Discrimination and the incidence of psychotic disorders among ethnic minorities in The Netherlands

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Background It is well established now that the incidence of schizophrenia is extremely high for several ethnic minority groups in western Europe, but there is considerable variation among groups. We investigated whether the increased risk among these groups depends upon the degree to which they perceive discrimination based on race or ethnicity.

Methods We studied the incidence of psychotic disorders over 7 years in The Hague, a city with a large and diverse population of ethnic minorities. To compare the incidence of schizophrenic disorders (DSM IV: schizophrenia, schizophreniform disorder, schizoaffective disorder) in each ethnic minority group with the incidence in native Dutch, we computed incidence rate ratios (IRRs). Based on a population study and on rates of reported incidents of discrimination in The Hague, the degree of perceived discrimination of ethnic minority groups was rated: high (Morocco), medium (Netherlands-Antilles, Surinam and ‘other non-western countries’), low (Turkey) or very low (‘western or westernized countries’).

Results The age- and gender-adjusted IRRs of schizophrenic disorders for ethnic minority groups exposed to high, medium, low, and very low discrimination were 4.00 (95% CI 3.00–5.35), 1.99 (1.58–2.51), 1.58 (1.10–2.27), and 1.20 (0.81–1.90), respectively. When not only schizophrenic, but all psychotic disorders were included in the analysis, the results were similar.

Conclusions These results suggest that discrimination perceived by ethnic minority groups in western Europe, or some factor closely related to it, may contribute to their increased risk of schizophrenia.

Keywords Schizophrenia, incidence, ethnic groups, discrimination

Introduction

The incidence of schizophrenia and other psychotic disorders is very high for several minority groups in western Europe.1,2 A broad spectrum of ethnic groups is affected, but there is considerable heterogeneity across groups.3 In the UK, the risk for African-Caribbeans is much higher than for South Asians,2 and in The Netherlands, the risk for immigrants from Morocco is higher than for those from Turkey.1 While these findings may offer clues to the aetiology of psychotic disorders, thus far they have defied explanation.4 As the excess cannot be explained by any known bias or biological risk factor,3 investigators have turned attention to the possible role of the social context in which ethnic minorities live.3
Measured variation across groups in aspects of the social context can be used to find out which factors may contribute to the observed variation in the incidence of schizophrenia.6

Discrimination based on ethnic background, skin colour or race (hereafter referred to as discrimination) has been suggested as one such factor.3,4 Discrimination has many facets, which tend to be correlated and difficult to disentangle. It comes in interpersonal experiences of racist insults or violence, but also in structural discrimination by institutions, as in employment policies or access to education or housing facilities. Discrimination may be directed at individuals or at groups, it can be found in opinions, attitudes and in behaviours, may be measured by objective events or by subjective perceptions of events,7,8 and has a pervasive, adverse influence on health of ethnic minority populations.9

Some cross-sectional studies have reported an association between perceived discrimination and the prevalence of psychosis at the individual level,10,11 and a prospective study in The Netherlands suggested that perceived discrimination (albeit not only racial, but any discrimination) may induce the onset of delusional ideations.12 A recent meta-analysis of incidence studies of psychotic disorders found that the risks were particularly high for dark-skinned immigrants, who are likely to experience a higher degree of discrimination.3 Perceived discrimination may be an important determinant of psychotic disorders not only at individual level, but also at group level. Ethnic minority groups differ in terms of their stigmatized status in society. Members of these groups develop shared understandings of this status, which include knowledge of negative cultural stereotypes of their identity, awareness that they are devalued in the eyes of others and recognition that they could be victims of discrimination.13–15 Independent of personal experiences, these collective representations of stigma have been associated with poor health outcomes.15,16

In the present study, we examined the association between perceived discrimination as a group characteristic and the incidence of psychotic disorders in ethnic minorities. We used data from a first-contact incidence study of psychotic disorders over 7 years, conducted in the city of The Hague, a city with a large and diverse population of ethnic minorities. We hypothesized that the incidence in ethnic minorities is associated with the extent to which these groups perceive discrimination.

