

Suicidal behavior and ethnicity of young females in Rotterdam, the Netherlands: rates and risk factors

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Objective. Although Western Europe is becoming increasingly multicultural, ethnic minorities are scarcely included in studies of suicidology. We investigated the prevalence of non-fatal suicidal behavior and examined risk factors in non-western female immigrant adolescents compared to majority female adolescents in the city of Rotterdam, The Netherlands.

Design. We conducted logistic regression on a dataset that consisted of self-reported health and well-being questionnaires filled out by 4527 adolescents of Dutch, South Asian-Surinamese, Moroccan, and Turkish origin. We examined whether young females of specific ethnic groups had elevated risk for attempted suicide. Well-known risk factors in suicidology of social economic class, level of education, life events, abuse, and family context were investigated to verify whether these factors are beneficial to explaining ethnic differences in suicidal behavior.

Results. We found that rates of attempted suicide among Turkish and South Asian-Surinamese young women were higher than of Dutch females, while Moroccan females had lower rates than Dutch female adolescents. Physical and sexual abuse, and an impaired family environment, as well as parental psychopathology or parental substance abuse contributed to non-fatal suicidal behavior of females across ethnicities. However, these risk factors, as well as low social economic class and of level of education, did not fully explain the vulnerability of Turkish and South Asian-Surinamese females.

Conclusion. Our findings underscored the need for developing suicide prevention for specific minority females in multicultural cities in Western Europe. Screening programs, which aim at preventing suicide attempts by young immigrant women should include risk factors in the family environment and relationship with the parents as well as physical and sexual abuse. However, the study also showed that the disproportionate risk of Turkish and South Asian-Surinamese females could not be understood by risk factors alone and transpired that the origins of ethnic disparities in suicidal behavior deserve further examination.

Keywords: suicidal behavior; risk factors; adolescents; young females; immigrant families

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Introduction

45 Increasingly, research shows that ethnic minorities with a migration background are more vulnerable to non-fatal suicidal behavior than majority populations in the west (see for instance Patel and Gaw 1996 on South Asian immigrant women worldwide, or Fortuna *et al.* 2007 on certain Latino populations in the USA). In general, female adolescents are known to have increased risk for non-fatal suicidal behavior compared to adolescent males or adults (Kessler *et al.* 1999). In the Netherlands, registration by health care professionals in the Hague and Amsterdam demonstrated increased rates of suicidal behavior among young females of Turkish, Moroccan, and South Asian-Surinamese origin (Schudel *et al.* 1998, Burger *et al.* 2005, Jansen and Buster 2008).¹ Immigrants from Turkish and Moroccan origin came to the Netherlands as guest laborers in the 1970s and the majority of them continued to reside in the Netherlands. Immigration by South Asian-Surinamese to the Netherlands occurred from the 1950s onward as a result of previous colonial ties. South Asians had migrated to Surinam from India to work as contract laborers in agriculture in the late nineteenth century.² The rates in the registration prompted us to investigate the incidences and risk factors of non-fatal suicidal behavior among South Asian-Surinamese, Turkish, and Moroccan young females compared to majority female adolescents in a similar multicultural city in the Netherlands.

60 The World Health Organization defines non-fatal suicidal behavior as: ‘a non-habitual act with a non-fatal outcome that the individual, expecting to, or taking the risk to die or inflict bodily harm, initiated, and carried out with the purpose of bringing about wanted changes’ (De Leo *et al.* 2006). However, in this study we assumed that an intent to die was crucial to classify behavior as a suicide attempt. Furthermore, research has shown that many other motives may coexist with the intent to die. These motives include: the wish to escape from an unbearable situation, the search for peace of mind or to communicate mental pain (Hjelmeland *et al.* 2002). Non-fatal suicidal behavior often concerns self-poisoning by taking an overdose of pills or cutting the wrist(s). For brevity reasons, non-fatal suicidal behavior is hereafter referred to as ‘suicidal behavior.’ We also use ‘suicidal behavior’ interchangeably with ‘attempted suicide.’

