

## ORIGINAL PAPER

Jean-Paul Selten · André Wierdsma · Niels Mulder · Huibert Burger

# Treatment seeking for alcohol and drug use disorders by immigrants to the Netherlands

## Retrospective, population-based, cohort study

Accepted: 16 January 2007 / Published online: 2 March 2007

**Abstract** *Background* We compared risks of first contact with services for an alcohol use disorder (AUD) or drug use disorder (DUD) between the largest immigrant groups to the Netherlands and Dutch nationals. We tested the hypothesis that the ethnic pattern for DUD is similar to the previously demonstrated pattern for schizophrenia. *Methods* Retrospective, population-based cohort study of *First Admissions* to Dutch psychiatric hospitals during the period 1990–1996 (national data) and *First Contacts* with inpatient or outpatient centres in Rotterdam for treatment of AUD or DUD during the period 1992–2001 (Rotterdam data). *Results* In both datasets the risk of service contact for AUD was significantly lower in immigrants from Surinam, Turkey and Morocco than

in Dutch nationals. The risk was lower or moderately higher in immigrants from western countries. Analysis of the national data showed that, compared with Dutch males, the risk of first hospital admission for DUD was higher for male immigrants from the Dutch Antilles (RR = 4.6; 95% CI: 4.0–5.3), Surinam (RR = 4.3; 3.9–4.7) and Morocco (RR = 2.3; 2.0–2.6), but not for male immigrants from Turkey (RR = 0.9; 0.7–1.1). A similar pattern was found with the Rotterdam data. Female immigrants from Surinam and the Dutch Antilles had a higher risk for DUD according to the national data, but a lower risk according to the Rotterdam data. Female immigrants from Turkey and Morocco had a lower risk (both datasets). Immigrants from western countries had a higher risk for DUD, but many had developed the disorder before emigrating. *Conclusion* Those immigrant groups in the Netherlands that are at increased risk of schizophrenia appear also at increased risk of developing DUD, but not AUD.

**Key words** addiction – alcohol abuse – substance abuse – migration – ethnicity

---

Dr. J.-P. Selten (✉)  
Rudolf Magnus Institute of Neuroscience  
Dept. of Psychiatry  
University Medical Centre Utrecht  
P.O.Box 85500, Reference Nr A00.241  
3508 GA Utrecht, The Netherlands  
E-Mail: j.p.selten@umcutrecht.nl

A. Wierdsma  
Municipal Health Services  
Rotterdam, The Netherlands

N. Mulder  
Dept. of Psychiatry  
Erasmus Medical Centre  
Rotterdam, The Netherlands

H. Burger  
Julius Centre for Health Sciences and Primary Care  
University Medical Centre Utrecht  
Utrecht, The Netherlands

H. Burger (Current affiliation)  
Dept. of Epidemiology and Bioinformatics  
University Medical Centre Groningen  
Groningen, The Netherlands

H. Burger (Current affiliation)  
Dept. of Psychiatry  
University Medical Centre Groningen  
Groningen, The Netherlands

---

## Introduction

Population-based studies of the risk of alcohol or drug use disorders (AUD and DUD, respectively) among immigrants to Europe are scarce, and those that have been published had limitations. For example, studies of first admissions to hospitals excluded large numbers of outpatients [8, 15], and population surveys were underpowered with respect to immigrants or were of limited validity because of low response rates and self-report based diagnoses [1, 9]. The issue, however, is important, because the adverse social environment in which many immigrants live may well be a risk factor for the development of these disorders.

Adverse social circumstances have been suggested to explain the association between migration and schizophrenia [5]. In the Netherlands, there is a characteristic ethnic pattern in the risk of schizophrenia: risks for male and female immigrants from Surinam and the Dutch Antilles and for male immigrants from Morocco are two to five times increased, whereas risks for female immigrants from Morocco and for immigrants from Turkey of either gender are *not* increased [21, 23–25]. We reasoned that if social adversity is important for the development of schizophrenia, then risks of DUD should follow the same ethnic pattern. We did not expect the risks for AUD to follow this pattern, because most immigrants from Turkey and Morocco are Muslims and Islam forbids the use of alcohol.