**Methods**

**Classification of ethnicity**

The municipality of The Hague keeps records of citizens’ country of birth and that of their parents. In this study, we used the classification of ethnicity as defined by The Netherlands’ Bureau of Statistics. Dutch ethnicity is assigned to citizens who are Dutch-born and whose parents were also born in The Netherlands (hereafter referred to as native Dutch). If a citizen, or (one of) his or her parents, was born abroad, he or she is assigned to the group of people born in the same country. If the parents were born in different foreign countries, the country of birth of the mother determines the assignment to a particular group. Since they share the background of their country of origin, immigrants and their children are assigned to the same group. Foreign countries of birth are condensed into six categories: (i) Morocco, (ii) Surinam, (iii) Netherlands Antilles, (iv) Turkey, (v) Western or westernized countries (northern, southern or western Europe, the former Yugoslavia, the USA, Canada, Australia, New Zealand, Japan or former Netherlands East Indies) and (vi) All other (non-western) countries. On January 1, 2005, The Hague had 472 087 inhabitants, of whom 45.2% was born outside The Netherlands or had a parent born outside The Netherlands.

**Ratings of discrimination**

Two independent sources were used to rate ethnic minority groups on perception of discrimination.

First, a population study17 measured personal experiences of discrimination among a sample (N = 459) of people from non-western ethnic minorities in five cities in The Netherlands, including The Hague (N = 100). The participants were recruited in public areas, such as markets, mosques, community centres, shops and on the street. They were on average very similar to their respective ethnic groups in The Netherlands in terms of age, sex, generation, religion and unemployment rate, but had somewhat higher levels of education. Participants were interviewed in spring 2001, by research assistants who were matched with participants on ethnicity. Table 1 shows results for the question about whether respondents had experienced incidents of interpersonal discrimination within the last year, dichotomized as: no experience, and any experience of a racist insult, threat or violence.

Second, complaints and reports of discrimination based on ethnic background, skin colour, race or religion, are collected in The Hague by the Anti Discrimination Bureau.18 This bureau actively monitors the nature and degree of discrimination in The Hague, and offers support to those who report any incident of discrimination. Table 2 shows the numbers of reports per ethnic group over the years 2001–05. Incidents involved unequal or hostile treatment, insults, threats and violence, in a context ranging from the labour market, restaurants, media, access to housing and education, to perceived discrimination by police, passers-by on the street or neighbours. We calculated rates of the ethnic groups’ perceived discrimination by dividing the absolute numbers of reported incidents as published in the report18 by the number of person-years.

Based on both measures, we rated the ethnic groups according to degree of perceived discrimination. In case of discrepancy between the two sources, we used the results of the
Neighbourhood deprivation

Neighbourhood deprivation, defined by high proportions of unemployed persons, low average income, poor quality of housing and high crime rates negatively influences health, and has been associated with high rates of schizophrenia in some studies. Therefore, investigations of the social context should take neighbourhood deprivation into account. The Hague consists of 44 neighbourhoods. A measure of the socio-economic level of the neighbourhoods was provided by the municipality. This score is based on proportion long-term unemployed, mean income, quality of housing and mean level of education (but not proportion of ethnic minorities). The effects of socio-economic level of the neighbourhoods was provided by the Anti Discrimination Bureau, The Hague.18

Thus, we rated the ethnic groups as perceiving high (Morocco), medium (Netherlands Antilles, Surinam and other non-western countries), low (Turkey) or very low (western or westernized countries) discrimination (Tables 1 and 2).

