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Depressive and anxiety disorders in different ethnic groups

A population based study among native Dutch, and Turkish, Moroccan and Surinamese migrants in Amsterdam

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■ **Abstract** *Introduction* To explore ethnic differences in psychopathology, this study examined the prevalence of depressive and anxiety disorders among different ethnic groups in Amsterdam and determined whether ethnic differences can be explained by socio-demographic differences. *Methods* A population-based sample of 321 Dutch, 231 Turkish, 191 Moroccan, 87 Surinamese/Antilleans was interviewed by well-trained bilingual interviewers, using the CIDI 2.1. Educational level and income were used as indicators of socio-economic status. *Results* The weighed 1-month prevalence of depressive and/or anxiety disorders was 6.6% (Dutch), 18.7% (Turkish), 9.8% (Moroccans) and 1.2 % (Surinamese/Antilleans). Among Moroccans, the prevalence of affective disorders seemed higher in men than in women, among the Turkish the opposite was observed. Ethnic differences in prevalence could not be explained by socioeco-

nomical differences. *Conclusion* Turkish women and men and Moroccan men in Amsterdam seem to have a higher risk of current affective disorders. Ethnicity is an independent predictor of common mental disorders in the Netherlands.

■ **Key words** depressive disorder – anxiety disorders – ethnic groups – population

Introduction

Immigration and urbanization are important phenomena of our time. All the big cities in the world have seen a dramatic increase of the population and change in the composition. The cities in western Europe were confronted with large groups of immigrants which

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fundamentally changed those cities. Major cities have their own groups of immigrants; Paris immigrants are mainly from Algeria, London's immigrants come from The Caribbean, Pakistan, Bangladesh and India. In Amsterdam the largest groups of immigrants are from Morocco, Turkey and the former colonies Surinam and the Antilles (the former Dutch West Indies). Currently, 48% of the Amsterdam population consists of ethnic minorities. Surinamese migrants make up 9% of the population, Moroccan migrants 9%, and Turkish migrants 5%, and Antillean migrants 2% [19]. Migration stimulated economic activity but in addition caused problems related to integration, cultural differences, and, partly as a result, health problems. This article focuses on specific health problems immigrants might face, namely depressive and anxiety disorders, the most common psychiatric disorders in the general population. According to recent population-based studies, 12.4% of the Dutch population has suffered from an anxiety disorder in the previous year and 7.2% from a mood disorder [5]. In Amsterdam, these disorders were even more common: in the previous year 17.4% has had an anxiety disorder and 13.7% a mood disorder [23]. However, these studies are typically limited to those who speak sufficient Dutch. In Amsterdam, as in other European cities, this excludes a large proportion of the population. A large proportion of the first-generation Turkish and Moroccan migrants in the Netherlands do not speak Dutch. The level of integration among these groups is low, mainly because they came as labour migrants with the intention to return to their country of origin. However, as their children grew up in the Netherlands, their outlooks changed. Return-migration often did not take place, resulting in a large proportion of the Dutch population that originates from different cultures and speaks different languages. Although a large part of the Surinam and Antillean population does speak Dutch, their cultural background also differs substantially from that of the native Dutch. The mental health situation among these migrant groups is likely to differ from that of the native Dutch population due to cultural differences, migration experiences and socio-economic position. Multiple studies show an association between low socio-economic status and an increased prevalence and persistence of depression [9, 18, 30]. Individual studies show that the relation between socio-economic inequalities and depression is heterogeneous and varies according to definitions and region and time. However, in a meta-analysis, a dose response relation was observed for education and income and the prevalence of depression [18]. Because the socio-economic status of migrant groups is in general lower than that of the native population, this needs to be taken into account when studying ethnic differences. A study in Norway showed that socio-economic differences accounted for a large part of the difference in mental distress between Pakistani migrants and native Norwegians [26].

Population based prevalence estimates of the mental health situation among migrant groups are scarce. Previous research on the prevalence of psychiatric disorders among migrant populations suffered from extremely low response rates, a lack of validated questionnaires, or a selected group of migrants [8, 10, 13, 16, 28, 33]. In the Netherlands, some studies reported higher prevalences of psychiatric disorders among migrants [3, 13, 28, 33], other studies reported lower prevalences [10, 16].

In order to adequately plan and evaluate prevention and mental health care, estimates of the psychiatric morbidity and identification of high risk groups are the first step.