75 Suicide attempts are disproportionately high among individuals who belong to lower social economic strata (Schmidtke and Lohr 2004). The low socioeconomic status of many non-western immigrant parents in the Netherlands (Dagevos and Gijsberts 2007) may hence play a role to the suicidal behavior of their daughters. Minority youngsters in the Netherlands are also unevenly enrolled in lower levels of secondary education compared to majority youngsters (Van Ours and Veenman 2003). This could impact their propensity to suicidal behavior. In addition, several health inequalities in immigrants have been reported that may increase the risk attempted suicide in their children (Van der Lucht and Foets 2008). Studies into psychiatric disorders among immigrants in the Netherlands show increased rates of certain psychiatric diagnoses. Turkish immigrants aged 12–65 have an elevated prevalence of anxiety disorders and depression. Schizophrenia appears to be more often diagnosed in Surinamese and Moroccans, whether born in the country of origin or in the Netherlands (Bengi-Arslan *et al.* 2002, De Graaf *et al.* 2005, Van Oort *et al.* 2007). Parental psychopathology is known to contribute to suicidal behavior of adolescents, in particular parental depression, substance abuse, and

anti-social disorders, although results of studies somewhat vary (Fergusson and Lynskey 1995, Pfeffer *et al.* 1998, Beautrais 1999). Inequalities in the physical health of immigrants have also been reported. For instance, diabetes mellitus is disproportionately found in South Asian-Surinamese and Turks as well as they have increased risks of hypertension and coronary heart disease (Bongers *et al.* 1995, Agyemang *et al.* 2005). Such physical inequalities may be relevant to suicidal behavior. A negative association has been identified between chronic disease of Turkish parents and the psychological well-being of their children (Van de Looij-Jansen *et al.* 2003).

Next, the first onset of suicidal behavior, which often takes place in adolescence, has stronger links with social and family risk factors and life events than repeated suicidality later in life. In later stages, mental illness and hopelessness become more important (Esposito and Clum 2003, Neeleman *et al.* 2004). In general, suicidal behavior is more common among older adolescents (aged 16–18) compared to younger adolescents (aged 13–15) (Beautrais 2005). The parent–child relationship also has substantial impact on the vulnerability of suicidal behavior. Children who evaluated their parental care as poor, because they felt rejected by them, perceived a lack of support, or had conflicts with them, had elevated risk for suicidal behavior (Johnson *et al.* 2002, Turner *et al.* 2002, Bilgin *et al.* 2007).

Research into the role of sexual and physical abuse unanimously shows that these experiences play a crucial role to suicidal behavior. Sexual abuse is known to happen more often to females than to males. Within a population sample of suicide attempters, 20–50% of women reported to have been sexually abused (Coll *et al.* 2001). In a general population sample, those who report to have been sexually abused before the age of 16 have a three to fourfold increased risk of suicidal behavior (Davidsson *et al.* 1996). Physical abuse is generally also found to constitute a risk (Enns *et al.* 2006) yet appears to have less impact than sexual abuse (Brodsky and Stanley 2008). Even when variables that are likely to co-occur in families with abusive parents are controlled for (e.g., familial conflict, low care by parents, parent psychopathology, see Brown *et al.* 2005), and when psychopathology of the individual is taken into account (Molnar *et al.* 2001), there remains strong support for a relationship between childhood abuse and suicidal behavior.

In this study we investigate which risk factors are relevant in the four ethnic groups. We will also examine whether these risk factors can account for the ethnic variation in rates of suicidal behavior of young females. We assume that the following prepositions influence the variation in the rates of suicidal behavior across immigrant and non-immigrants: (1) mental and physical health problems exist disproportionately in immigrant parents; (2) minority females are over represented at lower educational levels; (3) immigrant families mostly belong to lower social economic strata and also suffer from additional disadvantages compared to Dutch lower class families; (4) resulting from one to three: the family environment and relationship with the parents may be more unfavorable for immigrant young females; (5) the study we present here is the quantitative part of a project that combines qualitative and quantitative research strategies. We previously conducted life story interviews with South Asian, Turkish, and Moroccan young women who displayed suicidal behavior and we learnt that the failure to abide by cultural codes of chastity was related to suicidal behavior (Van Bergen *et al.* 2009). This led us to suggest that the

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140 cultural impact of sexual abuse to suicidal behavior may be more profound for
Turkish, Moroccan, and South Asian young women; and (6) due to the aforemen-
tioned factors (1–5), rates of attempted suicide among young females of South
145 Asian-Surinamese, Turkish, and Moroccan immigrant groups will be higher
compared to Dutch majority females. We hereby expect to have outlined significant
risk factors, which should be reflected in the amount of variance explained by these
components.

