

ORIGINAL PAPER

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Suicide in first- and second-generation immigrants in Sweden

A comparative study

Accepted: 10 April 2002

Abstract *Background* Studies of suicide in first-generation immigrants have consistently shown higher rates compared to their country of origin. Little is known about the risk of suicide in second-generation immigrants and intercountry adoptees. The aim of this study was to investigate rates of suicide death in second-generation immigrants and intercountry adoptees in comparison with their parental generation and the majority population. *Method* The study was based on multivariate analyses of register data on suicide death during 1990–98 in a Swedish national cohort of 2.7 million residents (10–68 years). *Results* Second-generation immigrants tended to have higher odds than the first-generation immigrants compared to the majority population in all six minority groups studied. The Finnish minority had the highest and the Middle Easterners the lowest odds for suicide death in both generations of immigrants. The intercountry adoptees had very high odds for suicide death (adjusted OR: 5.0; 95% CI 3.5–7.0). *Conclusions* Second-generation immigrants are at greater risk for suicide death than their parental generation. Intercountry adoptees should be of particular concern in suicide prevention.

Key words suicide – migration – ethnicity – adoptees – inequality – prevention

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Introduction

Studies of suicide rates in the first generation of immigrants in Sweden and the USA have consistently reported higher risks of suicide compared to the countries of origin (Sainsbury 1986; Ferrada-Noli 1997; Johansson, Sundquist, Johansson, *et al.* 1997). National differences in suicide rates between southern and northern Europe, and between neighbouring countries in Scandinavia have remained fairly stable during the last century (Durkheim 1897; Sainsbury 1986; Retterstol 1992). Studies of suicide rates in the first generation of immigrants have demonstrated that these ethnic patterns tend to prevail after settlement in Sweden (Ferrada-Noli 1997; Johansson, Sundquist, Johansson, *et al.* 1997).

During the last decades an increasing number of children in Sweden have been raised by foreign-born parents, reaching 15% of the total population during the 1990s. Another important source of children with a foreign heritage has been the steady influx of foreign-born adoptees, primarily from Korea, India and Colombia. Sweden is the country with the largest population of intercountry adoptees in Europe, and per capita (1–1.5% of the total population born after 1965) in the whole world (Cederblad, Höök, Irhammar *et al.* 1999). Little is known about the risk of suicide in these second-generation immigrants and intercountry adoptees. In this study we used the unique possibilities of Swedish national registers to compare suicide rates of these two migrant groups with their parental generation and the majority population.

Subjects and methods

Study population

This study was based on data from the national registers held by the Swedish National Board of Health and Welfare and Statistics Sweden linked through each individual's unique personal identification number. The study population consisted of the 1.25 million children born

between 1968 and 1979 who were recorded to be living in family households in the 1985 census (*the youth study group*) and the 1.47 million adults born between 1929 and 1965 in their households who were either Swedish-born or had settled in Sweden as adults, i. e. after 20 years of age (*the parent study group*).

The study period started in November 1990, in connection with the 1990 census, and lasted until December 1998. Residents in the 1985 census who were no longer recorded to be Swedish residents in 1990 were excluded from the study population. The study population thus consisted of residents who had lived in Sweden for at least 5 years.

■ Categories of study subjects

Information on the country of birth of the individuals in both study groups was obtained from the Swedish Population and Housing Census of 1985. This information was used for categorisation of the study groups. The parent study group was categorised as:

- Swedish-born: Swedish-born with the exclusion of parents of intercountry adoptees.
- Parents of intercountry adoptees: adults in the households of the intercountry adoptees (see below).
- First-generation immigrants: foreign-born who had settled in Sweden after their twentieth birthday. This category was further classified into six geographically defined groups (Table 1) as a proxy to ethnicity (Finland, Western, Eastern Europe, Southern Europe, Middle East and other non-European).

The youth study group was categorised as:

- Swedish-born with Swedish-born parents: child as well as all adults in the household were born in Sweden.
- Intercountry adoptees: children who were born outside of Europe, had no record of biological parents in the Swedish Parent Register and lived in a household where all adults were Swedish-born. The continents of birth of the intercountry adoptees were in 73% Asia (mainly south Korea, India and Sri Lanka), 22.7% Latin America (most commonly Colombia and Chile) and in 4% Africa.