To provide more insight into the mental health situation of different ethnic groups in Amsterdam, a population-based study was initiated. The study focused on depressive and anxiety disorders, different determinants of the prevalence, and the use of mental health care. The goals of this article are:

- to estimate the prevalence of depressive and anxiety disorders in the Dutch, Turkish, Moroccan and Surinamese/Antillean population of Amsterdam
- to determine whether ethnic differences in the prevalence can be explained by demographic (age and gender) or socio-economic characteristics (income level and educational level).

Methods

■ Data collection

This population-based study was performed as a second phase of the Amsterdam Health Monitor of 2004 [11, 28]. The Amsterdam Health Monitor is conducted every four years with a focus on the general health situation of the Amsterdam population. The monitor is performed among a sample of the adult population of Amsterdam, stratified by age and ethnicity, and representative for the population. Ethnicity is based on the country of birth of the respondent and his/her parents as registered in the municipal register. A respondent was considered to be Turkish, Moroccan or Surinam/Antillean if he or she was born in Turkey, Morocco or Surinam/The Netherlands Antilles respectively or if at least one parent was born there. Respondents were considered native Dutch if both the respondent and both parents were born in the Netherlands [24].

All respondents from the Health Monitor with a Dutch, Turkish, Moroccan, or Surinam/Antillean ethnicity who gave permission for a second approach (with no mention of the topic of study) were invited to participate in the second phase, one year after the first phase. The second phase consisted of a structured interview conducted by trained bilingual interviewers. Respondents were invited by letter, mentioning a specific date and time when the interviewer would make a home visit. Appointments could be changed by telephone. When the interviewer did not find the respondent home at the time of the appointment, a new home visit was made at a different time of the day, up to 8 attempts. Interviews could be held in Dutch, Turkish, Moroccan, or Berber (a non-written language among Bedouins in Western North Africa). The interviews took place in the period from February to June 2005, to avoid summer vacation, Christmas and Ramadan. All interviewers were trained during a full-time week and intensively coached during the period

Table 1 Response in the first and second phase by ethnicity

	Sample	Participation first phase		Permission second phase		Participation second phase		Percentage of sample (%)
	<i>n</i>	<i>n</i>	(%) ^a	<i>n</i>	(%) ^a	<i>n</i>	(%)	
Dutch	1,043	479	45.9	438	91.4	320	76.9	30.2
Moroccan	965	374	38.8	322	86.1	191	62.2	20.8
Turkish	913	454	49.7	316	69.6	213	70.5	24.4
Surinam/Antillean	337	142	42.1	134	94.4	88	73.9	29.4
Total	3,258	1,449	44.5	1,210	84.7	812	71.0	26.5

^aDenominators of response percentages are exclusive of respondents that have moved or were deceased since the sample was drawn

of data-collection. Interviews consisted of validated questionnaires and were recorded as a check for the researchers and to coach the interviewers. Completed interview forms had to be handed in weekly, and were immediately checked for consistency and completeness.

The study procedures were approved by the ethical commission of the Amsterdam Academic Medical Center.

■ Interview

The structured interview was designed so that it could be completed within a maximum of 1.5 h. Depressive and anxiety disorders were ascertained with the sections D (anxiety) and E (depressive) of the Composite International Diagnostic Interview (CIDI) 2.1 [32]. Major depressive disorder, dysthymia, social phobia, agoraphobia, panic disorders and generalised anxiety disorders were included in the interview and coded according to the DSM-IV criteria [1]. From the first phase, data on demographics (age and gender) and socio-economic status (family income, and highest level of education) were used in the analyses. The mental health indicator (MHI5), the Kessler psychological distress scale (K10), a question on the use of care for mental health problems in the past year, current use of psychopharmaca, and data on chronic somatic disorders from the first phase were used to test for possible selective response in the second phase.

Questionnaires were translated into Turkish, and the key-terms in Moroccan Arabic and translated back into Dutch. When the back translation differed from the original Dutch questionnaire, changes were discussed with the translators and adjusted. The official Turkish translation of the CIDI was used. The Arabic translation was used as a source of information to translate the key-terms into Moroccan Arabic.

■ Analyses

Questionnaire data were entered twice in Access and compared for inconsistencies. Data were analysed using SPSS 14.0.