Method***Study design and procedure***

150 Rotterdam is the second largest city of the Netherlands (581,000 inhabitants).
Rotterdam was chosen for this study because the majority of immigrants to the
Netherlands have settled in urban areas. Data were obtained from the Youth
Health Monitor Rotterdam (YMR), a longitudinal youth health surveillance
system carried out by the Municipal Public Health Service. The main aim of the
155 YMR is to monitor the health and well-being of youth aged between 0 and 19
living in Rotterdam and surrounding areas in order to provide information for
youth policy. All YMR data were collected within and as part of the government-
approved routine health examinations; separate informed consent was therefore not
required. The YMR is incorporated into the regular health examinations of the
preventive youth health care system. YMR data are also used to detect potential
160 individual health risks, including referrals for treatment. For this purpose, non-
anonymous procedures were used. Before 2003, anonymous reporting procedures
existed. When the anonymous scores were compared to non-anonymous
procedures, levels of internalizing behaviors were shown to be unaffected (Van de
Looij-Jansen *et al.* 2006). A systematic review by Evans *et al.* (2005) confirms
165 that differences in prevalence of suicide attempts between non-anonymous and
anonymous questionnaires are small.

For the present study we used data of the third grade pupils from secondary
schools. In the Dutch schooling system third graders are mainly 14 or 15 years old.
About 85% of all secondary schools in Rotterdam participated in the YMR. The
170 pupils completed a YMR questionnaire in the period between September 2003
until July 2006. The questionnaire was filled out in the classroom in the presence of
a school nurse and a teacher, the latter was present to maintain order. Only
anonymous data were used for the study we present here. The questionnaires
were completed on a voluntary basis. Parents received written information
on these questionnaires and could withdraw the participation of their child.
175 During the years 2003–2006, which we included in this study, the response rate was
about 90%.

Suicidal behavior

180 The dependent variable ‘life time prevalence of attempted suicide’ was measured
through asking adolescents ‘Have you ever made an attempt to end your life?’ on
a three-point scale ranking from never to once or more than once. The cut-off point

was constructed as follows: have you ever made an attempt to end your life? Never = no. Once/more than once = yes.

Family context variables

185 Family context variables included stressful life events and family environment. Life
events included parental divorce, parental psychopathology and substance abuse,
and parental physical chronic illness. This was examined through items such as
'Have you ever experienced a divorce between your parents?' Never = no. More
than 2 years ago/less than 2 years ago = yes. A variable was constructed for
190 parental psychiatric illness and substance abuse through combining two items that
asked whether adolescents 'had a parent that has psychiatric illness (for instance
depression, schizophrenia, psychotic disorder)' and a second item that asked 'is any
of your parent(s) addicted to alcohol, drugs or gambling?' Answer: no/no, but
I experienced this earlier/yes. The cut-off point was constructed as follows: no = 0.
No, but I experienced this earlier/yes (either substance abuse or psychiatric
195 illness) = 1. No, but I experienced this earlier/yes = 2. The variable 'parental
chronic illness' was constructed in a similar manner. The family environment was
examined through a validated psychosocial problem scale with high reliability (five
items such as 'do you often feel isolated at home? Is there frequent fighting at
home? Have you considered running away from home?' yes/no) (Baecke 1987). In
200 addition, a scale for the interest shown by parents toward their children was
examined through four items such as 'How often do your parents tell you that they
are proud of you?' Answer: nearly always, often, sometimes, and never. We created
a sum score that ranged from 4 = very interested to 16 = no interest shown at all.
This sum score demonstrated a high reliability. Furthermore, a variable was
205 constructed that investigated whether adolescents could discuss problems with at
least one of their parents. We combined two items that asked separately about
being able to discuss with the mother and, respectively, with the father. The cut-off
point was constructed as follows: very well, reasonable = yes (either one parent or
both parents) not so well, not at all, my mother/father has died or I do not have
210 any contact with my mother/father = no.

Sexual and physical abuse

Lifetime prevalence of sexual abuse was investigated through asking 'Have you ever
215 been sexually abused (for instance forced against your will into sexual activities,
harassed, raped)?' Never = no. Once/more than once = yes. Physical abuse was
similarly measured.

Sociodemographic variables

All areas of the city of Rotterdam were represented in the study. The postal code of
respondents was used as a proxy for socioeconomic class, since no other information
was available from the survey regarding this element. Factor scores that link the
220 postal code to socioeconomic class were available from the National Statistics Office.
These factor scores are based on a scale of items, e.g., income, hours of work, and
educational level.

225 The age of the students was included in the study. The educational level of the students was classified according the Dutch system of secondary education, which distinguishes between vocational training, general continued education, and education preparing students for college or university. These educational levels are referred to as low = 1, middle = 2, and high = 3, respectively.