We compared risks of first contact with services for AUD or DUD between the largest immigrant groups to the Netherlands and Dutch nationals, using relevant data from the Dutch Psychiatric Registry, which provides information on all admissions to all Dutch psychiatric hospitals, and from the Rotterdam Psychiatric Registry, which covers all inpatient and outpatient clinics for mental health in the city.

## Method

### ■ Immigrants to the Netherlands

The four largest non-western immigrant groups are from Turkey, Morocco, Surinam and the Dutch Antilles (Table 1). Migration from Turkey and Morocco started in the mid-sixties and has since increased gradually. Most immigrants from these countries have difficulties with the Dutch language. Almost all Turkish and Moroccan immigrants are Muslims.

The Dutch colony of Surinam, a country situated between Guyana and French Guyana, gained independence in 1975. During the 1970s and 1980s many inhabitants emigrated to the Netherlands. The Surinamese population is ethnically diverse, and a study performed in Rotterdam identified East-Indians, whose ancestors emigrated in the 19th century from British India to Surinam (54%), Afro-Surinamese (38%), and others (8%) [19]. The Dutch Antilles, islands near the coast of Venezuela, are part of the kingdom of the Netherlands and its inhabitants are predominantly of West-African origin. Almost all immigrants from Surinam and the Antilles speak Dutch. Most East-Indians are Hindus, most Afro-Surinamese and Dutch Antilleans are Christians. In Rotterdam, Cape Verdians form the fifth most important group. Emigration from Cape Verde, a group of islands near the West-African coast and a former Portuguese colony, started in the 60s. Most Cape Verdians have both African and Portuguese antecedents and are Roman Catholics. They speak Dutch and Crioulo [7].

### ■ Cases

Immigrant and Dutch cases were selected from two registries, using the variable “country of birth”. In this study, “Dutch nationals” refers to people born in the Netherlands.

The Dutch Psychiatric Registry receives anonymous information from all psychiatric hospitals and inpatient centres for the treatment of addiction in the Netherlands. It provided us with unduplicated information on all admissions during the period 1978–1996. The registry could not provide complete information for the years after 1996 and had not assigned a separate code for people born in Cape Verde. We selected information on patients who had been discharged with a primary ICD-9 diagnosis [30] of *alcohol or*

**Table 1** Foreign-born citizens of the Netherlands, by country of Birth, January 1st 1990

Country of birth	Number
Surinam	157,054
Turkey	141,250
Germany	127,535
Morocco	115,488
Northern Mediterranean	59,158
Dutch Antilles	56,063
Belgium	41,963
UK	36,413
Elsewhere	431,873

*drug dependence or nondependent abuse of alcohol or drugs* during the period 1990–1996 and who had never been hospitalised for any of these diagnoses during the period 1978–1989. Patients diagnosed with dependence on benzodiazepines (304.1) or nondependent abuse of tobacco (305.1), benzodiazepines (305.4), and antidepressants (305.8) were excluded.

Since 1988 the Rotterdam Psychiatric Registry has collected information on all patients treated with methadone, and from 1990 it has collected information on admission and discharge from all facilities for mental health in Greater Rotterdam. We analysed data for residents of Rotterdam who contacted the inpatient and outpatient clinics for AUDs and/or DUDs during the period from 1992 to 2001 and who had not been seen during the period from 1988 to 1991. The treating physician, psychologist or nurse distinguished between disorders of the use of (i) alcohol, (ii) illicit drugs (usually heroin, cocaine, cannabis, amphetamine or a combination of these substances) and (iii) legal drugs (e.g., benzodiazepines). We used data for the first two groups.

### ■ Denominators

The Dutch Central Bureau for Statistics provided us with annual population statistics, broken down by country of birth, sex and 5-year age-categories, as did the municipality of Rotterdam for its inhabitants. This information is derived from municipal records. All individuals residing legally in the Netherlands must register with a municipal authority and such registration is a prerequisite for obtaining essential documents (health insurance, work permit, residence permit) and possible aid (e.g., income support). Since non-registration is highly disadvantageous for legal residents, the denominators are regarded as highly reliable. It has been estimated that 10–15% of Turks, Moroccans, and Cape Verdians are illegal immigrants [12]. Most Surinamese and all Dutch Antilleans are legal immigrants.