DSM IV diagnoses were based on the CIDI 2.1. Prevalences of anxiety disorders include panic disorders, agoraphobia, general anxiety disorders and social phobia. Prevalences on depressive disorders include major depression and dysthymia.

Prevalence estimates are weighed by ethnic group, age groups (18–34, 35–44, 45–54, 55–64 and 65 years and older) and gender, based on the composition of the Amsterdam population in January 2005 [19]. Prevalence estimates presented by ethnic group are weighed by the age and gender distribution of the specific ethnic group. Possible effects of selective response on these demographic variables have therefore no effect on the final estimates. Highest educational level and monthly family income were used as determinants of socio-economic status. The independent associations of ethnicity, age, gender, and socio-economic status with the prevalence of depressive and anxiety disorders were determined based

on a logistic regression model. The inclusion of interaction terms was based on a significant improvement of the log likelihood ratio of the model. A *P* value of <0.05 was considered statistically significant.

Results

■ Response

Overall, 1,449 respondents from the four ethnic groups were included in the first phase (response 45%) (Table 1). Of these, 1,210 agreed to be approached for follow-up research, of which 812 participated in the second phase (response 71%). The relatively low percentage of Turkish respondents that agreed to a second approach is the result of the fact that in the first week no information on consent for a second approach among Turkish respondents was collected. Since respondents were invited randomly over time, this has most likely resulted in a non-selective non-response. Information on the representativity of the first phase is described elsewhere [28]. The response was relatively comparable between ethnic groups and the age groups of the different ethnic groups. The income-level and the employment status of the respondents of the first phase was comparable to that of the original sample. In both phases response rates were lowest among the Moroccans.

In the second phase, possible selection bias in the response was determined, based on the data from the first phase. Differences between respondents and nonrespondents were tested for several health-related variables: K10-score ($P = 0.43$), MHI-5 ($P = 0.07$), care for mental health problems in the past year ($P = 0.91$), current use of psychopharmaca ($P = 0.87$), the presence of chronic somatic disorders ($P = 0.30$), and perceived health status ($P = 0.88$), and showed no significant difference between participants of the second phase and those who did not participate in the second phase. Also, within the ethnic groups, no significant differences between participants and non-participants were observed.

Table 2 Lifetime, 1-year, 1-month weighed prevalence of depressive and anxiety disorders (excluding specific phobias) by ethnicity

	Lifetime prevalence			1-year prevalence			1-month prevalence		
	<i>n</i>	Weighed percentage	95% CI	<i>n</i>	Weighed percentage	95% CI	<i>n</i>	Weighed percentage	95% CI
Depressive disorders^a									
Dutch	95	24.8	20.4–29.9	36	10.3	7.4–14.2	15	4.4	2.6–7.3
Turkish	71	31.1	25.2–37.7	52	22.4	17.2–28.6	37	14.9	10.7–20.4
Moroccan	24	15.2	10.8–21.0	16	9.8	6.3–14.9	12	6.6	3.9–11.1
Surinamese	16	11.5	6.3–20.0	8	5.7	2.5–12.7	2	1.1	0.2–6.1
Total	206	22.5	19.8–25.5	112	10.3	8.4–12.6	66	4.7	3.4–6.4
Anxiety disorders^b									
Dutch	43	11.5	8.4–15.5	22	6.8	4.5–10.1	11	2.5	1.3–4.9
Turkish	41	14.9	10.7–20.3	28	9.6	6.3–14.3	21	7.7	4.8–12.1
Moroccan	17	9.3	5.9–14.3	13	8.3	5.1–13.1	11	7.6	4.6–12.2
Surinamese	10	7.4	3.5–15.0	7	4.8	1.9–11.6	2	1.1	0.2–6.1
Total	111	11.1	9.1–13.4	70	7.0	5.4–9.0	45	3.0	2.0–4.4
Depressive and/or anxiety disorders									
Dutch	107	28.8	24.0–34.1	51	14.8	11.3–19.2	24	6.6	4.3–9.9
Turkish	82	35.3	29.1–42.0	60	25.7	20.2–32.1	44	18.7	13.9–24.6
Moroccan	32	18.7	13.8–24.9	22	13.3	9.2–18.9	17	9.8	6.3–14.9
Surinamese	19	13.4	7.7–22.3	12	9.6	5.0–17.7	3	1.2	0.2–6.3
Total	240	26.4	23.5–29.5	145	14.5	12.1–17.1	88	6.8	5.3–8.7

Weighed for age and gender distribution of the different ethnic groups

^aMajor depressive disorders and dysthymia

^bPanic disorders, agoraphobia, social phobia, and generalised anxiety disorders

Research population

The median age of the population was 51 years (range 19–92 years). Among the Dutch 42% were male, among the Moroccans 53%, among the Turkish 40% and among the Surinamese/Antilleans 29%. Because all prevalences are weighed according to the age, gender and ethnic composition of Amsterdam, these differences in response will not have affected the prevalence-estimates.