Table 1 Country of birth of the parent study group

Country of birth	N
Sweden	1313925
Sweden	14480
Parents of intercountry adoptees	
Finland	56076
Western	
Norway	7103
Denmark	8330
Iceland	524
Germany	8466
Great Britain	1973
US and Canada	1379
Other Western	3678
Eastern Europe	
Poland	6464
Hungary	3367
Other Eastern Europe	5441
Southern Europe	
Yugoslavia	12895
Greece	3831
Italy	1560
Other Southern Europe	2040
Middle East	
Turkey	5229
Iran	934
Iraq	537
Other Middle East	2293
Other non-European	
Far East	2772
South Asia	1176
Chile	3186
Other Latin America	2417
Africa	2259
All	1472335

- Second-generation immigrants: children in households where at least one adult in the household was foreign-born. This category was further classified into the same six geographically defined groups as the parents of the census of 1985 (Table 1) as a proxy to ethnicity (see above) according to the country of birth of the adults in the household. When the adults in the household had diverse ethnicity the child was classified according to the oldest female and, if there were no female adults in the household, the oldest male in the household. If at least one, but not all, adults in the households were born in Sweden, the child was classified in intermediate groups (Finnish-Swedish, Western-Swedish, etc.).

■ Socio-demographic variables

Variables of socio-demographic confounders were created by information from the following registers:

- Swedish Population and Housing Census 1985: year of birth and socio-economic status (SES) of the household and housing situation. Socio-economic groups were defined according to a classification used by Statistics Sweden, which is based on occupation but also takes educational level of occupation, type of production and position at work of the head of the household into account (Statistics Sweden 1982).
- Swedish Population and Housing Census 1990: geographic location of the home (residency).
- Total Enumeration Income Survey for 1990: social welfare benefits received in 1990 by the head of the household in the census of 1985.

The non-European immigrant (Middle East and other non-European) households had the least satisfactory socio-economic situation, with the lowest SES, the highest proportion of social welfare recipients and the least satisfactory housing situation (Table 2). The Finnish and other European households had a socio-economic situation that was better than the non-Europeans, but less satisfactory than the Swedish majority population. The intercountry adoptees stand out with a female preponderance of 62% among the adoptees themselves and the most privileged socio-economic situation of all households. One-adult households were most common among immigrant households from Eastern Europe (11%) and least common in immigrant households from the Middle East (3%) (Table 2).

■ Statistical methods

The outcome variable of suicide death was obtained through individual record linkage to the National Cause of Death Register from November 1990 to December 1998. Suicide death was defined by an underlying cause of death of E950-E959 or E980-E989 (ICD-9) in the period 1990-96 and X60-X84 or Y10-Y34 (ICD-10) from 1997 to 1998.

Multivariate analyses were conducted by Cox regression of person years in the study with the dichotomised outcome suicide death as the dependent variable. Person years were calculated with data on death from the National Cause of Death Register 1990-98 and data on disposable income of the household from the Total Enumeration Income Survey during the period 1991-98. A method developed by Ringbäck et al. (1999) to minimise bias in death records of unrecorded emigration in foreign-born residents was used. According to this method only person years where at least some income in the household was recorded either from labour, benefits or pension were included in the study. Birth year was entered as a continuous variable in the regression models of the youth study group and as a six-category variable for the parent study group. Other socio-demographic variables were entered as dichotomised variables into the models. Dummy variables were created for variables with more than two values in these models.

The SPSS software package, version 10.0, was used in all statistical analyses.

Table 2 Socio-economic indicators of the parent study group

		Swedish ¹	Parents of intercountry adoptees	Finland	Western Europe	Eastern Europe	Southern Europe	Middle East	Other non-European
		N = 1313925 %	N = 14480 %	N = 56076 %	N = 31453 %	N = 15272 %	N = 20326 %	N = 8993 %	N = 11810 %
Sex	Male	47.0	47.0	39.7	48.7	40.3	57.2	53.5	46.2
	Female	53.0	53.0	60.3	51.3	59.7	42.8	46.5	53.8
Residency	Metropolitan area	26.4	30.0	35.8	37.9	55.5	54.8	56.6	63.8
	Smaller city	52.3	53.3	49.9	44.8	37.9	39.6	41.3	31.9
	Rural	21.3	16.8	14.3	17.3	6.6	5.6	2.2	4.2
Housing	Unclassified	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.2
	Rents apartment	18.6	8.1	35.2	25.8	43.3	56.7	83.6	69.3
	Owns apartment	7.0	5.2	11.8	8.5	11.7	9.8	6.2	10.3
	Own house	74.3	86.7	53.0	65.6	44.8	33.4	10.0	20.2
SES	Unclassified	22.8	18.0	23.0	28.9	32.1	32.8	63.2	42.8
	Manual labour	28.8	14.4	41.7	28.5	23.6	40.6	21.2	28.7
	Skilled labour	6.9	5.4	9.9	6.6	6.2	7.9	5.0	7.2
	White collar I	19.1	22.3	12.1	15.2	15.3	8.2	3.2	7.5
	White collar II	16.5	26.2	10.1	14.2	13.3	7.7	5.0	9.8
	White collar III	6.0	13.7	3.1	6.6	9.5	2.7	2.3	4.0
Single-adult household	Yes	5.5	3.7	8.0	6.3	10.6	4.9	3.5	9.9
	No	94.5	96.3	92.0	93.7	89.4	95.1	96.5	90.1
Received social welfare 1990–94	Yes	3.9	1.7	7.7	6.2	7.7	5.8	28.3	20.0
	No	96.1	98.3	92.3	93.8	92.3	94.2	71.7	80.0

