesis revisited:  
18 schizophrenia in Surinamese immigrants to The Netherlands. *Am J Psychiatry* 2002;**159**:669-  
19 71.  
20  
21  
22  
23  
24 20. Morgan C, Charalambides M, Hutchinson G, et al. Migration, ethnicity, and psychosis:  
25 toward a sociodevelopmental model. *Schizophr Bull* 2010;**36**:655-64  
26 doi:10.1093/schbul/sbq051.  
27  
28  
29  
30  
31 21. Janssen I, Hanssen M, Bak M, et al. Discrimination and delusional ideation. *Br J*  
32 *Psychiatry* 2003;**182**:71-6.  
33  
34  
35  
36  
37 22. Veling W, Selten JP, Susser E, et al. Discrimination and the incidence of psychotic  
38 disorders among ethnic minorities in The Netherlands. *Int J Epidemiol* 2007;**36**:761-8  
39 doi:10.1093/ije/dym085.  
40  
41  
42  
43  
44 23. Karlsen S, Nazroo JY, McKenzie K, et al. Racism, psychosis and common mental  
45 disorder among ethnic minority groups in England. *Psychol Med* 2005;**35**:1795-803  
46 doi:10.1017/S0033291705005830.  
47  
48  
49  
50  
51 24. van Dijk TK, Agyemang C, de Wit M, et al. The relationship between perceived  
52 discrimination and depressive symptoms among young Turkish-Dutch and Moroccan-Dutch.  
53 *Eur J Public Health* 2011;**21**:477-83 doi:10.1093/eurpub/ckq093.  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 25. Wamala S, Bostrom G, Nyqvist K. Perceived discrimination and psychological distress in  
4  
5 Sweden. *Br J Psychiatry* 2007;**190**:75-6 doi:10.1192/bjp.bp.105.021188.  
6  
7
- 8 26. Gee GC, Spencer M, Chen J, et al. The association between self-reported racial  
9  
10 discrimination and 12-month DSM-IV mental disorders among Asian Americans nationwide.  
11  
12 *Soc Sci Med* 2007;**64**:1984-96 doi:10.1016/j.socscimed.2007.02.013.  
13  
14
- 15 27. Cantor-Graae E. The contribution of social factors to the development of schizophrenia: a  
16  
17 review of recent findings. *Can J Psychiatry* 2007;**52**:277-86.  
18  
19
- 20 28. Kuo BC, Chong V, Joseph J. Depression and its psychosocial correlates among older  
21  
22 Asian immigrants in North America: a critical review of two decades' research. *J Aging*  
23  
24 *Health* 2008;**20**:615-52.  
25  
26
- 27 29. Gilbert P, Allan S. The role of defeat and entrapment (arrested flight) in depression: an  
28  
29 exploration of an evolutionary view. *Psychol Med* 1998;**28**:585-98.  
30  
31
- 32 30. Veling W, Hoek H, Selten J, et al. Age at migration and future risk of psychotic disorders  
33  
34 among immigrants in the Netherlands: a 7-year incidence study. *Am J Psychiatry*  
35  
36 2011;**168**:1278-85 doi:10.1176/appi.ajp.2011.11010110.  
37  
38
- 39 31. Shaw RJ, Atkin K, Bécaries L, et al. Impact of ethnic density on adult mental disorders:  
40  
41 narrative review. *The British Journal of Psychiatry* 2012;**201**:11-9  
42  
43 doi:10.1192/bjp.bp.110.083675.  
44  
45
- 46 32. Raad voor de Volksgezondheid en Zorg, Trimbos-instituut. Allochtone cliënten en  
47  
48 geestelijke gezondheidszorg (achtergrondstudie bij Interculturalisatie van  
49  
50 de gezondheidszorg). ; 2000. Report No.: 99/22.  
51  
52
- 53 33. Verheggen PP, Moha AA, Gomes C, Romer R. 'Beraken van Nieuwe  
54  
55 Nederlanders'; Bereik van cultuurgebonden media. ; 2007. Report No.: L1166.  
56  
57  
58  
59  
60

- 1  
2  
3 34. Available at: <http://www.urbanconnect.nl/index.php?nav=static&pagina=Marokko.nl>.  
4  
5  
6 35. van de Beek MH, van der Krieke L, Schoevers RA. Online mental health platform for  
7 moroccan-dutch in the Netherlands. *Psychiatr Serv* 2013;**64**:1178  
8  
9 doi:10.1176/appi.ps.6401102; 10.1176/appi.ps.6401102.  
10  
11  
12  
13 36. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population  
14 prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;**32**:959-76.  
15  
16  
17  
18 37. Donker T, Comijs H, Cuijpers P, et al. The validity of the Dutch K10 and extended K10  
19 screening scales for depressive and anxiety disorders. *Psychiatry Res* 2010;**176**:45-50  
20  
21 doi:10.1016/j.psychres.2009.01.012.  
22  
23  
24  
25 38. Donker T, van Straten A, Marks I, et al. Brief self-rated screening for depression on the  
26 Internet. *J Affect Disord* 2010;**122**:253-9 doi:10.1016/j.jad.2009.07.013.  
27  
28  
29  
30  
31 39. Fassaert T, De Wit MA, Tuinebreijer WC, et al. Psychometric properties of an  
32 interviewer-administered version of the Kessler Psychological Distress scale (K10) among  
33 Dutch, Moroccan and Turkish respondents. *Int J Methods Psychiatr Res* 2009;**18**:159-68  
34  
35  
36  
37 doi:10.1002/mpr.288.  
38  
39  
40 40. Loewy RL, Bearden CE, Johnson JK, et al. The prodromal questionnaire (PQ):  
41 Preliminary validation of a self-report screening measure for prodromal and psychotic  
42 syndromes. *Schizophr Res* 2005;**79**:117-25.  
43  
44  
45  
46  
47 41. Ising HK, Veling W, Loewy RL, et al. The validity of the 16-item version of the  
48 Prodromal Questionnaire (PQ-16) to screen for ultra high risk of developing psychosis in the  
49 general help-seeking population. *Schizophr Bull* 2012;**38**:1288-96 doi:10.1093/schbul/sbs068;  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 42. Rietdijk J, Dragt S, Klaassen R, et al. A single blind randomized controlled trial of  
4  
5 cognitive behavioural therapy in a help-seeking population with an At Risk Mental State for  
6  
7 psychosis: the Dutch Early Detection and Intervention Evaluation (EDIE-NL) trial. *Trials*  
8  
9 2010;**11**:30,6215-11-30 doi:10.1186/1745-6215-11-30; 10.1186/1745-6215-11-30.  
10

11  
12 43. Rietdijk J, Klaassen R, Ising H, et al. Detection of people at risk of developing a first  
13  
14 psychosis: comparison of two recruitment strategies. *Acta Psychiatr Scand* 2012;**126**:21-30  
15  
16 doi:10.1111/j.1600-0447.2012.01839.x; 10.1111/j.1600-0447.2012.01839.x.  
17

18  
19 44. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health  
20  
21 correlates of perceived discrimination in the United States. *J Health Soc Behav* 1999;**40**:208-  
22  
23 30.  
24

25  
26 45. Krieger N, Smith K, Naishadham D, et al. Experiences of discrimination: validity and  
27  
28 reliability of a self-report measure for population health research on racism and health. *Soc*  
29  
30 *Sci Med* 2005;**61**:1576-96 doi:10.1016/j.socscimed.2005.03.006.  
31  
32

33  
34 46. Williams DR, Yan Yu, Jackson JS, et al. Racial Differences in Physical and Mental  
35  
36 Health. *Journal of Health Psychology* 1997;**2**:335-51 doi:10.1177/135910539700200305.  
37

38  
39 47. Bastos JL, Celeste RK, Faerstein E, et al. Racial discrimination and health: A systematic  
40  
41 review of scales with a focus on their psychometric properties. *Soc Sci Med* 2010;**70**:1091-9  
42  
43 doi:10.1016/j.socscimed.2009.12.020.  
44

45  
46 48. Selten JP, Havenaar JM. Migratie en Niet-Affectieve Psychose; Add-on study bij protocol  
47  
48 "kwetsbaarheid en veerkracht bij niet-affectieve psychose"; 2004.  
49