The Turkish, Moroccan, and Surinam/Antillean research population consisted mainly of first generation migrants (92–93% in each group). The majority of the Moroccan (57%) and Turkish (51%) men came to the Netherlands for work. Family reunification was the major reason for migration of women from Morocco (89%) and Turkey (81%). Among the Surinamese/Antillean group, the reasons for migration were more diverse. The main reasons were a better education (23%), migrated with parents (16%) and Dutch social benefits (10%). The educational level was low among both the Turkish and Moroccan respondents (respectively, 61 and 60% primary school or less compared to 20 and 17% among the Dutch and Surinamese/Antillean, respectively). The same applies for income (44 and 56% below welfare level, compared to 25% among the Surinamese/Antillean and 7% among the Dutch).

Among Turkish respondents, 89% completed the interview in Turkish. Among Moroccan respondents, 38% of the interviews were completed in Moroccan Arabic, 4% in Berber, 32% in Dutch, and 27% in a combination of these different languages.

Prevalence

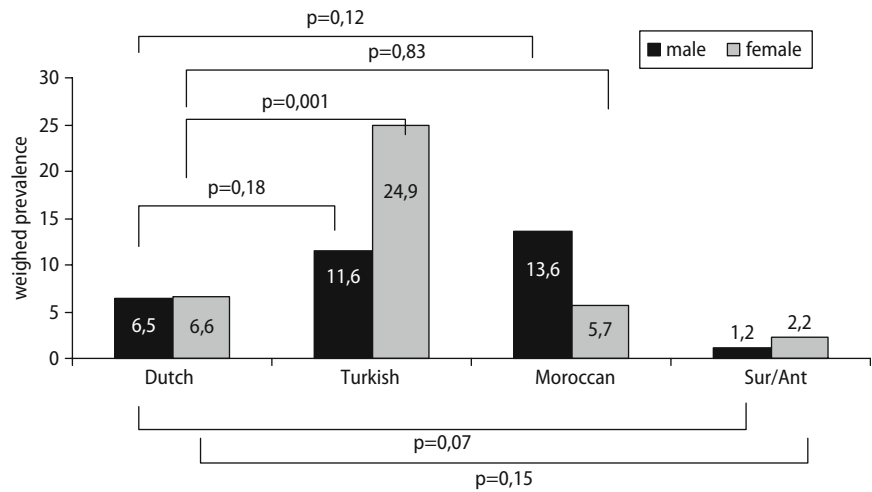
Overall, 26.4% of the Amsterdam population has suffered from a depressive or anxiety disorder ever in their life, 14.5% in the last year and 6.8% in the last month (Table 2). The weighed prevalence of both disorders is noticeably higher in the Turkish population than in the native Dutch population. Among the Moroccan population, the 1-month prevalence seems higher than among the Dutch population, whereas the lifetime prevalence seems lower. The estimates of the prevalence among the Surinamese/Antillean population seem relatively low.

The ratio between the lifetime prevalence, 1-year prevalence and 1-month prevalence is not comparable between the ethnic groups. Among the Dutch, the ratio of 1-month to 12-month prevalence is 42%; the ratio of the 12-month to lifetime prevalence is 43%. Among the Moroccan and the Turkish group, both these ratios are between 64 and 72%.

Depressive disorders are more prevalent than anxiety disorders among the Dutch and Turkish population, but not among the Moroccan and Surinamese/Antillean population.