### ■ Analysis

Incidence rates of first hospital admission (national data) or first contact (Rotterdam data) for an AUD or DUD were calculated by dividing the number of cases by the number of person-years at risk. Person-years were derived by adding the annual population statistics. Subsequently, the (5-year) age-adjusted relative risk for each immigrant group was calculated using Poisson regression analysis, using the Dutch group as reference. The analyses were performed for men and women separately and were confined to subjects aged 15–54, because there were very few subjects in the older age-groups.

## Results

### ■ Alcohol

Analysis of the national data showed that the mean annual crude risk of a first hospital admission was 3.4

**Table 2** Age-adjusted relative risks of first hospitalisation for alcohol or drug abuse or dependence for foreign-born citizens of the Netherlands, aged 15–54, by sex and country of birth, 1990–1996

Sex	Country of Birth	Person-years at risk	Alcohol			Illicit Drugs		
			Cases	Relative risk	(95% CI)	Cases	Relative risk	(95% CI)
Male	The Netherlands	29,018,433	9,911	1.00	(ref.)	6,042	1.00	(ref.)
	Surinam	493,682	153	0.90	(0.77–1.05)	492	4.28	(3.90–4.69)
	Dutch Antilles	173,381	76	1.29	(1.03–1.62)	189	4.59	(3.97–5.30)
	Morocco	424,985	66	0.50	(0.39–0.64)	223	2.31	(2.02–2.64)
	Turkey	533,930	82	0.48	(0.39–0.60)	119	0.88	(0.74–1.06)
	Northern Mediterranean <sup>a</sup>	207,830	52	0.67	(0.51–0.88)	81	2.02	(1.62–2.52)
	Belgium	84,203	64	2.18	(1.70–2.79)	48	2.69	(2.03–3.58)
	Germany	229,124	108	1.32	(1.10–1.59)	84	2.07	(1.67–2.56)
	United Kingdom	134,617	77	1.51	(1.21–1.90)	50	1.73	(1.31–2.29)
	Female	The Netherlands	27,994,488	3,793	1.00	(ref.)	2,054	1.00
Surinam		521,053	30	0.43	(0.30–0.62)	86	2.00	(1.61–2.49)
Dutch Antilles		171,790	16	0.71	(0.43–1.16)	21	1.50	(0.97–2.30)
Morocco		305,300	8	0.23	(0.12–0.47)	14	0.55	(0.32–0.92)
Turkey		433,139	3	0.06	(0.02–0.19)	4	0.10	(0.04–0.28)
Northern Mediterranean <sup>a</sup>		167,986	15	0.60	(0.36–1.00)	28	2.36	(1.63–3.43)
Belgium		108,779	30	1.89	(1.32–2.71)	19	2.44	(1.55–3.84)
Germany		271,719	65	1.63	(1.27–2.08)	108	5.82	(4.80–7.06)
United Kingdom		108,010	21	1.35	(0.88–2.07)	13	1.56	(0.90–2.69)

<sup>a</sup>Includes Spain, Portugal, Italy, former Yugoslavia and Greece

per 10,000 for a Dutch male and 1.4 per 10,000 for a Dutch female. The risk was moderately higher for immigrants from Belgium, Germany and the UK, and for male immigrants from the Dutch Antilles. The risk was lower for female immigrants from the Antilles and for male and female immigrants from Surinam, Turkey, Morocco and the Northern Mediterranean countries (Table 2).

Analysis of the Rotterdam data showed that the mean annual crude risk of a first contact with relevant services was much higher: 22.5 per 10,000 for a Dutch male and 8.0 per 10,000 for a Dutch female. The risk was lower for most immigrant groups. There were too few immigrants from western countries for meaningful sub-analyses (Table 3).

## ■ Illicit Drugs

The national data showed that most subjects had been diagnosed with dependence on a morphine type drug (ICD-9: 304.0) or a combination of a morphine type drug with any other drug (304.7). This was true for the Dutch (63%) and immigrant groups (55–78%). The second and third most common diagnoses were dependence on cannabis (304.3) and cocaine (304.2). The mean annual risk of a first admission was 2.1 per 10,000 for a Dutch male and 0.7 per 10,000 for a Dutch female. Male immigrants from Turkey and female immigrants from Turkey and Morocco had a lower risk of first admission. The other immigrant groups were at higher risk, and this was particularly the case for male immigrants from the Dutch Antilles and Surinam, and for female immigrants from Germany. Female immigrants from

Surinam and the Antilles and male immigrants from Morocco had a slightly higher risk of first admission than Dutch individuals.