50  
51 49. Dowrick C, Casey P, Dalgard O, et al. Outcomes of Depression International Network  
52  
53 (ODIN). Background, methods and field trials. ODIN Group. *Br J Psychiatry* 1998;**172**:359-  
54  
55 63.  
56  
57  
58  
59  
60



- 1  
2  
3 50. Dalgard OS, Thapa SB, Hauff E, et al. Immigration, lack of control and psychological  
4 distress: findings from the Oslo Health Study. *Scand J Psychol* 2006;**47**:551-8  
5  
6 doi:10.1111/j.1467-9450.2006.00546.x.  
7  
8  
9  
10 51. Syed H, Dalgard O, Dalen I, et al. Psychosocial factors and distress: a comparison  
11 between ethnic Norwegians and ethnic Pakistanis in Oslo, Norway. *BMC Public Health*  
12 2006;**6**:182- doi:10.1186/1471-2458-6-182.  
13  
14  
15  
16  
17 52. Meltzer H. Development of a common instrument for mental health. In: Nosikov A,  
18 Gudex C, editors. EUROHIS: Developing Common instruments for Health Surveys  
19 Amsterdam: IOS Press; 2003.  
20  
21  
22  
23  
24 53. Taylor PJ, Gooding P, Wood AM, et al. The role of defeat and entrapment in depression,  
25 anxiety, and suicide. *Psychol Bull* 2011;**137**:391-420 doi:10.1037/a0022935.  
26  
27  
28  
29  
30 54. Available at: [www.qualtrics.com](http://www.qualtrics.com).  
31  
32  
33 55. Hite K. Qualtrics Security White Paper, Why should I trust Qualtrics with my sensitive  
34 data? ; 2011. Report No.: version 2.0.  
35  
36  
37  
38 56. Wright KB. Researching Internet-based populations: Advantages and disadvantages of  
39 online survey research, online questionnaire authoring software packages, and web survey  
40 services. *Journal of Computer-Mediated Communication* 2006;**10**:00 doi:10.1111/j.1083-  
41 6101.2005.tb00259.x.  
42  
43  
44  
45  
46  
47 57. Ekman A, Litton JE. New times, new needs; e-epidemiology. *Eur J Epidemiol*  
48 2007;**22**:285-92 doi:10.1007/s10654-007-9119-0.  
49  
50  
51  
52  
53 58. van Gelder MM, Bretveld RW, Roeleveld N. Web-based questionnaires: the future in  
54 epidemiology?. *Am J Epidemiol* 2010;**172**:1292-8 doi:10.1093/aje/kwq291.  
55  
56  
57  
58  
59  
60

1  
2  
3 59. Rhodes SD, Bowie DA, Hergenrather KC. Collecting behavioural data using the world  
4 wide web: considerations for researchers. *Journal of Epidemiology and Community Health*  
5 2003;**57**:68-73 doi:10.1136/jech.57.1.68.  
6  
7  
8

9  
10 60. Van Selm M, Jankowski N. Conducting Online Surveys. *Quality & Quantity*  
11 2006;**40**:435-56 doi:10.1007/s11135-005-8081-8.  
12  
13

14  
15 61. Topp L, Barker B, Degenhardt L. The external validity of results derived from ecstasy  
16 users recruited using purposive sampling strategies. *Drug Alcohol Depend* 2004;**73**:33-40  
17 doi:10.1016/j.drugalcdep.2003.09.001.  
18  
19  
20

21  
22 62. Miller PG, Johnston J, Dunn M, et al. Comparing Probability and Non-Probability  
23 Sampling Methods in Ecstasy Research: Implications for the Internet as a Research Tool.  
24 *Subst use Misuse* 2010;**45**:437-50 doi:10.3109/10826080903452470.  
25  
26  
27

28  
29 63. Feild L, Pruchno RA, Bewley J, et al. Using Probability vs. Nonprobability Sampling to  
30 Identify Hard-to-Access Participants for Health-Related Research. *Journal of Aging and*  
31 *Health* 2006;**18**:565-83 doi:10.1177/0898264306291420.  
32  
33  
34  
35  
36  
37  
38  
39

## 40 **Figure Legends**

41  
42  
43  
44  
45 *Figure 1, online environment of the study*  
46  
47  
48  
49

50  
51 *Figure 2, recruitment strategy and survey design*  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 **Migrants Examined for Determinants of psychopathology through INternet**  
4  
5 **Assessment (MEDINA) study: a cross-sectional study among visitors of an**  
6  
7 **Internet community**  
8

9  
10 Madelien van de Beek, Lian van der Krieke, Robert Schoevers

11  
12  
13  
14 Madelien Hermina van de Beek (MD) (**corresponding author**)

15  
16 University of Groningen, University Medical Center Groningen,

17  
18 Department of Psychiatry, Groningen, the Netherlands

19  
20 Hanzeplein 1, Entrance 24, Room kn1.14a

21  
22 P.O. Box 30.001, 9700 RB Groningen

23  
24 Email: [m.vandebeek@dimence.nl](mailto:m.vandebeek@dimence.nl)

25  
26 Telephone: +31-6-19408029  
27  
28  
29  
30  
31

32 Lian van der Krieke (MSc)

33  
34 University of Groningen, University Medical Center Groningen,

35  
36 Department of Psychiatry, Groningen, the Netherlands

37  
38 Email: [j.a.j.van.der.krieke@umcg.nl](mailto:j.a.j.van.der.krieke@umcg.nl)  
39  
40  
41  
42

43 Prof. Robert Anton Schoevers (MD, PhD)

44  
45 University of Groningen, University Medical Center Groningen,

46  
47 Department of Psychiatry, Groningen, the Netherlands

48  
49 Email: [r.a.schoevers@umcg.nl](mailto:r.a.schoevers@umcg.nl)  
50  
51  
52

53 **Keywords:** migrants, psychopathology, social environment, Internet

54  
55 **Word count:** 3692  
56  
57  
58  
59  
60

## ABSTRACT

### *Introduction*

Migration is a risk factor for the onset of psychopathology. A range of social factors may play a role in the aetiology of psychiatric disorders in migrants. A better understanding of these associations is needed to develop preventive interventions to reduce the disease burden in the migrant population. Research among minority groups is generally time-consuming and it is difficult to recruit participants. Internet can offer interesting new possibilities to conduct research among ethnic minorities. This paper describes the design of an epidemiological study in the Moroccan-Dutch population, which will be entirely performed online. We investigate the association between social factors and psychopathology.

### *Methods and analysis*

The website Marokko.nl is visited by 70% of the young Moroccan-Dutch population in the Netherlands. This website therefore provides a unique possibility for research within this population. We will conduct a survey with online questionnaires via this website. The online survey consists of several validated short self-report questionnaires, measuring depressive and anxiety symptoms (K10), psychotic symptoms (PQ-16), and instruments measuring discrimination, social support and social defeat. Furthermore, demographic characteristics are collected. We will use univariate and multivariate methods for analysing the data.