The prevalence of affective disorders showed a different gender-pattern between the age groups (Fig. 1). The prevalence of depressive and/or anxiety disorders in the last month is higher among men than among women in the Moroccan population. In the Turkish population, the opposite is observed. Among the Dutch population, the gender-difference is minimal. However, in the age group under 50 years of age, the prevalence among Dutch women (6.9%) is higher

Fig. 1 Weighed month prevalence of psychiatric disorders (depressive and/or anxiety) by ethnicity and gender



than among Dutch men (3.8%) (not shown in table). For Moroccans and Turkish respondents under 50 years of age, the gender pattern is similar to the overall pattern (Moroccan men 15.8%, Moroccan women 5.3%, Turkish men 9.4%, Turkish women 26.2%). In the age groups over 50 years and older, prevalences were comparable among men and women. Overall, the prevalence is highest in Turkish women (25%), followed by Moroccan and Turkish men who have a comparable prevalence (13 and 12%, respectively). The prevalence among Moroccan women is comparable to that of the Dutch. No Suri-

name men had a depressive or anxiety disorder in the last month.

In Table 3 the results of the multivariate analyses are presented to study whether ethnic differences can be explained by socio-economic characteristics. The prevalence of disorders shows a strong association with ethnicity and gender. Turkish women have a significantly higher prevalence of depressive and anxiety disorders than the native Dutch women. The risk also seems increased for Turkish men compared to Dutch men, but not significantly. Univariately, the oldest age group is associated with a lower risk in

Table 3 Demographic risk factors for 1-year and 1-month prevalence of depressive and/or anxiety disorders, univariate and multivariate based on logistic regression analyses

	1-year prevalence					1-month prevalence				
	n	(%)	Weighed percentage	OR univariate	OR multiv	n	(%)	Weighed percentage	OR univariate	OR multiv
Dutch men	22	17.3	14.0	1.0	1.0	12	9.4	6.2	1.0	1.0
Turkish men	18	22.8	15.2	1.4 (0.7–2.8)	1.4 (0.6–3.2)	13	16.5	11.9	2.2 (0.9–5.3)	2.2 (0.8–5.8)
Moroccan men	12	12.2	15.2	0.7 (0.3–1.4)	0.8 (0.3–2.0)	11	11.2	13.3	1.4 (0.5–3.4)	1.3 (0.5–3.7)
Surinam/Antillean men	3	13.0	8.7	0.7 (0.2–2.6)	1.0 (0.3–3.8)	1	4.0	0.0	0.5 (0.1–4.3)	0.5 (0.1–4.0)
Dutch women	29	15.9	15.4	1.0	1.0	12	6.6	6.6	1.0	1.0
Turkish women	42	33.3	33.6	2.6 (1.5–4.5)	3.1 (1.6–6.1)	31	24.8	25.0	4.6 (2.3–9.5)	5.3 (2.1–13.1)
Moroccan women	10	11.2	11.5	0.7 (0.3–1.4)	1.2 (0.5–2.9)	6	6.7	5.6	1.0 (0.4–2.8)	1.6 (0.5–5.5)
Surinam/Antillean women	9	14.5	11.3	0.9 (0.4–2.0)	1.2 (0.5–2.7)	2	3.2	1.6	0.5 (0.1–2.2)	0.6 (0.1–3.0)
18–34 years	17	16.7	10.7	0.6 (0.3–1.1)	0.6 (0.3–1.3)	11	10.8	4.8	0.7 (0.6–1.5)	0.5 (0.2–1.2)
35–44 years	31	19.3	9.6	0.7 (0.4–1.2)	0.7 (0.4–1.3)	18	11.1	4.3	0.7 (0.3–1.3)	0.6 (0.3–1.2)
45–54 years	48	24.4	25.3	1.0	0.7 (0.4–1.3)	33	16.7	14.2	1.0	1.0
55–64 years	28	17.1	19.1	0.6 (0.4–1.1)	0.6 (0.3–1.2)	16	9.7	8.5	0.6 (0.3–1.2)	0.6 (0.3–1.2)
65+ years	21	13.0	13.7	0.5 (0.3–0.8)	0.8 (0.5–1.3)	10	6.2	5.6	0.4 (0.2–0.9)	0.9 (0.5–1.6)
Income										
Below welfare	34	17.6	11.2	0.9 (0.6–1.4)	1.2 (0.7–2.1)	24	12.4	7.1	1.2 (0.7–2.1)	0.9 (0.5–1.6)
Above welfare	92	19.6	15.4	1.0	1.0	50	10.6	6.0	1.0	1.0
Educational level										
Lowest	43	14.0	10.8	1.0	1.0	33	10.7	6.7	1.0	1.0
Low medium	23	14.0	10.3	0.9 (0.6–1.5)	1.2 (0.7–2.1)	13	8.0	4.4	0.9 (0.5–1.7)	1.3 (0.7–2.7)
High medium	22	14.2	6.9	1.0 (0.6–1.6)	1.0 (0.5–1.9)	11	7.1	2.9	0.8 (0.4–1.5)	1.1 (0.5–2.3)
High	21	13.9	13.2	1.0 (0.6–1.6)	1.1 (0.5–2.1)	7	4.7	4.7	0.5 (0.2–1.0)	0.8 (0.3–1.8)
Total	145	18.4	14.5			88	11.4	6.8	–	–