According to the Rotterdam data, the mean annual risk of a first contact with relevant services was 24.5 per 10,000 for a Dutch male and 9.1 per 10,000 for a Dutch female. This risk was higher for male immigrants from Surinam, the Dutch Antilles, and Morocco, but lower than indicated by the national data. Female immigrants from Surinam and the Dutch Antilles were at a lower risk, as were immigrants from Cape Verde, Turkey and the Northern Mediterranean, and female immigrants from Morocco.

## Discussion

### ■ Main findings

Since differential levels of social adversity may explain the ethnic pattern for schizophrenia, we tested the hypothesis that the pattern for DUD is similar. As expected, the risk of a first treatment for a DUD was higher for male immigrants from Surinam, the Dutch Antilles and Morocco and lower for female immigrants from Morocco and for immigrants of either gender from Turkey. The results for women from Surinam and the Netherlands Antilles were contradictory, namely a higher risk of treatment for DUD according to the national data and a lower risk according to the Rotterdam data. Remarkably, immigrants from almost all non-western countries had a lower risk of a first treatment for an AUD than Dutch nationals.

**Table 3** Age-adjusted relative risks of first treatment episode for disorder in use of alcohol or illicit drugs, for foreign-born citizens of Rotterdam, aged 15–54, by sex and country of birth, 1992–2001

Sex	Country of Birth	Person-years at risk	Alcohol			Illicit Drugs		
			Cases	Relative risk	(95% CI)	Cases	Relative risk	(95% CI)
Male	The Netherlands	1,017,807	2,286	1.00	(ref.)	2,496	1.00	(ref.)
	Surinam	122,850	238	0.87	(0.76–0.99)	663	2.09	(1.92–2.28)
	Dutch Antilles	37,676	72	0.94	(0.74–1.20)	314	3.08	(2.75–3.47)
	Morocco	74,025	76	0.51	(0.41–0.64)	297	1.50	(1.33–1.69)
	Turkey	99,163	91	0.44	(0.35–0.54)	111	0.41	(0.34–0.50)
	Northern Mediterranean <sup>a</sup>	44,265	23	0.22	(0.14–0.33)	90	0.92	(0.75–1.14)
	Cape Verde	34,788	33	0.38	(0.27–0.54)	41	0.51	(0.37–0.69)
	Other countries, rich <sup>b</sup>	40,462	39	0.40	(0.29–0.55)	124	1.34	(1.12–1.60)
	Other countries, poor <sup>c</sup>	93,087	214	1.05	(0.92–1.21)	608	2.49	(2.28–2.72)
	Female	The Netherlands	979,866	787	1.00	(ref.)	891	1.00
Surinam		136,511	43	0.41	(0.30–0.55)	64	0.49	(0.38–0.64)
Dutch Antilles		38,303	9	0.38	(0.21–0.72)	37	0.92	(0.67–1.28)
Morocco		58,269	3	0.08	(0.03–0.25)	21	0.33	(0.21–0.51)
Turkey		88,966	15	0.25	(0.15–0.41)	7	0.08	(0.04–0.16)
Northern Mediterranean <sup>a</sup>		37,716	9	0.29	(0.15–0.55)	30	0.89	(0.62–1.28)
Cape Verde		36,274	6	0.21	(0.09–0.46)	12	0.36	(0.20–0.64)
Other countries, rich <sup>b</sup>		39,487	16	0.47	(0.29–0.78)	69	2.08	(1.63–2.66)
Other countries, poor <sup>c</sup>		86,636	61	0.92	(0.71–1.19)	172	2.06	(1.75–2.43)

<sup>a</sup>Includes Spain, Portugal, Italy, former Yugoslavia and Greece

<sup>b</sup>Includes Western and Northern Europe, USA, Canada, Australia, New Zealand, Israel, Japan

<sup>c</sup>Includes remaining countries

### Strengths and weaknesses of the study

Our study was based on complete information from all Dutch hospitals (national data), all inpatient- and outpatient clinics in Rotterdam (Rotterdam data) and reliable denominators. The denominators did not include small numbers of illegal immigrants, but there is no evidence that they are at a high risk of developing a substance use disorder. The prevailing idea is that they behave inconspicuously, from fear of being detected and expelled.