### Table 2  Rates of reported incidents of discrimination in The Hague, 2001–05, per ethnic group

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Person years&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Number of incidents of discrimination&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Rate&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>112 298</td>
<td>230</td>
<td>204.8</td>
<td>High</td>
</tr>
<tr>
<td>Other non-western countries</td>
<td>224 241</td>
<td>373</td>
<td>166.3</td>
<td></td>
</tr>
<tr>
<td>Netherlands-Antilles</td>
<td>52 422</td>
<td>70</td>
<td>133.3</td>
<td>Medium</td>
</tr>
<tr>
<td>Surinam</td>
<td>221 188</td>
<td>176</td>
<td>79.6</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>147 447</td>
<td>97</td>
<td>65.8</td>
<td>Low</td>
</tr>
<tr>
<td>Western countries</td>
<td>251 487</td>
<td>56</td>
<td>22.3</td>
<td>Very low</td>
</tr>
</tbody>
</table>

<sup>a</sup> As defined in text, first- and second-generation included.
<sup>b</sup> Population 2001–05.
<sup>c</sup> Absolute numbers of complaints and reports of discrimination, 2001–05, Anti Discrimination Bureau, The Hague.
<sup>d</sup> Per 100 000 person-years.

The most deprived neighbourhoods were located in the city centre.

### Incidence of psychotic disorders

#### Subjects

The study was conducted in two phases (April 1, 1997 to April 1, 1999 and October 1, 2000 to October 1, 2005). Previous reports have detailed the methods of this study and presented descriptive data on incidence rates up to 2002. Briefly, the criteria for inclusion and exclusion were similar to those used in the World Health Organization Ten-Country study. There was collaboration with the local general practitioners, psychiatrists and residents in psychiatry, to get access to every possible case. Over the 7 years of the study, 678 citizens of The Hague aged 15–54 years made first contact with a psychiatrist for a (suspected) psychotic disorder. Diagnostic interviews were conducted by the research team in 497 cases (73%) and interviews with relatives in 420 cases (62%). For the patients who refused to be interviewed, the physicians provided detailed clinical information. Differences in the proportions of refusers across the discrimination categories were small (29%, 25%, 25% and 26% for very low, low, medium and high discrimination, respectively).

Of the total of 678 patients, 60 were excluded on the basis of being diagnosed with a substance-induced psychotic disorder, a psychotic disorder due to a somatic condition or a non-psychotic disorder, using the diagnostic protocol described subsequently.

#### Diagnostic protocol

The patients were interviewed by Dutch residents in psychiatry, using the Dutch translation of a semi-structured diagnostic interview, the Comprehensive Assessment of Symptoms and History (CASH). Relatives were interviewed by trained nurses, using the Instrument for the Retrospective Assessment of the Onset of Schizophrenia (IRAOS). If necessary, an official interpreter was available to help in the administration of the CASH or IRAOS. In addition, the residents asked the physicians of the patients for detailed clinical information. Based on CASH, IRAOS and clinical information, the residents compiled a narrative history of the patient’s illness. For the patients who had refused to participate in the interviews, a history was made with the anonymized clinical information.

During a diagnostic meeting, two psychiatrists made a consensus DSM-IV diagnosis on the basis of the narrative history.

#### Statistical procedures

The municipality of The Hague provided population figures per country of birth, gender, five-year age-group and neighbourhood for the years of the study, yielding 1 870 408 person-years of observation. First-contact rates were calculated by dividing the number of cases by the number of person-years (ages 15–54). Incidence rate ratios (IRR) and 95% confidence intervals (95% CI) were calculated by Poisson regression analysis, using the STATA statistical program, 9.0 version.

All comparisons of ethnic minority groups with native Dutch were adjusted for five-year age-group, gender and socio-economic level of the neighbourhood. The effects of discrimination were tested for statistical significance by Wald tests. Additional analyses were conducted to address diagnostic bias. A potential source of bias in this study is over-diagnosis of schizophrenic disorders (DSM IV: schizophrenia, schizoaffective disorder, schizoaffective disorder) among people from ethnic minorities presenting with psychotic symptoms. Therefore, we also examined the effects of discrimination for the incidence of all psychotic disorders. In addition, in the
first phase (1997–99), the psychiatrists who made the diagnosis were blinded for ethnicity by omitting any clue to a patient’s ethnicity in the narrative history, to ensure that their perceptions of ethnic minorities could not influence their diagnoses. In the second phase (2000–05), all relevant information about a patient’s ethnicity was included. The proportions of patients from non-western ethnic minorities that received a diagnosis of a schizophrenic disorder were compared between the two diagnostic methods.