230 The ethnicity of the Dutch, Moroccan, and Turkish youngsters was scored in line with the classification system of the National Statistics Office, using the country of birth of the father and mother to establish ethnicity. South Asian-Surinamese young females, however, could only be distinguished through ethnic self-identification. This is due to the two-fold migration history of South Asian-Surinamese in the Netherlands (from India to Surinam and subsequently to the Netherlands). In addition, youngsters with a mixed ethnic background (e.g., the father born in Turkey or Morocco and the mother born in the Netherlands or vice versa), were categorized as ethnic minorities only when youngsters self-identified with the minority culture. Those youngsters who belong to the third generation (since both their parents were born in the Netherlands while the youngsters themselves identified as Turkish or Moroccan) were excluded from the survey (five persons). The immigrant young females who remained in our sample belonged to the first and second generation.

Statistical analysis

245 Rates of suicidal behavior of different minority groups were compared, and their difference with the rate of the Dutch majority group were tested using Chi-square tests. To analyze whether demographics, life events, and family risk factors contributed to suicidal behavior; logistic regression was used. The relevance of these variables was analyzed first within each of the ethnic groups, and subsequently we tested our model across ethnicities. To find out whether differences in rates of suicidal behavior between ethnic groups remained significant, we controlled for these independent variables. Since we considered sociodemographic variables as highly important, they were constantly included in the regression. All other variables were included by method of stepwise entry and reported only when they reached significance. We also verified whether socioeconomic class, sexual abuse, and parental psychopathology differ in relation to suicidal behavior according to ethnicity. We examined this by adding interaction terms of ethnicity with social and economic class, sexual abuse, and parental psychopathology in the multivariate logistic models. The interactions were tested at a significance level of 5% ($p < 0.05$). We used SPSS 14.0 to perform analyses in our study. Due to the nature of the topics in our enquiry, we suspected the existence of multicollinearity. We verified whether any of our variables demonstrated a correlation of more than 0.50 to any of the other variables, which proved not to be the case.

Results

Sample description

265 Table 1 shows age, educational level, and living situation of young females in four ethnic groups. Most of the adolescents (approximately 90%) in our sample are

Table 1. Sample characteristics by ethnicity of female students (N = 4527), aged 14–16 in Rotterdam, The Netherlands 2003–2006.

	Dutch (N = 3090, %), mean (SD) ^a	South Asian- Surinamese (N = 266, %), mean (SD) ^a	Moroccan (N = 557, %), mean (SD) ^a	Turkish (N = 614, %), mean (SD) ^a
Sociodemographic factors				
Age				
14	51.7%	48.1%	36.1%	38.3%
15	42.5%	42.1%	49.0%	49.5%
16	5.8%	9.8%	14.9%	12.2%
Lives with				
Biological parents ^b	77.1%	56.8%	86.3%	82.7%
One biological parent	17.2%	38.0%	11.9%	15.2%
Other situation	5.7%	5.3%	1.8%	2.1%
Education level				
Low	44.1%	68.4%	74.9%	71.0%
Middle	26.2%	18.8%	14.4%	15.5%
High	29.7%	12.8%	10.8%	13.5%
SES (−2.7 to 3.8, −2.7 = highest SES)	0.1 (1.1)	1.7 (1.4)	2.2 (1.1)	2.2 (0.9)
Sexual and physical abuse				
Sexual abuse (yes)	7.7%	7.7%	2.7%	1.8%
Physical abuse (yes)	9.9%	17.9%	9.3%	10.3%
Family context characteristics				
Parental divorce (yes)	19.7%	36.6%	11.5%	15.2%
Parental interest (4–16, 16 = maximum interest)	7.6 (2.3)	7.7 (2.5)	7.3 (2.8)	7.5 (2.5)
Discuss problems with parent(s) (yes)	90.9%	77.9%	83.5%	80.0%
Family environment (0–5, 0 = most favorable)	0.6 (1.1)	0.7 (1.2)	0.4 (1.0)	0.6 (1.1)
Parental psychopathology				
None	86.9%	82.8%	91.4%	80.9%
Substance abuse or psychiatric illness	11.4%	13.4%	7.7%	16.6%
Substance abuse and psychiatric illness	1.7%	3.8%	0.9%	2.5%
Parental chronic illness (yes)	16.6%	16.7%	15.9%	14.6%

^aBased on descriptive statistics.

^bThe category ‘lives with one biological parent’ refers to household where either only one biological parent is present or one biological parent and a stepparent are present. The category ‘lives in other situation’ refers to: a household with two stepparents, a household with a relative, or living in institutional care.