The accuracy of the data on country of birth has not been examined. However, since the responsible physician, psychologist, nurse or social worker, who knew the patient well, provided this information, it was probably in most cases correct. Furthermore, “country of birth” is not always synonymous with ethnic origin. Some Dutch nationals were second-generation immigrants, but most of them were younger than 20 during the study period. Finally, our study did not regard outpatient facilities in other places than Rotterdam.

### True differences in risk?

The registries could not provide information on the *time when* the patient developed the disorder. However, the physicians who treated the Surinamese, Dutch Antillean, Turkish, and Moroccan immigrants stated that most patients developed the DUD after their arrival in the Netherlands. The higher risk of DUDs among western immigrants, in contrast, is almost certainly because these individuals already had

the disorder before immigrating and sought drugs or treatment in the Netherlands. A survey in Amsterdam revealed that only 4 of 369 western immigrants had developed their DUD in the Netherlands [4]. Many German heroin prostitutes, for example, came for treatment with methadone.

It is very likely that the results presented here do not equate to true incidence rates. A high proportion of heroin addicts (62–81%) do come in contact with the Dutch services [11], but this is probably not true for people addicted to other drugs or to alcohol. It may be noteworthy here that cannabis is the most popular drug of misuse, not heroin [1].

Consequently, an important question concerns the true differences in the risk of developing a disorder. Bearing in mind that there is evidence that non-western immigrants are more likely to avoid AUD or DUD services than Dutch nationals are [13, 28], there is probably a real increase in the risk of developing a DUD among male immigrants from Surinam, the Antilles and Morocco, and the true increase could even be greater. Similarly, the decrease in risk among immigrants from Turkey or Cape Verde may in reality be non-existent.

We have no ready explanation for the contradictory findings on the risk of DUD among female immigrants from Surinam and the Dutch Antilles. Firstly, it is possible that they avoid the treatment facilities in Rotterdam. Secondly, a history of migration from Surinam or the Dutch Antilles may be a risk factor for a more severe form of the disorder, which requires hospitalisation. Finally, it is possible that their true risk of developing DUD is not increased and that they are less “successful” than Dutch women in

avoiding hospitalisation. The latter mechanism could explain the increased risk of a first hospitalisation seen in the national data.

### ■ Possible mechanisms

The results presented here may be influenced by many factors, including the patterns of substance use in the countries of origin and destination, selective migration, and thresholds for contacting the relevant services. A previous study concluded that the prevalence of AUD in the country of origin was a strong determinant of the frequency in immigrants [15]. However, it is still uncertain whether the reported international differences in prevalence rates are real or result from measurement error [20]. The low risk of AUDs among immigrants from Turkey and Morocco is probably due to the Islamic religion. A Turkish study reported a low prevalence of alcohol abuse in Istanbul [2].

It is possible that the increased risk in certain immigrant groups is due to selective migration of genetically predisposed individuals, but there have been no studies of this. Selective migration is unlikely to be the sole explanation for the higher risk of a DUD among immigrants from Surinam, because more than a third of the population emigrated shortly after the country became independent.

Since immigrants are over-represented in the urbanized areas of the Netherlands and since urban residence has been found to be associated with a higher risk for the development of AUDs and DUDs [26], one could argue that some findings for migrants obtained with the national data are not a reflection of their ethnic minority status, but a manifestation of the urban effect. Indeed, the relative risks for several immigrant groups were lower in the Rotterdam data than in the national data. However, confounding by urbanicity cannot have played a role in the Rotterdam data-set, where all citizens were exposed to the urban factor. Furthermore, it is likely that urban residence is both a cause and a consequence of the development of a DUD, because many patients move to cities, where illicit substances are more readily available.

### ■ Social defeat?

As expected, the ethnic pattern for DUDs, in particular the low risks among male immigrants from Turkey and the high risks among male immigrants from Surinam, the Dutch Antilles and Morocco, bears a striking resemblance to the ethnic pattern for schizophrenia. The risk of schizophrenia for immigrants from Cape Verde has been addressed by a single prevalence study in Rotterdam, which found no increased rate for Cape Verdian men and a twofold increased rate for Cape Verdian women [7]. Consequently, the results for male immigrants from Cape

Verde are in line with our hypothesis, those for female immigrants are not. How to explain the similarities in ethnic patterns, especially among males?