### *Ethics and dissemination*

The local Medical Ethical Committee have assessed the study protocol and judged that the study could be conducted without their approval. Knowledge dissemination

1  
2  
3 will take place through peer-reviewed publication in scientific journals as well as  
4  
5 publication for participants on the project website.  
6

### 7 8 *Discussion*

9  
10 In this study we further explore the association between psychopathology and social  
11 factors within an online Moroccan-Dutch sample. The recruitment of participants via  
12 the website Marokko.nl creates a big advantage in collecting a large sample of a  
13 specific migrant population. Strengths and limitations of the methodology are  
14 discussed. Furthermore, we review the advantages and challenges of online  
15 epidemiological research methods.  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

### 27 **Strengths and limitations of this study**

#### 28 *Strengths*

- 29  
30  
31  
32 - This study uses a novel methodology, in which recruitment and data collection  
33 is performed entirely online.  
34  
35  
36 - The use of the Internet creates the opportunity to recruit many Moroccan-  
37 Dutch migrants, a population which is otherwise difficult to reach for research.  
38  
39 - We collaborate with the gatekeepers of the website Marokko.nl, which is  
40 visited by 70% of the young Moroccan-Dutch population in the Netherlands.  
41  
42  
43  
44  
45  
46

#### 47 *Limitations*

- 48  
49 - Because of Internet recruitment, we collect a convenience sample, with the  
50 risk of selection bias.  
51  
52  
53 - Due to the cross-sectional design, we cannot determine the direction of  
54 associations between variables that we investigate.  
55  
56  
57  
58  
59  
60

## INTRODUCTION

Across countries and cultures, migration is a risk factor for the development of psychopathology.<sup>1</sup> Psychiatric disorders are heterogeneous and they develop as a result of the interplay between a range of genetic and environmental influences.<sup>2-4</sup> Gaining a better understanding of the aetiology of psychopathology, and especially of modifiable risk factors that are associated with its development, is essential because this can lead us to preventive interventions. In migrants, some aetiological risk factors remain unchanged (e.g. genetic factors) whereas others (e.g. environmental factors) may change as a result of migration. Studying the development of psychopathology in migrant populations may further increase our understanding of the role of these risk factors.<sup>5</sup>

Currently available evidence suggests that the association between migration and psychopathology is strongest for psychotic disorders. Two meta-analyses found that the relative risk for developing schizophrenia was significantly higher in the migrant population compared to the native population.<sup>6,7</sup> Interestingly, the relative risk for developing schizophrenia greatly differed between migrant subgroups, and was as high as 4.5 for second-generation migrants and 4.8 in black ethnic groups.<sup>7-9</sup> For mood disorders, Swinnen *et al.* found a relative risk of 1.38 (95% CI 1.17-1.62) for migrants in a meta-analysis covering 14 studies (2 on depressive disorder, 5 on bipolar disorder and 9 on mood disorders on unspecified polarity).<sup>10</sup> Since then, other studies have confirmed the increased prevalence of depressive symptoms in migrant populations.<sup>11,12</sup> A recent study by Cantor-Graae *et al.* has shown increased incidence risk ratios for all psychiatric disorders in foreign-born adoptees and second generation migrants having one foreign born parents. However, for first generation and second-

1  
2  
3 generation migrants with two foreign-born parents, the risk was only increased for  
4  
5 schizophrenia.<sup>1</sup>  
6

7  
8 Variation in the incidence of psychopathology between different ethnic groups has  
9  
10 also been shown in the Netherlands, where the present study is situated. In 2012, the  
11  
12 largest migrant groups in the Netherlands (16.7 million inhabitants) originated from  
13  
14 Turkey (392,923; 2.3% of the total population), Morocco (362,954; 2.2% of the total  
15  
16 population), Surinam (346,797; 2.1% of the total population), and the Dutch Antilles  
17  
18 (143,992; 0.9% of the total population).<sup>13</sup> For schizophrenia, the incidence was  
19  
20 increased in most of the different migrant groups in the Netherlands compared to the  
21  
22 overall population, but not in all. The incidence of schizophrenia appeared to be  
23  
24 highest in the second-generation Moroccan-Dutch inhabitants.<sup>14, 15</sup> Furthermore, a  
25  
26 Dutch study has shown that incidence and prevalence rates for mood disorders are  
27  
28 highest among Turkish migrants (Relative Risk 4.9), followed by Moroccan migrants  
29  
30 (RR 3.6) and Surinamese migrants (RR 1.8), while the rates in Western-European  
31  
32 migrants were comparable to the general Dutch population.<sup>16</sup> These findings replicate  
33  
34 the results from a previous Dutch study.<sup>17</sup>  
35  
36  
37  
38  
39

#### 40 41 **Possible explanations**

42  
43 Although migrants are at increased risk to develop psychopathology, the explanation  
44  
45 for this association is still largely unknown. Previously, it was hypothesized that the  
46  
47 disorder itself would be a factor in migration, because especially schizophrenia and  
48  
49 bipolar patients were believed to be more restless and rootless and therefore more  
50  
51 inclined to migrate. This 'selective migration' hypothesis was first suggested by  
52  
53 Ødegaard *et al.* in 1932<sup>18</sup> but is now generally discarded, as scientific evidence cannot  
54  
55 support it.<sup>19, 20</sup> An example of an argument against the selective migration theory is  
56  
57  
58  
59  
60

1  
2  
3 the fact that the incidence of schizophrenia in second-generation migrants is  
4 substantially higher compared to their parents from the first generation. This  
5 phenomenon points to the importance of post-migration factors or, in other words,  
6 (social) factors in the country of destination.<sup>6</sup> Social factors that are frequently  
7 suggested to be associated with psychopathology in migrants are (among others):  
8 discrimination, lack of social support and social defeat. Discrimination was associated  
9 with psychotic symptoms in several studies.<sup>21-23</sup> Also in mood disorders, an  
10 association with discrimination was found.<sup>23-26</sup> Lack of social support or isolation was  
11 found to be associated with psychopathology in several studies.<sup>27,28</sup> In the original  
12 article by Gilbert *et al.* in 1998, the concept of social defeat, or “being in a  
13 subordinate position”<sup>9</sup> was associated with depression.<sup>29</sup> Social defeat has also been  
14 hypothesized as an etiological factor for developing schizophrenia in migrant  
15 populations.<sup>9</sup> Discrimination, social support and social defeat are variables we will  
16 measure in this study. Furthermore, associations between demographic variables and  
17 increased risk for psychopathology in migrants have also been found. As an example,  
18 younger age at migration was a risk factor for psychosis in a Dutch study.<sup>30</sup> In a  
19 systematic review, Shaw *et al.* found that lower density of the ethnic minority  
20 population in the neighbourhood was associated with higher risk of psychopathology.  
21 This effect was most consistently found for psychosis and only tentative for other  
22 mental disorders, due to heterogeneity and limited statistical power of the studies  
23 examined.<sup>31</sup>

### 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

#### **Aims of the current study**

In the current study, we want to further explore the relationship between migration and psychopathology, concentrating on social factors. We aim to investigate the



1  
2  
3 associations between psychotic symptoms and mood symptoms on the one hand and  
4  
5 discrimination, social defeat, and social support on the other. As the association  
6  
7 between social factors and psychopathology may be subgroup-specific, we focus on  
8  
9 one ethnic group: the Moroccan-Dutch population. This population is relatively hard  
10  
11 to reach for researchers and mental health care workers. A previous population-based  
12  
13 study in several ethnic groups in the Netherlands reported response rates of 30.2% for  
14  
15 Dutch participants compared to 20.8% for Moroccan-Dutch participants.<sup>17</sup> A research  
16  
17 report of the Dutch government in the year 2000 states that Moroccan-Dutch patients  
18  
19 are underrepresented in the mental health care system.<sup>32</sup> However, since the majority  
20  
21 of young Moroccan-Dutch individuals actively visit the website Marokko.nl, we have  
22  
23 a unique opportunity to reach this population.  
24  
25  
26  
27  
28  
29

## 30 METHODS AND ANALYSIS

31  
32 We will conduct an online survey in a cross-sectional convenience sample of the  
33  
34 Moroccan-Dutch population, using a combination of several self-report  
35  
36 questionnaires. The survey will run from 15-11-2012 to 1-5-2014.

37  
38 *Our research questions are the following:*

- 39  
40  
41 1. How often are symptoms of depression and psychosis reported in a cross  
42  
43 sectional sample of young (age 18-35) Moroccan-Dutch participants,  
44  
45 measured by self-administered screening questionnaires?
- 46  
47  
48 2. Which environmental factors of stress or strain do the Moroccan-Dutch  
49  
50 participants report, thereby specifically focusing on social factors such as  
51  
52 discrimination, social defeat and social support?
- 53  
54  
55 3. What is the association between the symptoms of psychopathology and the  
56  
57 reported social factors?  
58  
59  
60

## Setting

We will recruit participants at a unique website, which is visited by the majority of Moroccan-Dutch adolescents: [www.marokko.nl](http://www.marokko.nl). This website exists for over ten years. Of all young Moroccan-Dutch people (age 15-35) in the Netherlands 70% visit this website regularly, of whom 33% visits the website weekly.<sup>33, 34</sup> Marokko.nl is serving as a national forum board, where everybody can start a discussion and respond to it. With some exceptions, the language in these discussions is Dutch.