14 or 15 years old. We observed that immigrant young women are enrolled in lower school types twice as often compared to majority young women. About 77–86% of the adolescents live with their biological parents, with the exception of South Asian-Surinamese young women (in 57% of the cases).

Frequencies of attempted suicide of minority females compared to majority females

Table 2 presents the data on female suicide attempters and non-attempters according to their ethnicity. Almost 9% of Dutch majority young women report to have attempted suicide at least once in their life. More than twice (19.2%) as many South Asian-Surinamese females demonstrated suicidal behavior, whereas the rates of Turkish young females were about 1.5 times higher (14.8%). Moroccan young women reported less suicidal behavior (6.2%; minority groups compared to majority women).

Risk factors of suicidal behavior within the four ethnic groups

Table 3 shows for each ethnic group how suicidal behavior depends on demographics, parental psychopathology, life events, abuse, and the family context. A lower level of education is important to suicidal behavior, except for the South Asian-Surinamese females. Age appears insignificant across ethnicities. The index of socioeconomic status was not associated with suicidal behavior in this study, with exception of the Turkish females for whom a lower social class seems to indicate an increased vulnerability to attempt suicide (almost significant, $p = 0.06$). Physical abuse is a relevant factor to the suicidal behavior of Turkish and Dutch young females. Sexual abuse renders Dutch and South Asian young females vulnerable for suicidal behavior. An unsatisfactory family environment increases propensity to attempt suicide in all the minority groups. In Dutch females, a lack of parental interest, less discussion of problems with the parents, and a parental divorce contributes to suicidal behavior. Less discussion of problems with the parents also increases susceptibility of attempting suicide in Turkish young females. South Asian-Surinamese young women lived with two biological parents considerably less often than other ethnicities.³ Parental divorces in South Asian-Surinamese did not contribute to the vulnerability in South Asian-Surinamese women. Parental psychopathology and parental substance abuse is a contributing factor in Turkish and South Asian-Surinamese females. Parental chronic illness influences the suicidal behavior in Moroccan young females only.

Testing a model of risk factors of suicidal behavior across ethnic minority groups

Socioeconomic class, age, level of education, and ethnic minority status

Table 4 presents odds ratios for suicidal behavior associated with a minority ethnicity, when socioeconomic status and level of education are included as risk

Table 2. Non-fatal suicidal behavior by ethnicity of female students aged 14–16 in Rotterdam, The Netherlands 2003–2006.

	Dutch, N = 3090 (%)	South Asian-Surinamese, N = 266 (%)	Moroccan, N = 557 (%)	Turkish, N = 614 (%)
Suicidal behavior				
No	2818 (91.2)	215 (80.8)	523 (93.9)	523 (85.2)
Yes	272 (8.8)	51 (19.2)**	34 (6.1)*	91 (14.8)*

*Significantly different than Dutch females (the reference group) at level ≤ 0.05 .

**Significantly different than Dutch females (the reference group) at level ≤ 0.01 .

Table 3. Risk factors of suicidal behavior in four different ethnic groups of female students, aged 14–16 in Rotterdam, The Netherlands 2003–2006 (four separate models).^a

	Dutch females		South Asian-Surinamese females		Moroccan females		Turkish females	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Age	1.13	(0.89–1.42)	0.98	(0.54–1.77)	0.73	(0.41–1.13)	1.32	(0.87–2.00)
Level of education	0.59	(0.48–0.73)**	0.54	(0.26–1.09)	0.21	(0.07–0.67)**	0.52	(0.30–0.88)*
Socioeconomic status	1.03	(0.90–1.16)	0.93	(0.70–1.23)	0.86	(0.62–1.21)	1.35	(0.99–1.86)
Sexual abuse	2.76	(1.87–4.07)**	12.3	(3.28–46.14)**				
Physical abuse	2.44	(1.70–3.50)**					2.93	(1.36–6.34)**
Parental divorce	1.40	(1.00–1.93)*						
Parental interest	0.93	(0.87–0.99)*						
Discuss problems with parents	0.43	(0.29–0.64)**						
Family environment	1.80	(1.60–2.02)**						
Parental psychopathology ^b			1.97	(1.49–2.60)**	2.29	(1.77–2.97)**	0.44	(0.23–0.85)**
Parental chronic illness			2.86	(1.43–5.71)**			1.61	(1.27–2.03)**
R ² of the model (Nagelkerke)	0.27		0.43		2.64	(1.06–6.60)*	2.99	(1.84–4.86)**
					0.26		0.36	

*Significant at level ≤ 0.05 .