Table 3 Socio-demographic variables and diagnoses of the cases identified in the study

<table>
<thead>
<tr>
<th>Number of participants</th>
<th>618</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender [No. (%)]</td>
<td>436 (70.6)</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>Male 26.6 (7.8)</td>
</tr>
<tr>
<td></td>
<td>Female 29.3 (8.7)</td>
</tr>
<tr>
<td>Ethnicity (No.)*</td>
<td>Morocco 91</td>
</tr>
<tr>
<td></td>
<td>Surinam 94</td>
</tr>
<tr>
<td></td>
<td>Netherlands-Antilles 21</td>
</tr>
<tr>
<td></td>
<td>Turkey 55</td>
</tr>
<tr>
<td></td>
<td>Other non-western countries 97</td>
</tr>
<tr>
<td></td>
<td>Western countries 34</td>
</tr>
<tr>
<td></td>
<td>Native Dutch 226</td>
</tr>
<tr>
<td>Diagnosis, (No.)</td>
<td>Schizophrenic disorder 424</td>
</tr>
<tr>
<td></td>
<td>Major depressive disorder with psychotic features 25</td>
</tr>
<tr>
<td></td>
<td>Bipolar disorder with psychotic features 38</td>
</tr>
<tr>
<td></td>
<td>Delusional disorder 10</td>
</tr>
<tr>
<td></td>
<td>Brief psychotic disorder 33</td>
</tr>
<tr>
<td></td>
<td>Psychotic disorder, not otherwise specified 88</td>
</tr>
</tbody>
</table>

* As defined in text, includes first- and second-generation.

Table 4 Incidence rate ratios (IRRs) for schizophrenic disorders in by degree of perceived discrimination and ethnic group

<table>
<thead>
<tr>
<th>Degree of discrimination</th>
<th>Ethnic group</th>
<th>Cases/Person-years</th>
<th>Unadjusted IRR 95% CI</th>
<th>Adjusted IRR 95% CI</th>
<th>Adjusted IRR 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Morocco</td>
<td>70/88 249</td>
<td>5.90 (4.43–7.85)</td>
<td>4.00 (3.00–5.35)</td>
<td>3.52 (2.56–4.83)</td>
</tr>
<tr>
<td></td>
<td>Netherlands Antilles</td>
<td>150/453 849</td>
<td>2.46 (1.95–3.09)</td>
<td>1.99 (1.58–2.51)</td>
<td>1.84 (1.44–2.36)</td>
</tr>
<tr>
<td></td>
<td>Surinam</td>
<td>13/45 064</td>
<td>2.15 (1.22–3.79)</td>
<td>1.64 (0.93–2.90)</td>
<td>1.54 (0.87–2.74)</td>
</tr>
<tr>
<td></td>
<td>Other non-western countries</td>
<td>72/203 088</td>
<td>2.64 (1.99–3.50)</td>
<td>2.21 (1.66–2.94)</td>
<td>2.05 (1.52–2.77)</td>
</tr>
<tr>
<td>Medium</td>
<td>Turkey</td>
<td>37/122 249</td>
<td>2.25 (1.57–3.23)</td>
<td>1.58 (1.10–2.27)</td>
<td>1.41 (0.96–2.07)</td>
</tr>
<tr>
<td>Low</td>
<td>Western countries</td>
<td>25/149 889</td>
<td>1.24 (0.81–1.90)</td>
<td>1.20 (0.79–1.84)</td>
<td>1.17 (0.76–1.81)</td>
</tr>
<tr>
<td>Very low</td>
<td>Native Dutch</td>
<td>142/1056 172</td>
<td>1.00 (0.81–1.90)</td>
<td>1.00 (0.79–1.84)</td>
<td>1.00 (0.76–1.81)</td>
</tr>
</tbody>
</table>

* Includes DSM-IV categories schizophrenia, schizophreniform disorder and schizoaffective disorder.