Discussions are moderated by a trained team of (mostly Moroccan-Dutch) moderators who make sure the website regulations are respected. Only visitors with an account can contribute to the discussion. To set up an account, one has to create a pseudonym and answer some questions about gender and age. This pseudonym is shown when creating or replying to a discussion. Also, the account is connected to a personal email box; this “personal message” system is available within the site. Because the pseudonyms guarantee anonymity, members feel free to share very personal information in the forum discussions. This includes personal information about sensitive topics like sickness and health, (arranged) marriages, pregnancy and abortion. Although mental health problems are generally a taboo in the Moroccan-Dutch population, on this website many discussions cover this subject. Apparently, there is a need for a platform to discuss these issues in this community.

Despite their need for discussing mental health issues, the Moroccan-Dutch population is underrepresented in preventive programs in mental health care. On the Marokko.nl website, psychiatric problems are discussed, but no professional help is offered. In 2012, we therefore created an add-on to the website about mental health. This mental health domain of Marokko.nl is called [www.ziekofbezeten.marokko.nl](http://www.ziekofbezeten.marokko.nl)

1  
2  
3 (“ziek of bezeten” means: being ill or being possessed). Within this domain, we  
4  
5 supply information about psychiatric disorders, self-tests for depression and substance  
6  
7 use, and email and chat contact with mental health care workers or specially trained  
8  
9 Imams.<sup>35</sup> Our research survey is nested within ziekoftbezeten.nl. For a schematic  
10  
11 overview of the online environment see figure 1.  
12  
13

### 14 15 16 **Participants & recruitment**

17  
18 The participants in this study will be recruited from the Moroccan-Dutch population.  
19

20  
21 Inclusion criteria for this study are:

- 22 - At least one of the parents is born in Morocco
- 23 - Having sufficient knowledge of the Dutch language
- 24 - Having internet access and being a visitor the website marokko.nl

25  
26  
27  
28  
29  
30 Exclusion criteria are:

- 31 - Age younger than 18 years

32  
33  
34 Recruitment takes places online, using the website Marokko.nl. We will recruit  
35  
36 participants in several ways, which are listed below and are shown in Figure 2. There  
37  
38 are three main recruitment routes that lead participants to our survey:  
39

- 40 1. Advertisement via banners on Marokko.nl.
- 41  
42 2. Via an invitation at the end of a depression self-test on the  
43 ziekoftbezeten.marokko.nl domain: after filling out the depression self-test,  
44  
45 people will be asked to participate in the survey.  
46  
47
- 48 3. In several places on the website ziekoftbezeten.nl, visitors who are interested in  
49  
50 participating in the study, have the opportunity to “opt-in” for research and  
51  
52 leave an e-mail address.  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Should these recruitment routes not result into a sufficient number of participants,  
4  
5 additional forms of recruitment can be deployed:  
6

- 7 - Via the “personal message” function (a marokko.nl linked email service), a  
8 random subset of the registered users can be asked to participate.  
9
- 10 - Contributors of several relevant forum discussions can be approached via  
11 “personal message” and asked to participate.  
12
- 13 - Location of the advertisement of the study can be customized. When for  
14 example more women than men are included, the study can specifically be  
15 advertised on parts of the website where men are active.  
16  
17  
18  
19  
20  
21

22 We will track the route via which participants were recruited (anonymously), so that  
23 we can analyse the various recruitment strategies and compare the participant  
24 characteristics between these recruitment strategies.  
25  
26  
27  
28  
29  
30  
31

### 32 **Procedure**

33 After inclusion, participants will be asked to fill out an online survey. The first  
34 webpage will contain information about the study and informed consent. When  
35 informed consent is given, the next page will show the survey. The survey consists of  
36 questions about depressive and psychotic symptoms, discrimination, social defeat,  
37 social support, and baseline demographics. Completing all questions will take  
38 approximately 10 minutes. Furthermore, we will ask the participants if we can  
39 approach them for further research at a later time. The last page will provide  
40 participants feedback on the questionnaires they filled out. When scores for  
41 psychopathology are high, the advice to contact the general practitioner will be given  
42 and addresses of mental health care organisations are provided.  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Measurements & Instruments

We will ask for demographic variables, as listed in table 1. As a measurement of ethnic density, we ask for the first 4 digits of the postal code, which provides us with enough information to connect to a certain area or neighbourhood without conflicting with the participants' anonymity.

*Table 1, Demographic variables*

Demographic variables	Operationalization
Age	Years
Gender	Male/female
Ethnicity	Country of birth, country of birth parents
Age of migration	If applicable
Ethnic density	Postal code (first 4 figures)
Previous mental health care	If yes: diagnosis
Previous/current medication	(free text words)
Social economic status	Income
Education	(free text words)
Religion	How important is religion for you? (Likert scale)
Substance use	First 3 questions of the Drug Use Disorders Identification Test (DUDIT) + question on kind of substance used

The main part of our online survey consists of a combination of 5 short questionnaires measuring psychopathology and social factors, which are listed in table 2. The questionnaires are further described below. Table 3 shows an example of questions for each questionnaire.

*Table 2, questionnaires*

Trait	Questionnaire	Items	Time
Depressive symptoms	K10	10	2 min
Psychotic symptoms	PQ-16	16	2 min
Discrimination	Discrimination scale	22	2 min
Social defeat	Social defeat scale	16	3 min
Social support	Oslo social support questionnaire	3	1 min
<b>Total time (including demographics):</b>			<b>10 min.</b>

Table 3, question examples

Questionnaire	Question example	Scale
<b>K10</b>	During the last month, how often did you feel tired out for no good reason?	0 – not at all ... 4 – always
<b>PQ-16</b>	I have seen things that other people apparently can't see.	True – Untrue
<b>Discrimination scale</b>	How often do you experience one of the following types of discrimination: You are being scoffed at or threatened.	0 – never ... 3 – often
<b>Social defeat scale</b>	I feel that I have not made it in life	0 – not at all ... 4 – always
<b>Oslo social support questionnaire</b>	How many people are so close to you that you can count on them if you have serious personal problems?	0 – none ... 4 – six or more

### *Psychopathology – Mood symptoms*

The Kessler Psychological Distress Scale (K10)<sup>36</sup> is a short questionnaire measuring mood and anxiety symptoms. It contains 10 items on a 5-point likert scale. This scale has previously been tested for the validity in the Dutch language<sup>37</sup> and for online self-administration.<sup>38</sup> Furthermore, it has previously been used in a migrant population in the Netherlands.<sup>39</sup>

### *Psychopathology – Psychotic symptoms*

The Prodromal Questionnaire-16 (PQ-16) is a short version of the Prodromal Questionnaire.<sup>40</sup> It is a self-report screening instrument for psychosis risk, with 16 true/false statements. The instrument has been developed and tested for validity in the Dutch language.<sup>41</sup> **Although this instrument has not been specifically validated in Moroccan-Dutch participants, the sample in which it has been studied in previous research was ethnically diverse.**<sup>42, 43</sup>

### *Social factors – perceived discrimination*

1  
2  
3 Discrimination is measured with a combination of two subscales: the ‘everyday  
4 discrimination scale’ and the ‘major experiences of discrimination scale’<sup>44-46</sup> The  
5 instrument showed adequate results in the appraisal of a review by Bastos *et al.*<sup>47</sup> The  
6 translation we use is previously used in the Dutch MIGROUP study (an add-on  
7 protocol to the GROUP-study).<sup>48</sup>  
8  
9

#### 10 11 12 13 14 15 16 *Social factors – social support*

17 The Oslo Social Support Questionnaire was designed by Dalgard *et al.*<sup>49-51</sup> It consists  
18 of only three questions and was the instrument of choice for social support on an  
19 expert meeting where common instruments for mental disorders for European  
20 population studies were chosen, called “EUROHIS”.<sup>52</sup> A Dutch translation of the  
21 instrument is available.  
22  
23  
24  
25  
26  
27  
28