**Significant at level ≤ 0.01 .

^aDue to the stepwise regression method, only the significant variables are shown for each multivariate model. The exceptions are the demographic variables which are included as a rule in all the models across ethnicities.

^bParental psychopathology refers to psychiatric illness or substance abuse in the parent(s).

Table 4. The association between demographics, family risk factors, and abuse to suicidal behavior and ethnicity of female students, aged 14–16 in Rotterdam, The Netherlands 2003–2006, multivariate model.

	OR (95% CI)	
	Suicidal behavior (Model 1) ^a	Suicidal behavior (Model 2) ^b
Ethnicity		
Dutch	Reference group	Reference group
South Asian-Surinamese	2.05 (1.43–2.96)**	1.75 (1.13–2.69)**
Moroccan	0.50 (0.33–0.75)**	0.56 (0.35–0.91)*
Turkish	1.38 (1.00–1.90)*	1.62 (1.12–2.35)**
Age	1.23 (1.05–1.44)**	1.10 (0.92–1.32)
Level of education	0.50 (0.42–0.59)**	0.56 (0.47–0.67)**
Socioeconomic status	1.01 (0.92–1.10)	1.01 (0.92–1.12)
Sexual abuse		2.89 (2.04–4.09)**
Physical abuse		2.38 (1.79–3.18)**
Parental divorce		
Parental interest		
Discuss problems with parent(s)		0.53 (0.40–0.72)**
Family environment		1.69 (1.55–1.85)**
Parental psychopathology ^c		1.35 (1.09–1.69)**
Parental chronic illness		
R ² of the model (Nagelkerke)	0.08	0.29

*Significant at level ≤ 0.05 .

**Significant at level ≤ 0.01 .

^aBased on multivariate logistic regression analyses, including ethnicity and demographic variables.

^bBased on multivariate logistic regression using stepwise method for variable selection. Due to the stepwise regression method, only the significant variables are shown. The exceptions are the demographic variables which are included as a rule in the model.

^cParental psychopathology refers to psychiatric illness or substance abuse in the parent(s).

factors and Dutch young women as reference group (Model 1). South Asian-Surinamese and Turkish ethnicities were both associated with increased odds ratios of suicidal behavior compared to Dutch young women. Moroccan young women had decreased odds ratios in comparison to Dutch women. Socioeconomic status was not associated to suicidal behavior. Higher educational levels reduced the odds ratios of attempting suicide.

Table 4 demonstrates differences in suicidal behavior between ethnic minority group after adjustment for demographics, parental psychopathology, life events, abuse, and the family context (Model 2). The association of South Asian-Surinamese and Turkish ethnicities to suicidal behavior compared to Dutch ethnicity remained significant in the model. Moroccan ethnicity displayed a similar protective effect against suicidal behavior as observed in the previous model. Socioeconomic status had a similar non-significant association with suicidal behavior compared to the first model. Higher educational levels functioned as a protection similar to the first model.

Three types of life events were tested in Model 2 of Table 4: parental divorce, parental psychopathology and substance abuse, and parental physical (chronic) illness. Parental psychopathology and substance abuse increased odds ratios for

suicidal behavior. Interaction terms of parental psychopathology and substance abuse with ethnicity were also significant (not shown in table). South Asian-Surinamese and Turkish young females were more at risk for suicidal behavior than Dutch young females when they reported parental psychiatric illness or substances abuse. Parental divorce, and parental chronic illness increased vulnerability for suicidal behavior, yet did not reach significance. The investigation of the family environment showed that living in a discomforting family environment increased the odds of attempted suicide. When parents showed interest in their daughters this decreased odds ratios of attempted suicide, but not significantly. Adolescents who could discuss problems with at least one of their parents were less at risk for suicidal behavior. Sexual and physical abuse both had a very strong association with suicidal behavior. Interaction terms of sexual abuse with ethnicity were not significant.