“–” No significant contribution to the multivariate model, and therefore not included

both the year prevalence and the month prevalence. In addition, an increasing educational level is also associated with a lower month prevalence. The associations between income and the prevalence of depressive and anxiety disorders were not significant.

When studying independent associations in a multivariate model, ethnicity is the only factor independently related to the 1-year and the 1-month prevalence. The associations between all other factors were no longer significant when adjusted for ethnicity.

Discussion

Population based prevalence estimates of the mental health situation among migrant groups were scarce [10, 16, 17]. In this study, representative groups of Dutch, Turkish, Moroccan and Surinamese people were included, allowing for a reliable prevalence estimate of depressive and anxiety disorders and a comparison between the migrant groups and the native Dutch group.

The overall prevalence of depressive and anxiety disorders in Amsterdam was 26.4% (lifetime), 14.5% (1-year), 6.8% (1-month). These figures confirm the high rates of psychopathology in Amsterdam [5, 23].

The ethnic pattern in prevalence differed with the observation period of the prevalence, resulting from ethnic differences in the ratios between the lifetime prevalence, the 1-year prevalence and the 1-month prevalence. Among the Dutch, these ratios are about 40% (meaning that 40% of those with a lifetime disorders also had a disorders in the last year, and 40% with a disorders in the last year also had a disorders in the last month), which is comparable with the results from the national study [5]. Among the Turkish and Moroccan groups, these ratios are much higher (between 64 and 72%), meaning that among those with a lifetime disorder a higher percentage also had a disorders in the last year. For the Turkish this is comparable to the ratios found in a national Turkish study [2]. Whether these higher ratios and relatively low lifetime prevalences are the result of differences in the course of depression, or whether they result from differences in recall influenced by cultural factors, needs further investigation. Since the 1-month prevalence is the least subject to recall bias, this was used to consider differences between the ethnic groups.

The 1-month prevalence of depressive and anxiety disorders in the various migrant groups differs from the prevalence among the native Dutch. Among the Dutch, 6.6% of the population suffered from a depressive or anxiety disorder in the previous month, among the Turkish 18.7%, among the Moroccan 9.8% and among the Surinamese/Antillean 1.2%. The month prevalence is significantly higher among Turkish women than among the native Dutch women. Among Turkish men the prevalence also seemed to be higher than among the Dutch men, but this difference

did not reach statistical significance. Among the Moroccans and Surinamese/Antillean groups no significant differences with the Dutch population were observed, although the prevalence among Moroccan men tended to be higher than among Dutch men. This tendency was clearer in the weighed prevalence than in the unweighed prevalence, as a result of the fact that the high risk age groups are more prevalent among the Moroccan men in the Amsterdam population. Although a negative association of the prevalence of depressive and/or anxiety disorders with increasing educational level was observed, this association could not explain the ethnic differences. Nor could other demographic or socio-economic differences.

The higher prevalence of depressive disorders was also reported for Turkish and Moroccan migrants in Belgium [17]. A recent review of studies on depressive disorders and migration showed a relatively small increased risk in migrants for depressive disorders [25]. Unfortunately, only a minority of the included studies were performed outside the health care setting. Because of possible differences in help-seeking behaviour between ethnic groups, this might have resulted in biased prevalence estimates.