The relative risks for immigrants from non-western countries might be decreased by adjustment for social class, but unfortunately we did not dispose of the required data to do this. However, social class does not explain the ethnic pattern among the immigrant groups of this study, because Turkish immigrants have a lower educational level and income than Surinamese and Dutch Antillean immigrants [19]. It is also worthwhile to note that the relationship between social class and risk for substance use disorders is not straightforward and may depend on the definition of social class. A large study in Israel found a lower risk for people of high socio-economic status, when this was defined in terms of educational level, income and occupational prestige, but a higher risk for people who have more control over their workplace: ownership, control over budget decisions, control over other workers and control over one's own work [29].

It is also unlikely that the pattern is explained entirely by genetic factors, because Cape Verdians, who are at a low risk, originate from the same part of Africa as the Afro-Surinamese and Dutch Antilleans.

Since use of cannabis and some other drugs increases the risk of schizophrenia [14], one could hypothesise that the increased schizophrenia risks for certain immigrant groups are due to higher rates of drug abuse. However, studies examining drug abuse in patients with a first episode of schizophrenia have failed to find higher rates in African-Caribbeans in the UK or in immigrants to the Netherlands [6, 27].

The chronic experience of social defeat has recently been hypothesised to be a risk factor for both substance use disorders and schizophrenia [22]. Experiments in rats have shown that repeated episodes of social defeat led not only to an increased self-administration of amphetamine and cocaine, but also to amphetamine sensitisation, i.e., an enhanced behavioural and dopamine response to amphetamine [10]. Previously untreated schizophrenic patients exhibit amphetamine sensitisation too [18] and resemble, in this respect, defeated animals. It is possible, therefore, that the subordinate or outsider position of many immigrants contributes to their high risks of substance use disorders and schizophrenia. The social cohesion among Turkish and Cape Verdian immigrants to the Netherlands, who distinguish themselves from other immigrant groups by their strong social and family networks and a strong, positive identification with their own culture [7, 17] may be a protective factor. Cape Verdians are known as "silent immigrants", because they do not complain and do not cause many problems. Moreover, the stability of the Turkish community is reflected by the lower crime rate among Turkish immigrants compared with their Moroccan, Dutch Antillean or Surinamese counter-

parts [16]. The results of a study in London, which demonstrated that the incidence of schizophrenia in non-white ethnic minorities is greater when they comprise a smaller proportion of the local population, support these ideas [3].

However, not all of the findings are completely in line with our hypothesis. On the basis of the social defeat hypothesis one would expect high risks of AUDs among immigrants from the non-Islamic countries of Surinam and the Dutch Antilles, but this study only found an increased risk for Dutch Antillean-born males in the national data. Perhaps a preference for either alcohol or drugs is explained by cultural factors.

In conclusion, this study showed similarities between the ethnic pattern for DUD and that for schizophrenia. However, further research is needed to investigate whether these similarities also occur in other countries and whether they are due to the experience of social defeat or to other factors.