#### 29 30 31 32 *Social factors – social defeat*

33 The most widely used instrument for measuring social defeat is the Social Defeat  
34 Scale, designed by Gilbert *et al.*<sup>29, 53</sup> It is a 16 item self-report scale. This instrument  
35 was also included in the MIGROUP protocol<sup>48</sup> and therefore available in Dutch.  
36  
37  
38  
39  
40  
41  
42

#### 43 **Sample size calculation**

44 We based the power calculations on two associations we are investigating in our  
45 study: 1. The association between discrimination and depression; 2. The association  
46 between discrimination and psychosis.  
47  
48  
49  
50

- 51 1. The power calculation for the association between depression and  
52 discrimination is based on the study by Van Dijk *et al.*<sup>24</sup> In this study, around  
53 50% of 153 Moroccan-Dutch and 199 Turkish-Dutch participants experienced  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 discrimination. In order to be able to detect an association with an effect size  
4 measured as an Odds Ratio of at least 2, the sample size per group (with and  
5 without discrimination) is 182. Based on this association, inclusion should  
6 reach a minimum of 400 participants.  
7  
8

- 9  
10  
11 2. Power calculation for detecting the association between perceived  
12 discrimination and psychotic symptoms (delusional hallucination) was based  
13 on Janssen *et al.*<sup>21</sup> This study differs from our study because it has a  
14 longitudinal design and it also includes Dutch inhabitants, not only migrants.  
15 The similarity between both studies is that they both take place in the general  
16 (healthy) population. Based on this study, for an  $\alpha=0.05$  (two-sided 0.025)  
17 and  $\beta=0.20$  (Power 80%) to detect an association with an Odds Ratio of at  
18 least 2, N had to be at least over 864 participants.  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

29 Based on the power calculation for the association between discrimination and  
30 psychosis, we aim to include 1000 participants.  
31  
32  
33  
34  
35

### 36 **Data analysis**

#### 37 *Descriptive statistics*

38  
39  
40 We will describe the socio-demographic variables in our sample and will compare  
41 them with those of other studies on psychopathology with Moroccan-Dutch  
42 participants. We will investigate the association between social factors (independent  
43 variables) and psychopathology (dependent variable) and we correct for relevant  
44 social-demographic variables (confounding variables). The dependent variable  
45 psychopathology will be divided into psychotic symptoms and psychological distress  
46 (depressive and anxiety symptoms). Using cut-off scores for the specific  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 questionnaires, we consider psychopathology as a binary variable (yes/no psychotic  
4  
5 disorder; yes/no psychological distress)  
6  
7

### 8 9 *Univariate analysis*

10 Association between social factors and psychopathology will first be described in  
11  
12 percentages, subdivided by socio-demographic variables (e.g. gender, age, socio-  
13  
14 economic status, ethnicity). We will use Chi-square test for categorical and t-tests for  
15  
16 continuous variables to identify significant associations between these variables. We  
17  
18 will take gender differences in our sample into account in our analysis, since previous  
19  
20 studies in the Moroccan-Dutch population have shown large differences in  
21  
22 psychopathology rates between men en women.<sup>14, 17</sup>  
23  
24  
25  
26  
27  
28

### 29 *Multivariate analysis*

30 After univariate analysis, we will use a regression model (possibly Poisson  
31  
32 regression) to investigate the association between psychopathology and the social  
33  
34 factors, correcting for confounders. The exact regression model we will choose is  
35  
36 partly dependent on the incidence of psychopathology in our sample. We consider the  
37  
38 Poisson regression model, because we expect that the occurrence of psychopathology  
39  
40 will not be high in our non-clinical sample.  
41  
42  
43  
44  
45  
46

## 47 **ETHICS AND DISSEMINATION**

### 48 **Informed consent and data security**

49  
50 When entering the survey, participants are asked for informed consent. They can give  
51  
52 their consent by checking a box. In addition, participants will be asked to check a box  
53  
54 to confirm that his or her age is above 18. When both boxes are checked, participants  
55  
56  
57  
58  
59  
60

1  
2  
3 can click on 'next' and the first page of survey is displayed. A unique research  
4  
5 identification number will then be created for each participant, which is used for data  
6  
7 filing and handling. All recorded personal information (like pseudonym on the  
8  
9 website, name or email address) will be coded. IP-addresses will not be recorded.  
10  
11 For the online questionnaire, we use the service of Qualtrics.<sup>54</sup> In this online service,  
12  
13 we can design the entire survey and link it to the ziekofbezeten-domain of Marokko.nl  
14  
15 (so it can be opened from this website). They guarantee good safety measurements for  
16  
17 data storage and handling. For online data transport, the safety is comparable with  
18  
19 Internet banking. The researchers remain owner of the data and can download it for  
20  
21 analysis. The user-account of the researcher is secured by username and password.<sup>55</sup>  
22  
23  
24  
25  
26

### 27 **Ethical considerations**

28  
29 The Medical Ethical Committee of the UMCG have assessed the study protocol and  
30  
31 judged that the study could be conducted without their approval.  
32  
33  
34  
35

### 36 **Dissemination**

37  
38 We aim to present the study results at conferences and in one or more scientific  
39  
40 publications in peer-reviewed journals. After publication, results of the study will also  
41  
42 be published on ziekofbezeten.nl, to inform study participants and other interested  
43  
44 people about the results.  
45  
46  
47  
48  
49

### 50 **DISCUSSION**

51  
52 This study protocol is a result of new possibilities the Internet creates for  
53  
54 epidemiological research. We describe an online survey in the Moroccan-Dutch  
55  
56 population, a target group that is hard to reach for researchers and health care workers  
57  
58  
59  
60

1  
2  
3 through traditional means, but which is very actively participating in a range of social  
4 exchanges on the website Marokko.nl. The methodology of online research is rather  
5 new in psychiatric epidemiology and has many advantages. Research within an online  
6 community offers the possibility to reach large numbers of the study population with  
7 relatively simple means at affordable costs.<sup>56,57</sup> Online questionnaires have a more  
8 structured format, therefore reducing the risk of skipping questions or making  
9 errors by the participants.<sup>58</sup> Questions can be customised, based on previous answers,  
10 saving time for the participant. Furthermore, there is no data entry by the researcher,  
11 which saves time and reduces data entry errors.<sup>59</sup> Like in our study, online recruitment  
12 can provide unique access to groups that are otherwise difficult to reach.<sup>56,59,60</sup>  
13  
14 An important aspect in this study is that it is designed in close collaboration with the  
15 Marokko.nl gatekeepers, who are familiar with or part of the Moroccan-Dutch target  
16 population. This enhances the survey design, reduces non-response and secures  
17 efficient recruitment strategies within the website.  
18  
19

20  
21 Although the Internet creates new and exciting possibilities in epidemiological  
22 research, there are also new challenges and possible limitations. With online research,  
23 recruiting a probability sample is difficult or even impossible and response rates  
24 cannot always be calculated.<sup>60</sup>  
25  
26

27  
28 In a non-probability or convenience sample, there is a possible risk of selection bias,  
29 which is one of the major limitations of our study. Recruitment via a convenience  
30 sample is entirely dependent of people who are willing to volunteer. Therefore, the  
31 probability that people who, for example, fear stigmatization are less likely to  
32 participate in research focusing on mental illness. However, this may be partly  
33 countered by the fact that the internet-survey allows participants to stay anonymous.  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 This is supported by the fact that mental illnesses are frequently and openly discussed  
4  
5 on Marokko.nl.  
6

7  
8 However, non-probability or convenience samples can also generate important  
9  
10 information. Two studies investigated ecstasy use with different sampling strategies to  
11  
12 compare probability versus non-probability samples.<sup>61, 62</sup> They concluded that the two  
13  
14 samples were to a great extent comparable in terms of demographic and drug use  
15  
16 characteristics. The samples differed slightly on employment status,<sup>61, 62</sup> recent use of  
17  
18 drugs other than ecstasy, and how the ecstasy was obtained.<sup>62</sup> The authors suggest that  
19  
20 the differences were due to different recruitment strategies. Another study used  
21  
22 probability and non-probability samples in a study of elderly patients with end stage  
23  
24 renal disease and their spouses. Although there were some differences on religion and  
25  
26 ethnicity, most demographic characteristics were comparable.<sup>63</sup> In our design, we  
27  
28 recruit a convenience sample within a well-described population of which the overall  
29  
30 size within the population is known. We will therefore be able to compare the  
31  
32 demographic characteristics in our sample with the characteristics of the entire  
33  
34 Moroccan Dutch population.  
35  
36