¹ excluding parents of intercountry adoptees

Results

There were 2381 suicide deaths recorded in the parent study group during the period 1990–1998. The cumulated incidence was 0.22% for men and 0.11% for women. In the youth study group 1159 suicide deaths were recorded during the period 1990–98, that is a cumulated incidence of 0.13 for men and 0.05 for women (Table 3).

Intoxication was the most common suicide method, accounting for 47.3% of the suicides in the parent study group and 43.3% of the youth study group. The intercountry adoptees had the highest proportion of hangings (35%), while intoxication was less common in this group (29%).

■ Socio-demographic determinants

Suicide death rates varied markedly by several socio-demographic determinants in both study groups. In a multivariate age-adjusted model (adjusted for age, SES and geographic location of the home) the odds ratio (OR) of having received social welfare benefits in 1990 was 2.3 in the parent study group and 2.1 in the youth study group; single adult households ORs 2.1 and 1.8, respectively. The OR of male to female sex was 2.6 in both generations (Table 4).

When socio-economic determinants were introduced into the regression model of suicide death (Table 5), the odds ratios of all ethnic groups in the first- as well as the second-generation immigrants decreased.

■ Comparison between the first- and second-generation immigrants

In the multivariate analysis the second-generation immigrants tended to have higher odds than the first-generation immigrants relative to the Swedish majority population in all six ethnic groups. The odds ratios after adjustment for socio-demographic confounders in the first-generation Finnish was 1.4 compared to 1.7 in the second generation, 1.1 and 1.5 in Eastern Europeans, 1.2 and 1.7 in the Western group, 0.3 and 0.9 in the Southern European, 0.3 and 0.4 in the Middle Easterners and 0.6 and 0.8 in other non-Europeans (Table 5).

■ Intercountry adoptees

The male intercountry adoptees in the second-generation study group had the highest cumulated incidence of suicide of all sub-groups in the study with 0.52%, while the female adoptees had a cumulated incidence of 0.15% (Table 4). The age- and sex-adjusted OR for suicide death of intercountry adoptees was 4.5 compared to other individuals with Swedish-born parents, and increased further to 5.0 after adjustment for socio-economic confounders (Table 5).

■ Ethnic patterns

In the multivariate analysis the Finnish and Western immigrants had high odds for suicide compared to the Swedish majority population in both generations (ORs

Table 3 Suicide rates by ethnicity

a. Parent study group

	N	Cases	Men %	Women %
Swedish-born ¹	1313925	2096	0.22	0.10
Parents of intercountry adoptees	14480	28	0.28	0.12
First-generation immigrants:				
Finland	56076	132	0.35	0.16
Eastern Europe	15272	28	0.15	0.21
Western Europe	31453	60	0.24	0.17
Southern Europe	20326	14	0.07	0.05
Middle East	8993	7	0.12	0.02
Other non-European	11810	16	0.16	0.11
All	1472335	2381	0.22	0.11

¹ excluding parents of intercountry adoptees

b. Youth study group

	N	Cases	Men %	Women %
Swedish-born with two Swedish-born parents	1056225	907	0.12	0.05
Intercountry adoptees	11787	34	0.52	0.15
Second-generation immigrants:				
Finland	35534	59	0.24	0.09
Finland /Sweden	37480	41	0.15	0.06
Eastern Europe	8258	11	0.17	0.10
Eastern Europe /Sweden	9363	6	0.08	0.04
Western Europe	9562	17	0.27	0.08
Western Europe /Sweden	33663	45	0.19	0.07
Southern Europe	14488	12	0.12	0.04
Southern Europe /Sweden	8111	7	0.12	0.05
Middle East	10160	4	0.08	0.00
Middle East /Sweden	1434	1	0.14	0.00
Other non-European	9986	9	0.10	0.08
Other non-European/Sweden	7440	6	0.08	0.08
All	1253491	1159	0.13	0.05

Table 4 Cox regression models of socio-demographic determinants and suicide death in first and second generation respectively