**Results**

Of the 436 men and 182 women who made first contact for a psychotic disorder, 311 men and 113 women were diagnosed with a schizophrenic disorder. The overall first-contact rate for schizophrenic disorders was 33 (95% CI 30–36) per 100 000 person-years. Table 3 shows the demographic characteristics and diagnoses of the cases identified in the study.

Across ethnic minority groups, the incidence of schizophrenic disorders increased with degree of perceived discrimination. Compared with native Dutch, the IRRs among ethnic minority groups, adjusted for age and sex, were 4.00 (95% CI 3.00–5.35), 1.99 (1.58–2.51), 1.58 (1.10–2.27) and 1.20 (0.79–1.84) for high, medium, low and very low degree of discrimination, respectively (Table 4). In this Poisson regression model, the adjusted pooled $\chi^2$ for degree of discrimination was 95.97, df = 4, $P < 0.0005$. Table 4 also gives the IRRs for the separate ethnic minority groups.

Further adjustment for socio-economic level of the neighbourhood slightly attenuated the effects of discrimination, particularly in the groups exposed to the most discrimination (Table 4).

Additional analyses were conducted to check for diagnostic bias. When the analysis was extended to include all psychotic disorders, the results were similar (Table 5). The proportion of patients from non-western ethnic minorities that received a diagnosis of a schizophrenic disorder was 65% (70/108) in the first phase and 75% (186/249) in the second phase ($\chi^2 = 3.63$, df = 1, $P = 0.06$).

**Discussion**

The increased risk of schizophrenia and other psychotic disorders for ethnic minority groups in western Europe is a consistent and strong finding, which thus far has defied explanation. It is also evident that the degree of increased risk of schizophrenia varies substantially among these ethnic minority groups. The results of the present study in...
The Hague may take us a step toward understanding this phenomenon. The incidence of psychotic disorders varied across ethnic minority groups by degree of perceived discrimination: the incidence was higher when groups perceived more discrimination.

Our data suggest that belonging to an ethnic minority group perceiving a high degree of discrimination is a risk factor for psychotic disorders, rather than immigration per se. We measured discrimination as a group-level characteristic, shared by all the members of the group. Belonging to a group that is stigmatized or discriminated against, has been linked to poor mental health, physical illness and academic underachievement, not only in individuals who perceive direct interpersonal discrimination, but also in those who experience that their group is discriminated against and stigmatized. Perceptions and impact of discrimination appear to be influenced by group characteristics such as ethnic support, collective self-esteem, and perhaps also sensitivity for discrimination. It should nonetheless be emphasized that the effect of a group-level factor does not preclude individual variation in experience which also influences disease risk. Within an ethnic group, individual perceptions of discrimination vary, and influence disease risk.

The findings are consistent with studies from the United Kingdom. The highest risk of psychotic disorders has been found in the African-Caribbean population, which is the ethnic minority group that also reported the highest degree of discrimination.

Our rating of discrimination for ethnic minority groups was based on measures of perceived discrimination, but discrimination is also present in structural, institutional forms, or in prejudiced attitudes of the majority population. The Moroccan population in The Netherlands probably has the highest ratings on all these dimensions of discrimination. The Moroccan ethnic group had the highest rating on perceived discrimination in this study, has the highest unemployment rate of all ethnic minority groups and is disliked most by native Dutch. However, these dimensions are not necessarily concordant for other ethnic groups. The Turkish group has only a slightly better socioeconomic position than the Moroccan group, and yet is rated low in terms of perceived discrimination. The Surinamese and Antillean groups are liked better than the Turkish group by the native Dutch, and are less often unemployed, and yet are rated higher in terms of perceived discrimination. Thus, perception of discrimination may be an important factor in the relationship between discrimination and psychosis, even when taking into account structural discrimination or socioeconomic consequences of discrimination. This is consistent with our finding that the effects of perceived discrimination did not change significantly after adjustment for socioeconomic level of the neighbourhood, and with recently developed conceptual models that explicitly place racial discrimination within a stress framework and focus on perceived racism as an important determinant of health.