37  
38 An important limitation of our recruitment strategy is that people with psychological  
39  
40 complaints may be more interested in participating in the study, and may thus be  
41  
42 overrepresented. More specifically, recruitment via the depression self-test might  
43  
44 encourage people with depressive complaints to participate in particular. By using and  
45  
46 recording different recruitment methods (such as the depression self-test and  
47  
48 advertisement on Marokko.nl), we can investigate the effects of the recruitment  
49  
50 strategy on the outcome variables. Depending on these differences, we might need to  
51  
52 correct for it in our analyses.  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Another possible limitation is our use of a cross-sectional design, that may show  
4  
5 associations between variables, but does not reveal causal and temporal relations.  
6

7 However, the results of this study will serve as the basis for future research, in which  
8  
9 temporal relations can be more closely studied. We will ask participants' consent to  
10  
11 approach them at a later moment. We consider performing a follow-up measurement  
12  
13 with the same design and instruments. If we will be able to reach enough participants,  
14  
15 we can create a prospective cohort.  
16

17  
18 Using only self-report information could be another possible limitation of the study.  
19

20 We have no other source to check demographic variables, the notification of  
21  
22 symptoms and the absence or presence of social factors. This may lead to participants  
23  
24 exaggerating (or underreporting) their symptoms in order to see how this influences  
25  
26 the feedback they are given. However, earlier research suggests that the anonymity of  
27  
28 online self-report questionnaires can also result in more open and honest answers to  
29  
30 sensitive questions compared to questionnaires that are used by an interviewer,<sup>58-60</sup>  
31  
32 and there is no risk for interviewer bias.<sup>59</sup>  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

### **Acknowledgments**

We thank Lude Franke for his help in designing the figures.

### **Authors' contributions**

RS conceptualised and initiated the website ziekofbezeten. MvdB and RS designed the study. MvdB wrote the manuscript. LvdK and RS contributed to, and critically revised the manuscript. All authors read and approved the final version of the manuscript.

### **Funding**

The website ziekofbezeten.nl was built with financial support of the “Innovatiefonds Zorgverzekeraars”, the “Skanfonds” and “Stichting Voorzorg Utrecht”. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### **Competing interests**

None declared.

- 1  
2  
3 **REFERENCES** 1. Cantor-Graae E, Pedersen CB. Full spectrum of psychiatric disorders  
4 related to foreign migration: a danish population-based cohort study. *JAMA Psychiatry*  
5 2013;**70**:427-35 doi:10.1001/jamapsychiatry.2013.441; 10.1001/jamapsychiatry.2013.441.  
6  
7  
8  
9  
10 2. van Os J, Kenis G, Rutten BP. The environment and schizophrenia. *Nature* 2010;**468**:203-  
11 12 doi:10.1038/nature09563; 10.1038/nature09563.  
13  
14  
15 3. Wichers M, Schrijvers D, Geschwind N, et al. Mechanisms of gene-environment  
16 interactions in depression: evidence that genes potentiate multiple sources of adversity.  
17 *Psychol Med* 2009;**39**:1077-86 doi:10.1017/S0033291708004388;  
18 10.1017/S0033291708004388.  
19  
20  
21  
22  
23  
24 4. Kendler KS. The dappled nature of causes of psychiatric illness: replacing the organic-  
25 functional/hardware-software dichotomy with empirically based pluralism. *Mol Psychiatry*  
26 2012;**17**:377-88 doi:10.1038/mp.2011.182.  
27  
28  
29  
30  
31  
32 5. McGrath JJ, Lawlor DA. The search for modifiable risk factors for schizophrenia. *Am J*  
33 *Psychiatry* 2011;**168**:1235-8 doi:10.1176/appi.ajp.2011.11081300.  
34  
35  
36  
37 6. Bourque F, van der Ven E, Malla A. A meta-analysis of the risk for psychotic disorders  
38 among first- and second-generation immigrants. *Psychol Med* 2011;**41**:897-910  
39 doi:10.1017/S0033291710001406.  
40  
41  
42  
43  
44 7. Cantor-Graae E, Selten JP. Schizophrenia and migration: a meta-analysis and review. *Am J*  
45 *Psychiatry* 2005;**162**:12-24 doi:10.1176/appi.ajp.162.1.12.  
46  
47  
48  
49 8. Harrison G. Searching for the causes of schizophrenia: the role of migrant studies.  
50 *Schizophr Bull* 1990;**16**:663-71.  
51  
52  
53  
54 9. Selten JP, Cantor-Graae E. Social defeat: risk factor for schizophrenia?. *Br J Psychiatry*  
55 2005;**187**:101-2 doi:10.1192/bjp.187.2.101.  
56  
57  
58  
59  
60

- 1  
2  
3 10. Swinnen SG, Selten JP. Mood disorders and migration: meta-analysis. *Br J Psychiatry*  
4  
5 2007;**190**:6-10 doi:10.1192/bjp.bp.105.020800.  
6  
7  
8 11. Missinne S, Bracke P. Depressive symptoms among immigrants and ethnic minorities: a  
9  
10 population based study in 23 European countries. *Soc Psychiatry Psychiatr Epidemiol*  
11  
12 2012;**47**:97-109 doi:10.1007/s00127-010-0321-0.  
13  
14  
15 12. Levecque K, Lodewyckx I, Vranken J. Depression and generalised anxiety in the general  
16  
17 population in Belgium: a comparison between native and immigrant groups. *J Affect Disord*  
18  
19 2007;**97**:229-39 doi:10.1016/j.jad.2006.06.022.  
20  
21  
22 13. Available at:  
23  
24 <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=37325&D1=a&D2=0&D3=0&D4=0&D5=0-1,3,137,152,220,237&D6=l&HD=130312-1304&HDR=T&STB=G1,G2,G3,G4,G5>.  
25  
26  
27  
28  
29  
30  
31  
32 14. Selten JP, Sijben N. First admission rates for schizophrenia in immigrants to The  
33  
34 Netherlands. The Dutch National Register. *Soc Psychiatry Psychiatr Epidemiol* 1994;**29**:71-7.  
35  
36  
37 15. Veling W, Selten JP, Veen N, et al. Incidence of schizophrenia among ethnic minorities in  
38  
39 the Netherlands: a four-year first-contact study. *Schizophr Res* 2006;**86**:189-93  
40  
41 doi:10.1016/j.schres.2006.06.010.  
42  
43  
44 16. Selten JP, Laan W, Kupka R, et al. Risk of psychiatric treatment for mood disorders and  
45  
46 psychotic disorders among migrants and Dutch nationals in Utrecht, The Netherlands. *Soc*  
47  
48 *Psychiatry Psychiatr Epidemiol* 2012;**47**:271-8 doi:10.1007/s00127-010-0335-7;  
49  
50 10.1007/s00127-010-0335-7.  
51  
52  
53 17. de Wit MA, Tuinebreijer WC, Dekker J, et al. Depressive and anxiety disorders in  
54  
55 different ethnic groups: a population based study among native Dutch, and Turkish,  
56  
57  
58  
59  
60