Discussion

This study is the first to investigate the (self-reported) rates and risk factors of suicidal behavior of young females belonging to immigrant groups in the Netherlands. The results underscore the vulnerability of Turkish and South Asian-Surinamese young females compared to majority females aged 14–16 years old in the city of Rotterdam. The findings reflect registrations of female suicidal behavior in the Hague in the late 1980s and 1990s and in the early twenty-first century. Our results support findings of a study which compared suicidal ideation in Turkish and Moroccan youth with Dutch adolescents aged 12–18 in the city of Utrecht in the Netherlands. The study in Utrecht demonstrated higher rates of suicidal ideation in Turkish youth in the years 1996–2001 (Van Bergen *et al.* 2008). Since these studies altogether cover a time interval from 1988 to 2003, the propensity of Turkish and South Asian-Surinamese young females to suicidal behavior appears a long-term vulnerability that has not yet started declining. By comparison, the self-reported incidences of Dutch young women (8.8%) are much lower; and have shown minor increases over time. Two previous Dutch studies by Garnefski *et al.* (1992) and Diekstra *et al.* (1993) that used exactly the same question to inquire on suicidal behavior and the same age band, found rates of, respectively, 7% and 6%. Moreover, the rates of attempted suicide by Dutch females (8.8%) are rather congruent with rates of 9.7% reported by majority adolescents in an epidemiological sample of more than 500,000 (male and female) adolescents in the west (Europe and USA), as shown in a systematic meta review by Evans *et al.* (2005).

Although a single question to enquire after suicidal behavior can be found in many questionnaires, the study would have benefited from further elaboration on the suicidal behavior of the respondents. The question ‘Have you ever made an attempt to end your life?’ meets the perspective of the respondents of what counts as a suicide attempt. In order to understand what exactly is understood as a suicide attempt, it is necessary to investigate what kind of behavior was undertaken, which method was employed and what motivated the act (e.g., Scoliers *et al.* 2009).

Moroccan young females were less at risk for suicidal behavior compared to Dutch young women, which contradict the findings based on the registrations during the late 1980s and 1990s (Schudel *et al.* 1998, Burger *et al.* 2005). However, the most recent registration by health care professionals in 2002–2003 found no differences between Dutch and Moroccan young women (Burger *et al.* 2005). In addition, the

365 aforementioned study into suicidal ideation of adolescents by Van Bergen *et al.*
(2008) also demonstrated lower rates of Moroccans compared to Dutch youngsters.
It remains unclear why Moroccan young women seem less at risk today than
370 previously. Potential explanations may be found in the process of social change
leading to increased emancipation in Moroccan communities regarding women's
autonomy (Pels 2009). The outcomes of Moroccan young women reveal that a family
background of migration is not a risk factor for suicidal behavior per se. This is
underscored by the fact that South Asian-Surinamese parents mostly grew up in
375 Surinam when the country was under colonial rule of the Netherlands; resulting in
familiarity with Dutch language and culture. South Asian-Surinamese parents would
hence be less likely than Turkish and Moroccan parents to suffer from acculturative
stress.

We also speculated that the fact that minorities are overrepresented in lower levels
of education as well as they disproportionately belong to lower social economic
strata could illuminate ethnic variation in suicidal behavior. Yet, South Asian-
380 Surinamese and Turkish ethnicities remained independently associated with an
increase in suicidal behavior after controlling for the level of education in the
analysis. However, caution is needed with regard to this finding since the educational
outcomes are yet unknown, as youngsters were still enrolled in education at the time
they were surveyed. Socioeconomic class seemed to have some relevance to the risk
385 of attempted suicide in Turkish females but not in South Asian-Surinamese young
women. However, the measurement we used for socioeconomic status was a proxy
factor based on the postal code and therefore has limitations.

One of our assumptions focused on the contribution of (mental) health
inequalities. Contrary to our expectations, chronic physical illness of Turkish parents
was not associated to suicidal behavior, but it was for Moroccan youngsters. Future
390 research should examine this finding. Parental psychopathology, however, played an
important role in attempted suicide of Turkish and South Asian-Surinamese females,
in comparison with majority females. Plausible explanations may be that minority
parents have poorer access to care, or are diagnosed late because of taboo and
unfamiliarity with mental illness and mental health care in their communities
395 (Kamperman 2005). In addition, it is plausible that minority parents received
a treatment that does not match their cultural beliefs, and therefore less successful.
Interviews we conducted earlier for this project revealed that South Asian-
Surinamese women with a history of suicidal behavior more frequently report
400 alcohol abuse of their fathers compared to majority females.

It is suggested that the relationship between sexual abuse and suicidal behavior
may occur through an impaired self-concept, shame, self-blame, and low self-esteem
(Brodsky and Stanley 2008). For immigrant females, we hypothesized that these
405 feelings would be worsened as a result of increased shame related to being a
disappointment to herself and her family by losing (family) honor, and being prone
to the stigma of the 'girl gone astray.' However, our interaction term of sexual abuse
and ethnicity failed to support such ethnocultural factors. It may be that sexual
abuse and harassment is underreported in minority women because of feelings of
shame and repercussions that could occur when the abuse becomes known.
410 Considering the fact that questionnaires have not been filled out anonymously,
underreporting remains a possibility. We suggest that further research is needed into
the reporting of the experiences of sexual abuse of minority females.