An important next step for understanding aetiology is to determine the mechanism by which groups’ perceptions of discrimination would result in individuals developing schizophrenia, a neurodevelopmental disorder. The profoundly difficult and inescapable experience of ongoing discrimination and stigma may present a threat to social identity of individuals, which is a severe cognitive and emotional challenge. Individuals with a genetic vulnerability to schizophrenia often have impaired executive function, and when subjected to such a severe challenge, they may be more likely to develop the disorder. This may apply in particular to those who have a greater tendency for making external attributions, as these attributions may lead to paranoid ideations and in extreme form to persecutory delusions. Animal experiments are of some relevance here. In male rats, repeated exposures to social defeat leads to sensitization of the mesolimbic dopamine system, i.e. an enhanced behavioural and dopamine response to dopamine agonists. The mesolimbic dopamine system of untreated schizophrenia patients has been demonstrated to be sensitized too. Consequently, if the results of the animal experiments can be extended to humans, it is possible that chronic exposure to discrimination, or other forms of social defeat, lead to disturbances in dopamine function and further the development of psychosis.

**Strengths and limitations**

A major strength of this study is its size. Second, both the numerators (cases) and denominators (person-years) of the incidence rates were reliable. The incident cases were derived from all sources of treatment in a defined municipality and were assessed with a rigorous diagnostic protocol. The person-years were derived from a comprehensive municipal registration system. Registration with municipal authorities is compulsory for all individuals residing legally in The Netherlands and a prerequisite for obtaining essential documents and possible aid (e.g. income support). The data from a recent report in

### Table 5 Incidence rate ratios (IRRs) for all psychotic disorders by degree of perceived discrimination

<table>
<thead>
<tr>
<th>Degree of discrimination</th>
<th>Cases/Person-years</th>
<th>Unadjusted</th>
<th>Adjusted&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Adjusted&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Adjusted&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>91/88 249</td>
<td>4.82</td>
<td>3.78–6.15</td>
<td>3.50</td>
<td>2.73–4.47</td>
</tr>
<tr>
<td>Medium</td>
<td>212/45 3849</td>
<td>2.18</td>
<td>1.81–2.63</td>
<td>1.84</td>
<td>1.52–2.22</td>
</tr>
<tr>
<td>Low</td>
<td>55/122 249</td>
<td>2.10</td>
<td>1.57–2.82</td>
<td>1.56</td>
<td>1.16–2.10</td>
</tr>
<tr>
<td>Very low</td>
<td>34/149 889</td>
<td>1.06</td>
<td>0.74–1.52</td>
<td>1.03</td>
<td>0.72–1.48</td>
</tr>
<tr>
<td>Native Dutch</td>
<td>226/1 056 172</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

<sup>a</sup> Adjusted for age and gender.
<sup>b</sup> Adjusted for age, gender and socio-economic level of the neighbourhood.
<sup>c</sup> As defined in text.
The Netherlands\(^{36}\) suggest that the number of illegal foreigners in The Hague is less than 7000. Thus, under-enumeration of ethnic minorities is unlikely to explain the findings.

We used two independent sources to rate ethnic groups on perceived discrimination.\(^{17,18}\) Both studies used different methods: one used interviews, the other relied on reported incidents of discrimination. The similar results of both measures argues for the validity of the rating of perceived discrimination in the years of the study. Nevertheless, based on the figures from the Anti Discrimination Bureau in The Hague alone (Table 2), it could be argued that Surinamese, who were assigned to the medium discrimination category, should be classified as experiencing low degree of discrimination. When we did so, the main effect of discrimination remained highly significant, but the difference in risk for the medium and low discrimination categories disappeared (data not shown).

Limitations of the study may include the system of classification of ethnicity. In The Netherlands, ethnicity is generally not determined by self-ascription, but by (parents') country of origin. However, this classification reflects the dominant consensus about ethnic categories in The Netherlands, which is relevant for group-level discrimination and stigma, regardless of individual identification with these categories.