- 1  
2  
3 Moroccan and Surinamese migrants in Amsterdam. *Soc Psychiatry Psychiatr Epidemiol*  
4 2008;**43**:905-12 doi:10.1007/s00127-008-0382-5.  
5  
6  
7  
8 18. Odegaard O. Emigration and insanity: a study of mental disease among Norwegian-born  
9 population in Minnesota. *Acta Psychiatrica Et Neurologica Scandinavia* 1932;**7**:1-206.  
10  
11  
12  
13 19. Selten JP, Cantor-Graae E, Slaets J, et al. Odegaard's selection hypothesis revisited:  
14 schizophrenia in Surinamese immigrants to The Netherlands. *Am J Psychiatry* 2002;**159**:669-  
15 71.  
16  
17  
18  
19  
20 20. Morgan C, Charalambides M, Hutchinson G, et al. Migration, ethnicity, and psychosis:  
21 toward a sociodevelopmental model. *Schizophr Bull* 2010;**36**:655-64  
22 doi:10.1093/schbul/sbq051.  
23  
24  
25  
26  
27  
28 21. Janssen I, Hanssen M, Bak M, et al. Discrimination and delusional ideation. *Br J*  
29 *Psychiatry* 2003;**182**:71-6.  
30  
31  
32  
33 22. Veling W, Selten JP, Susser E, et al. Discrimination and the incidence of psychotic  
34 disorders among ethnic minorities in The Netherlands. *Int J Epidemiol* 2007;**36**:761-8  
35 doi:10.1093/ije/dym085.  
36  
37  
38  
39  
40 23. Karlsen S, Nazroo JY, McKenzie K, et al. Racism, psychosis and common mental  
41 disorder among ethnic minority groups in England. *Psychol Med* 2005;**35**:1795-803  
42 doi:10.1017/S0033291705005830.  
43  
44  
45  
46  
47 24. van Dijk TK, Agyemang C, de Wit M, et al. The relationship between perceived  
48 discrimination and depressive symptoms among young Turkish-Dutch and Moroccan-Dutch.  
49 *Eur J Public Health* 2011;**21**:477-83 doi:10.1093/eurpub/ckq093.  
50  
51  
52  
53  
54  
55 25. Wamala S, Bostrom G, Nyqvist K. Perceived discrimination and psychological distress in  
56 Sweden. *Br J Psychiatry* 2007;**190**:75-6 doi:10.1192/bjp.bp.105.021188.  
57  
58  
59  
60

- 1  
2  
3 26. Gee GC, Spencer M, Chen J, et al. The association between self-reported racial  
4 discrimination and 12-month DSM-IV mental disorders among Asian Americans nationwide.  
5 *Soc Sci Med* 2007;**64**:1984-96 doi:10.1016/j.socscimed.2007.02.013.  
6  
7  
8  
9  
10 27. Cantor-Graae E. The contribution of social factors to the development of schizophrenia: a  
11 review of recent findings. *Can J Psychiatry* 2007;**52**:277-86.  
12  
13  
14  
15 28. Kuo BC, Chong V, Joseph J. Depression and its psychosocial correlates among older  
16 Asian immigrants in North America: a critical review of two decades' research. *J Aging*  
17 *Health* 2008;**20**:615-52.  
18  
19  
20  
21  
22 29. Gilbert P, Allan S. The role of defeat and entrapment (arrested flight) in depression: an  
23 exploration of an evolutionary view. *Psychol Med* 1998;**28**:585-98.  
24  
25  
26  
27  
28 30. Veling W, Hoek H, Selten J, et al. Age at migration and future risk of psychotic disorders  
29 among immigrants in the Netherlands: a 7-year incidence study. *Am J Psychiatry*  
30 2011;**168**:1278-85 doi:10.1176/appi.ajp.2011.11010110.  
31  
32  
33  
34  
35 31. Shaw RJ, Atkin K, Bécarea L, et al. Impact of ethnic density on adult mental disorders:  
36 narrative review. *The British Journal of Psychiatry* 2012;**201**:11-9  
37 doi:10.1192/bjp.bp.110.083675.  
38  
39  
40  
41  
42 32. Raad voor de Volksgezondheid en Zorg, Trimbos-instituut. Allochtone cliënten en  
43 geestelijke gezondheidszorg (achtergrondstudie bij Interculturalisatie van  
44 de gezondheidszorg). ; 2000. Report No.: 99/22.  
45  
46  
47  
48  
49 33. Verheggen PP, Moha AA, Gomes C, Romer R. 'Beraken van Nieuwe  
50 Nederlanders'; Bereik van cultuurgebonden media. ; 2007. Report No.: L1166.  
51  
52  
53  
54  
55 34. Available at: <http://www.urbanconnect.nl/index.php?nav=static&pagina=Marokko.nl>.  
56  
57  
58  
59  
60

- 1  
2  
3 35. van de Beek MH, van der Krieke L, Schoevers RA. Online mental health platform for  
4 moroccan-dutch in the Netherlands. *Psychiatr Serv* 2013;**64**:1178  
5  
6 doi:10.1176/appi.ps.6401102; 10.1176/appi.ps.6401102.  
7  
8  
9  
10 36. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population  
11 prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;**32**:959-76.  
12  
13  
14  
15 37. Donker T, Comijs H, Cuijpers P, et al. The validity of the Dutch K10 and extended K10  
16 screening scales for depressive and anxiety disorders. *Psychiatry Res* 2010;**176**:45-50  
17  
18 doi:10.1016/j.psychres.2009.01.012.  
19  
20  
21  
22 38. Donker T, van Straten A, Marks I, et al. Brief self-rated screening for depression on the  
23 Internet. *J Affect Disord* 2010;**122**:253-9 doi:10.1016/j.jad.2009.07.013.  
24  
25  
26  
27  
28 39. Fassaert T, De Wit MA, Tuinebreijer WC, et al. Psychometric properties of an  
29 interviewer-administered version of the Kessler Psychological Distress scale (K10) among  
30 Dutch, Moroccan and Turkish respondents. *Int J Methods Psychiatr Res* 2009;**18**:159-68  
31  
32 doi:10.1002/mpr.288.  
33  
34  
35  
36  
37 40. Loewy RL, Bearden CE, Johnson JK, et al. The prodromal questionnaire (PQ):  
38 Preliminary validation of a self-report screening measure for prodromal and psychotic  
39 syndromes. *Schizophr Res* 2005;**79**:117-25.  
40  
41  
42  
43  
44 41. Ising HK, Veling W, Loewy RL, et al. The validity of the 16-item version of the  
45 Prodromal Questionnaire (PQ-16) to screen for ultra high risk of developing psychosis in the  
46 general help-seeking population. *Schizophr Bull* 2012;**38**:1288-96 doi:10.1093/schbul/sbs068;  
47  
48 10.1093/schbul/sbs068.  
49  
50  
51  
52  
53 42. Rietdijk J, Dragt S, Klaassen R, et al. A single blind randomized controlled trial of  
54 cognitive behavioural therapy in a help-seeking population with an At Risk Mental State for  
55  
56  
57  
58  
59  
60