In addition, some risk factors, which were previously understood to be psychological presently, are known to be biological as well. Little is known about the role of genes and neurobiology in relation to attempted suicide of immigrant youth. Since genetics are beyond the scope of the study we are unable to elaborate on this issue. Convergence between rates of suicidal behavior in the host country and countries of origin also point at cultural factors. In poor rural areas of Turkey, from which most of the Turkish immigrants in the Netherlands originate, rates of attempted suicide are also high. The southeast region of Batman where autonomy of young women is highly restricted has registered rates of suicidal behavior of 20% in young females (Oto *et al.* 2001). This emphasizes the possibility that attempted suicide in Turkish females is associated with disadvantaged position of women regarding their strategic life choices (e.g., education, sexuality, and marriage). This is supported by our qualitative research that indicated how a struggle over autonomy for females – while they are simultaneously expected to fulfill many caretaker roles in their family – played an important role in the suicidal behavior of Turkish females (van Bergen *et al.* 2009).

In the province of Nickerie in Surinam, the place of origin of the majority of the South Asian-Surinamese in the Netherlands, hospital registration demonstrated a rate of attempted suicide of 5.2 per 1000 for young females. This is quite similar to the rate of 4.0 in South Asian females in hospitals the Hague (Graafsma 2008), while no research in Surinam has hitherto investigated self-reported rates. Women in the South Asian Diaspora are known to have high rates suicidal behavior worldwide (see Patel and Gaw 1996 on high rates of attempted suicide by South Asian women living in Malaysia, Fiji, South Africa, and the UK). This suggests there is a possibility that the impact of the cultural familiarity may render suicidal behavior a more likely alternative for South Asian women compared to other ethnicities.

Our study has confirmed that rates of attempted suicide in young females of South Asian-Surinamese and Turkish ethnicities are worrisome. The variance we explained through our model was high (30%), demonstrating we captured crucial aspects. Multiple disadvantages exist in minority women that influence their suicidal behavior. However, it seems that the vulnerability to suicidal behavior of South Asian-Surinamese and Turkish young females may not be due to their educational status alone. The impact of socioeconomic status and migration requires further investigation. The relevance of parental mental illness and substance abuse was established. These findings are of academic interest as well as they are beneficial for prevention. These results indicate the potential for prevention programs, which could usefully incorporate the role that parental psychopathology and parental substance abuse plays in relation to suicidal behavior among minority women. Furthermore, we recommend that further research with sensitivity to gender and ethnicity is necessary to unravel the interplay of social, family, and individual factors in relation to suicidal behavior of immigrant young women.

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Notes

1. Prevalence of non-fatal suicidal behavior registered by health care professionals in the city of the Hague 1987–1993: Turkish females aged 15–19: 5.0 per 1000 per year, and aged 20–24 years old 3.8. Surinamese women aged 15–19: 7.2 and aged 20–24: 6.5. Moroccan women aged 15–19: 4.0 and aged 20–24: 1.5. Dutch women aged 15–19: 2.0 and aged 20–24: 2.5. Prevalence of suicidal behavior registered by health care professional in the city of the Hague 2002–2003: Turkish females aged 15–19: 5.0 per 1000 per year, and aged 20–24 years old 7.0. Surinamese women aged 15–19: 4.5 and aged 20–24: 4.0. Moroccan women aged 15–19: 2.3 and aged 20–24: 2.0. Dutch women aged 15–19: 1.0 and aged 20–24: 1.5.
2. South Asian-Surinamese and Creole-Surinamese make up 90% of the Surinamese immigrant population (Choenni and Adhin 2003). Surinamese migration to the Hague mostly consisted of South Asian-Surinamese–Surinamese, which lead us to assume that it concerns South Asian-Surinamese who have increased rates. Preliminary results of registration of non-fatal suicidal behavior in the city of Amsterdam confirm that South Asian-Surinamese females are more at risk for non-fatal suicidal behavior compared to Creole-Surinamese (Jansen and Buster 2008).
3. The high number of single parent households in the South Asian-Surinamese group is not specific to our sample but in line with figures of the The Netherlands Institute for Social Research and Netherlands Statistics (1999). These figures show a high percentage of single mothers in the South Asian-Surinamese group compared to Turkish and Moroccan ethnicities.

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