There may have been some misclassification of perceived discrimination of ethnic minority groups. Those from western or westernized countries were all designated as perceiving low degree of discrimination. People from countries such as former Yugoslavia and Japan were assigned to the group of western countries, but may differ from the majority population in skin colour or behaviour, and may experience discrimination to a higher degree. However, such misclassification could not have appreciably affected our results. These are small groups in The Hague, and we found only one case among them.

Diagnostic bias could have contributed to higher rates of schizophrenic disorder in groups that are discriminated against. Additional analyses addressed this potential bias. First, the results were similar when all psychotic disorders were included in the analyses rather than only schizophrenic disorder. Second, the proportion of non-western patients receiving a diagnosis of schizophrenic disorder was slightly higher in the diagnostic protocol where the psychiatrists were not blinded for ethnicity compared with the protocol where they were blinded, but this difference was not statistically significant and too small to explain the findings.

**Potential confounding**

Socio-economic status of the ethnic minority groups was not adjusted for. As noted earlier, this cannot fully account for our findings, because socio-economic status is not highly concordant with perceived discrimination among these ethnic groups. For example, the risk of schizophrenia is lower for people with Turkish background than for Surinamese, but their socio-economic status as a group is much lower than that of Surinamese.\(^{29}\)

We adjusted for neighbourhood deprivation, but other neighbourhood characteristics may also be important for the incidence of psychotic disorders. First, urban birth and upbringing is an established risk factor for schizophrenia.\(^{37}\) It is unlikely that this could explain differences in rates across ethnic minority groups, because the study was restricted to the urban population of The Hague. Prior history of residences may also influence the risk of later schizophrenia,\(^{37}\) but the majority of the second generation of all ethnic minority groups is born in The Hague, and the large majority of first-generation immigrants from both Morocco and Turkey comes from rural areas, whereas the risk of schizophrenic disorder was much higher for Moroccans than for Turks.\(^{1}\)

Second, a low proportion of ethnic minorities living in the neighbourhood has been associated with higher incidence of schizophrenia among these minorities.\(^{5}\) Low ethnic density is likely to be associated with smaller probability of social support, which may lead both to higher degree of perceived discrimination and the onset of psychotic disorder. On the other hand, the ethnic density effect is often attributed to more exposure to or increased perception of discrimination among members of ethnic minority groups living in neighbourhoods with low ethnic density.\(^{18}\) In that case, low ethnic density is not a confounding factor in the present study, but may be regarded as an antecedent or an indicator of perceived discrimination.

Use of cannabis is related to the onset of schizophrenia,\(^{39}\) and may be the cause or consequence of discrimination. In the Netherlands, however, there is no clear evidence that the prevalence of drug use is higher in ethnic minority groups than among the majority population.\(^{40}\) Also, there was no association between ethnicity and drug use among cases in the first phase of our study.\(^{41}\)

A long period of separation from parents in childhood has been associated with the incidence of schizophrenia, particularly among African-Caribbeans in the UK.\(^{52}\) Pre-natal exposures such as infection and nutritional deficiency have been related to the risk of schizophrenia.\(^{43,44}\) High paternal age at birth is a risk factor for schizophrenia in offspring.\(^{45}\) To account for our findings, these factors would have to be very strongly correlated with the degree of perceived discrimination across ethnic minority groups.

**Conclusion**

In these data, degree of ethnic groups’ perceived discrimination was associated with the incidence of schizophrenia. Discrimination, or some factor that is strongly associated with discrimination, may be part of the explanation of an increased incidence among ethnic minorities in western Europe. This finding also underscores the importance of investigating discrimination as a determinant of health in minority populations.

**Acknowledgements**

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**Conflict of interest:** None declared.
KEY MESSAGES

- The incidence of schizophrenia is increased in several ethnic minority groups in The Netherlands.
- Degree of perceived discrimination measured as a group characteristic is associated with the incidence of schizophrenia in these ethnic minorities.
- This association is not explained by neighbourhood deprivation.

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