- 1  
2  
3 psychosis: the Dutch Early Detection and Intervention Evaluation (EDIE-NL) trial. *Trials*  
4 2010;**11**:30,6215-11-30 doi:10.1186/1745-6215-11-30; 10.1186/1745-6215-11-30.  
5  
6  
7  
8 43. Rietdijk J, Klaassen R, Ising H, et al. Detection of people at risk of developing a first  
9 psychosis: comparison of two recruitment strategies. *Acta Psychiatr Scand* 2012;**126**:21-30  
10 doi:10.1111/j.1600-0447.2012.01839.x; 10.1111/j.1600-0447.2012.01839.x.  
11  
12  
13  
14  
15 44. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health  
16 correlates of perceived discrimination in the United States. *J Health Soc Behav* 1999;**40**:208-  
17 30.  
18  
19  
20  
21  
22 45. Krieger N, Smith K, Naishadham D, et al. Experiences of discrimination: validity and  
23 reliability of a self-report measure for population health research on racism and health. *Soc*  
24 *Sci Med* 2005;**61**:1576-96 doi:10.1016/j.socscimed.2005.03.006.  
25  
26  
27  
28  
29 46. Williams DR, Yan Yu, Jackson JS, et al. Racial Differences in Physical and Mental  
30 Health. *Journal of Health Psychology* 1997;**2**:335-51 doi:10.1177/135910539700200305.  
31  
32  
33  
34 47. Bastos JL, Celeste RK, Faerstein E, et al. Racial discrimination and health: A systematic  
35 review of scales with a focus on their psychometric properties. *Soc Sci Med* 2010;**70**:1091-9  
36 doi:10.1016/j.socscimed.2009.12.020.  
37  
38  
39  
40  
41 48. Selten JP, Havenaar JM. Migratie en Niet-Affectieve Psychose; Add-on study bij protocol  
42 "kwetsbaarheid en veerkracht bij niet-affectieve psychose"; 2004.  
43  
44  
45  
46  
47 49. Dowrick C, Casey P, Dalgard O, et al. Outcomes of Depression International Network  
48 (ODIN). Background, methods and field trials. ODIN Group. *Br J Psychiatry* 1998;**172**:359-  
49 63.  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 50. Dalgard OS, Thapa SB, Hauff E, et al. Immigration, lack of control and psychological  
4 distress: findings from the Oslo Health Study. *Scand J Psychol* 2006;**47**:551-8  
5  
6 doi:10.1111/j.1467-9450.2006.00546.x.  
7  
8  
9  
10 51. Syed H, Dalgard O, Dalen I, et al. Psychosocial factors and distress: a comparison  
11 between ethnic Norwegians and ethnic Pakistanis in Oslo, Norway. *BMC Public Health*  
12 2006;**6**:182- doi:10.1186/1471-2458-6-182.  
13  
14  
15  
16  
17 52. Meltzer H. Development of a common instrument for mental health. In: Nosikov A,  
18 Gudex C, editors. EUROHIS: Developing Common instruments for Health Surveys  
19 Amsterdam: IOS Press; 2003.  
20  
21  
22  
23  
24 53. Taylor PJ, Gooding P, Wood AM, et al. The role of defeat and entrapment in depression,  
25 anxiety, and suicide. *Psychol Bull* 2011;**137**:391-420 doi:10.1037/a0022935.  
26  
27  
28  
29  
30 54. Available at: [www.qualtrics.com](http://www.qualtrics.com).  
31  
32  
33 55. Hite K. Qualtrics Security White Paper, Why should I trust Qualtrics with my sensitive  
34 data? ; 2011. Report No.: version 2.0.  
35  
36  
37  
38 56. Wright KB. Researching Internet - based populations: Advantages and disadvantages of  
39 online survey research, online questionnaire authoring software packages, and web survey  
40 services. *Journal of Computer-Mediated Communication* 2006;**10**:00 doi:10.1111/j.1083-  
41 6101.2005.tb00259.x.  
42  
43  
44  
45  
46  
47 57. Ekman A, Litton JE. New times, new needs; e-epidemiology. *Eur J Epidemiol*  
48 2007;**22**:285-92 doi:10.1007/s10654-007-9119-0.  
49  
50  
51  
52  
53 58. van Gelder MM, Bretveld RW, Roeleveld N. Web-based questionnaires: the future in  
54 epidemiology?. *Am J Epidemiol* 2010;**172**:1292-8 doi:10.1093/aje/kwq291.  
55  
56  
57  
58  
59  
60

1  
2  
3 59. Rhodes SD, Bowie DA, Hergenrather KC. Collecting behavioural data using the world  
4 wide web: considerations for researchers. *Journal of Epidemiology and Community Health*  
5 2003;**57**:68-73 doi:10.1136/jech.57.1.68.  
6  
7  
8

9  
10 60. Van Selm M, Jankowski N. Conducting Online Surveys. *Quality & Quantity*  
11 2006;**40**:435-56 doi:10.1007/s11135-005-8081-8.  
12  
13

14  
15 61. Topp L, Barker B, Degenhardt L. The external validity of results derived from ecstasy  
16 users recruited using purposive sampling strategies. *Drug Alcohol Depend* 2004;**73**:33-40  
17 doi:10.1016/j.drugalcdep.2003.09.001.  
18  
19  
20

21  
22 62. Miller PG, Johnston J, Dunn M, et al. Comparing Probability and Non-Probability  
23 Sampling Methods in Ecstasy Research: Implications for the Internet as a Research Tool.  
24 *Subst use Misuse* 2010;**45**:437-50 doi:10.3109/10826080903452470.  
25  
26  
27

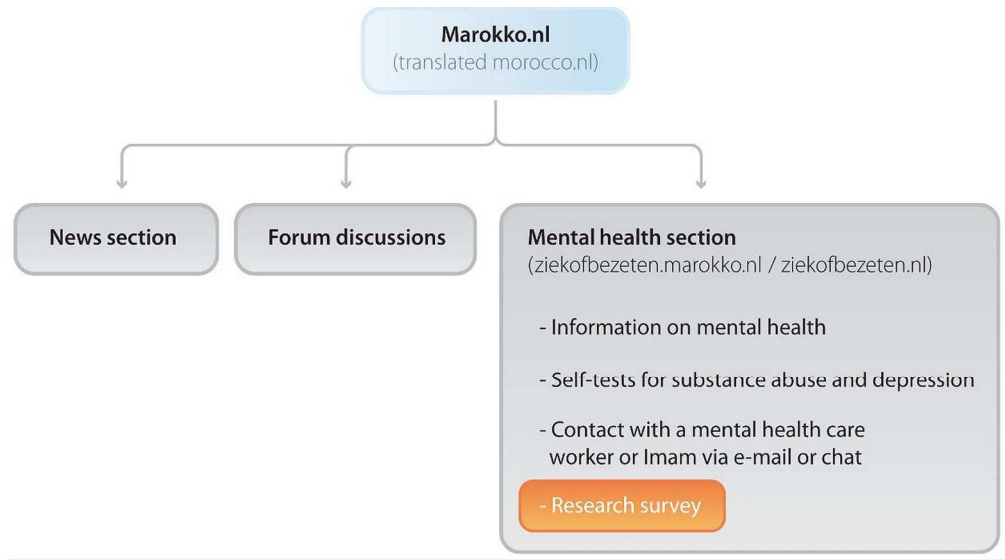
28  
29 63. Feild L, Pruchno RA, Bewley J, et al. Using Probability vs. Nonprobability Sampling to  
30 Identify Hard-to-Access Participants for Health-Related Research. *Journal of Aging and*  
31 *Health* 2006;**18**:565-83 doi:10.1177/0898264306291420.  
32  
33  
34  
35  
36  
37  
38  
39

## 40 **Figure Legends**

41  
42  
43  
44  
45 *Figure 1, online environment of the study*  
46  
47  
48  
49

50  
51 *Figure 2, recruitment strategy and survey design*  
52  
53  
54  
55  
56  
57  
58  
59  
60

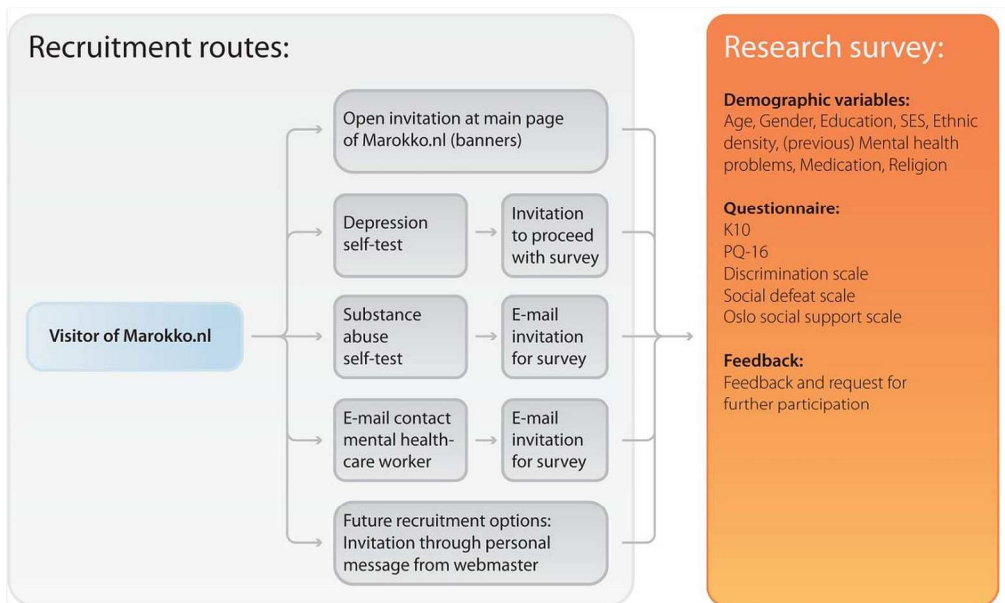
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



162x90mm (300 x 300 DPI)

review only

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



150x90mm (300 x 300 DPI)

Review only