## References

1. Abraham MD, Kaal HL, Cohen PDA (2001) Licit and illicit drug use in Amsterdam, 1987–2001. Development of drug use in Amsterdam, as measured in five population surveys between 1987 and 2001. Centre for Drugs Research, Amsterdam
2. Akvardar Y, Turkcan A, Yazman U, Aytaclar S, Ergor G, Cakmak D (2003) Prevalence of alcohol use in Istanbul. *Psychol Rep* 92:1081–1088
3. Boydell J, van Os J, McKenzie K, Allardyce J, Goel R, McCreadie RG, Murray RM (2001) Incidence of schizophrenia in ethnic minorities in London: ecological study into interactions with the environment. *BMJ* 323:1336–1368
4. van Brussel GHA, van Lieshout SJM (1990) Annual Report of Drugs Department. Municipal Medical and Health Services, Amsterdam
5. Cantor-Graae E, Selten JP (2005) Schizophrenia and migration: a meta-analysis and review. *American Journal of Psychiatry* 162:12–24
6. Cantwell R, Brewin J, Glazebrook C, Dalkin T, Fox R, Medley I (1999) Prevalence of substance misuse in first-episode psychosis. *Br J Psychiatry* 174:150–153
7. Choenni C (2004) Kaapverdianen in Nederland [Cape Verdians in the Netherlands]. Ministry of Justice, The Hague
8. Cochrane R, Bal SS (1989) Mental hospital admission rates of immigrants to England: a comparison of 1971 and 1981. *Soc Psychiatry Psychiatr Epidemiol* 24:2–11
9. Coulthard M, Farrell M, Singleton N, Meltzer H (2002) Tobacco, alcohol and drug use and mental health. HMSO, London
10. Covington HE, Miczek KA (2001) Repeated social defeat-stress, cocaine or morphine: effects on behavioural sensitisation and intravenous self-administration “binges”. *Psychopharmacology (Berlin)* 158:388–398
11. Driessen FMHM (1990) Provision of methadone in the Netherlands. Bureau Driessen, Utrecht
12. Engbersen GJ, van der Leun J, Willems P (1995) The relationship between illegal residence and criminality. University of Utrecht, Utrecht
13. Harrison L, Sutton M, Gardiner E (1997) Ethnic differences in substance use and alcohol-use-related mortality among first generation migrants to England and Wales. *Substance use and misuse* 32:849–876
14. Henquet C, Krabbendam L, Spauwen J, Kaplan C, Lieb R, Wittchen HU, van Os J (2005) Prospective cohort study of cannabis use, predisposition for psychosis, and psychotic symptoms in young people. *BMJ* 330:7481–7486
15. Hjern A, Allebeck P (2004) Alcohol-related disorders in first- and second-generation immigrants in Sweden: a national cohort study. *Addiction* 99:229–236
16. Junger M, Polder W (1992) Some explanations of crime among four ethnic groups in the Netherlands. *J Quant Criminol* 8:51–77
17. Landmann N (1992) The Islamic institutions in the Netherlands. Free University Press, Amsterdam
18. Laruelle M (2003) Dopamine transmission in the schizophrenic brain. In: Hirsch SR, Weinberger D (eds) *Schizophrenia* (2nd Ed). Blackwell, Oxford, pp 365–387
19. Martens EP (1999) Focus on ethnic minorities. Institute for Socio-Economic Research, Rotterdam
20. Rehm J, Room R, van den Brink W, Jacobi F (2005) Alcohol use disorders in EU countries and Norway: an overview of the epidemiology. *Eur Neuropsychopharm* 15:377–382
21. Schrier AC, van de Wetering BJM, Mulder PGH, Selten JP (2001) Point prevalence of schizophrenia in immigrants groups in Rotterdam: data from outpatient facilities. *Eur Psychiatry* 16:162–166
22. Selten JP, Cantor-Graae E (2005) Social defeat: risk factor for schizophrenia? *Br J Psychiatry* 187:101–102
23. Selten JP, Sijben AES (1994) First admission rates for schizophrenia in immigrants to the Netherlands. The Dutch national registry. *Soc Psychiatry Psychiatr Epidemiol* 27:71–77
24. Selten JP, Slaets JPJ, Kahn RS (1997) Schizophrenia in Surinamese and Dutch Antillean immigrants to the Netherlands: evidence of an increased incidence. *Psychol Med* 27:807–811
25. Selten JP, Veen ND, Feller WG, Blom JD, Camoenië W, Oolders J, van der Velden M, Hoek HW, Vladar Rivero VM, van der Graaf Y, Kahn RS (2001) Incidence of psychotic disorders in immigrants to the Netherlands. *Br J Psychiatry* 178:367–372
26. Sundquist K, Frank G (2004) Urbanization and hospital admission rates for alcohol and drug abuse: a follow-up study of 4.5 million women and men in Sweden. *Addiction* 99:1298–1305
27. Veen ND, Selten JP, Hoek HW, Feller WG, van der Graaf Y, Kahn RS (2002) Use of illicit substances in a psychosis incidence cohort: a comparison among ethnic groups in the Netherlands. *Acta Psychiatr Scand* 105:440–443
28. Verdurmen JEE, Smit F, Toet J, van Driel HF, van Ameijden EJC (2004) Under-utilisation of addiction treatment services by heroin users from ethnic minorities: results from a cohort study over four years. *Addiction Res Theory* 12:285–298
29. Wohlfarth T, van den Brink WJ (1998) Social class and substance use disorders: the value of social class as distinct from socioeconomic status. *Soc Sci Med* 47:51–58
30. World Health Organisation (1978) *Mental disorders: glossary and guide to their classification in accordance with the 9th revision of the International Classification of Diseases*. WHO, Geneva