An international comparison of national prevalence studies by WHO showed lower prevalences of depressive and anxiety disorders for Turkey than for The Netherlands [2]. This supports the hypothesis that the high prevalence for Turkish migrants in Amsterdam is related to either selective migration or their migration-history and actual migrant-status. Although no prevalence estimates for Moroccans in Morocco are available, it is likely that similar factors impact the mental health for Moroccans in the Netherlands. Several factors have been described that might explain the higher rates of affective disorders in migrants. The stress associated with the process of migration itself resulting in a feeling of loss and negative life-events; adjustment to an unfamiliar and sometimes discriminatory and hostile culture, can result in a clash of values, culture conflicts within the family, a mismatch of expectations, and a lack of social support [4, 15, 25, 27]. Moreover, the level of education and the socio-economic status of migrants are often low, and as a consequence poverty and unemployment are common. On the other hand, selective migration could have occurred. People with a genetic predisposition for depressive disorders might be less likely to leave their home and family. Research among Mexican-Americans and non-Hispanic whites in the US showed significantly higher risks for affective disorders among the US-born migrants compared to their foreign-born counterparts, indicating that the explanation for the increased prevalence for migrants cannot be solely sought in the personal history of migration [6, 12].

The difference in the prevalence between the Turkish, Moroccan and Surinamese and Antillean group show that these migrants cannot be studied as one, but

most likely the above mentioned factors have a different impact in the different groups. In future analyses we aim to disentangle potentially relevant factors, amongst which social support, acculturation, life events, discrimination, daily hassles and coping styles.

A remarkable result was the low prevalence among Moroccan women compared to Moroccan men. In general, the prevalence of depression is higher among women than among men, especially in the reproductive years [13, 20]. Although this was not confirmed for the entire Dutch group, it was confirmed for those in the reproductive age-groups. When studying only these age groups, the prevalence among Moroccan women remained lower than for Moroccan men. A few exceptions are known to the general gender pattern of higher prevalences among women compared to men, namely very traditional societies (such as the Amish and orthodox Jews), and cultural groups where high value is attached to the female role, such as the Mediterranean countries [7, 20]. Although it is known that especially the Berber group in Morocco is very traditional, it is not easy to compare this to the before-mentioned very traditional groups in other studies. Whether the low prevalence among Moroccan women is related to a traditional role or a low awareness of mental problems needs to be investigated. Remarkably, several Moroccan women answered they were not allowed to leave the house, and yet reported no symptoms of anxiety or depression. Further investigation of this vulnerable group is necessary to explore the underlying factors of this result. In England, a similar remarkable result was observed. Common mental disorders were highly prevalent among Pakistani and Indian women, in contrast to a low prevalence among Bangladeshi women, in spite of the fact that Bangladeshi women are one of the socio-economically vulnerable groups in society [31].

■ Strengths and limitations

A lot of effort was put into reaching the target groups and collecting reliable information. The method of data collection of the first phase was tested and evaluated as successful in a pilot study. Interviewers were matched with the respondents on gender and ethnicity, well-trained and intensively coached, questionnaires were translated, interviews were face-to-face in the language of choice, and the CIDI has been successfully used in many different western and non-western countries. Nevertheless, this has resulted in a response rate of 26% over the two phases. The very low response rates in previous population-based studies in these groups [10, 16], and the efforts put into reaching and motivating the study population in this study, suggests that this is currently the maximum attainable response rate for this type of research in these populations. The fact that response percentages were comparable across the ethnic groups and

the age groups of the ethnic groups suggests that possible selections are likely to have occurred similarly over the ethnic groups and will therefore not influence the inter-ethnic comparisons.

Selective response concerning age, gender and ethnicity was adjusted for by weighing the prevalences to the general Amsterdam population. In addition, selective response on mental health related factors in the second phase could be ruled out, based on data from the first phase. Although only a quarter of the initial sample has participated, the selections could partly be measured and corrected for.

Although we cannot rule out that selections have occurred in the response, these estimates provide valuable information in a field where the paucity of population estimates hampers the interpretation of more clinical data. The results from this study are the first estimates regarding the prevalence of depressive and anxiety disorders based on a population-based sample of different ethnic groups, including respondents who do not master the Dutch language, using cross-culturally validated measurement instruments. The cross-cultural validity of the CIDI for depressive disorders is underscored by our finding of a comparable symptom profile across all ethnic groups [22].

Conclusion

Turkish women have the highest risk for a current depressive or anxiety disorder. The risk of a current disorder also seems increased for Turkish men and Moroccan men compared to Dutch men, but not significantly. An increased risk for Surinamese/Antillean men and women was not observed. Although socio-economic factors are related to the prevalence of depressive and anxiety disorders, these cannot explain the ethnic differences. The identified high risk groups should receive additional attention in prevention programmes and mental health care. The Public Mental Health Service and the Mental Health Organizations in Amsterdam are setting up policies to address this issue.

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