	Parent study group OR (95 % C.I.)	Youth study group OR (95 % C.I.)
Sex		
Male	2.6 (2.4–2.8)	2.6 (2.3–3.0)
Female	1.0	1.0
SES of the household		
White collar	1.0	1.0
Blue collar or unclassified	1.0 (0.9–1.1)	1.2 (1.0–1.4)
Received social welfare 1990		
Yes	2.3 (2.0–2.5)	2.1 (1.8–2.5)
No	1.0	1.0
Single-adult households		
Yes	2.1 (1.9–2.3)	1.8 (1.5–2.2)
No	1.0	1.0
Residency		
Stockholm, Malmö, Gothenburg	1.0	1.0
Other city	0.9 (0.9–1.0)	1.0 (0.8–1.1)
Rural	1.2 (1.0–1.4)	1.2 (1.0–1.4)

Model adjusted for year of birth

Table 5 Cox regression models of suicide by country of birth

a. Parent study group

	First generation	
	Model 1 OR (95 % CI)	Model 2 OR (95 % CI)
Swedish-born ¹	1	1
Parents of intercountry adoptees	1.2 (0.8–1.8)	1.4 (1.0–2.0)
First-generation immigrants		
Finland	1.6 (1.3–1.9)	1.4 (1.2–1.7)
Eastern Europe	1.2 (0.8–1.8)	1.1 (0.7–1.5)
Western Europe	1.3 (1.0–1.6)	1.2 (1.0–1.6)
Southern Europe	0.4 (0.2–0.6)	0.3 (0.2–0.5)
Middle East	0.5 (0.2–1.0)	0.3 (0.1–0.6)
Other non-European	0.9 (0.5–1.4)	0.6 (0.4–1.0)

¹ excluding parents of intercountry adoptees

Model 1 adjusted for birth year and sex

Model 2 adjusted for birth year, sex, SES, single-parent household, social welfare benefits, housing and geographic location of the home

b. Youth study group

	Second generation	
	Model 1 OR (95 % CI)	Model 2 OR (95 % CI)
Swedish-born with two Swedish-born parents	1	1
Intercountry adoptees	4.5 (3.2–6.4)	5.0 (3.5–7.0)
Second-generation immigrants		
Finland	2.0 (1.5–2.6)	1.7 (1.3–2.3)
Finland /Sweden	1.2 (0.9–1.7)	1.3 (0.9–1.7)
Eastern Europe	1.7 (1.0–3.3)	1.5 (0.8–2.6)
Eastern Europe /Sweden	0.7 (0.3–1.7)	0.8 (0.4–1.7)
Western Europe	2.2 (1.2–3.4)	1.7 (1.1–2.8)
Western Europe /Sweden	1.5 (1.1–2.1)	1.6 (1.2–2.1)
Southern Europe	1.0 (0.6–1.8)	1.0 (0.5–1.7)
Southern Europe /Sweden	1.0 (0.5–2.2)	1.0 (0.5–2.2)
Middle East	0.5 (0.2–1.4)	0.4 (0.1–1.0)
Middle East /Sweden	0.9 (0.1–6.4)	0.9 (0.1–6.6)
Other non-European	1.2 (0.6–2.3)	0.9 (0.4–1.7)
Other non-European/Sweden	1.0 (0.5–2.3)	1.2 (0.5–2.4)

Model 1 adjusted for birth year and sex

Model 2 adjusted for birth year, sex, SES, single-parent household, social welfare benefits, housing and geographic location of the home

1.4 and 1.2 in the first generation and ORs 1.7 and 1.7 in the second generation (Table 5); after adjustment for socio-demographic variables, while the Middle-East immigrants had lower odds for suicide in both generations (ORs 0.3 and 0.4). The first-generation immigrants from southern Europe had lower odds than the Swedish majority population (adjusted OR 0.3), while the odds of the second generation from southern Europe were similar to those of the Swedish majority population (Table 5).

The intermediate groups of mixed ethnicity in the second-generation immigrants had odds that tended to lie between those of the majority and the minority populations, although the difference from the Swedish majority population did not reach statistical significance (Table 5).

Discussion

■ Second-generation immigrants have a higher risk of suicide death

Second-generation immigrants had higher odds for suicide than the first generation of immigrants compared to the Swedish majority population in all six ethnic groups in this study. There are several different explanations that may contribute to this pattern. Marmot (Marmot, Adelstein and Bulusu 1984) has suggested that immigrants tend to represent a particularly healthy segment of the population in the country of origin; i.e. “the healthy migrant hypothesis”. Individuals with psychiatric disorders, for example, may be less able to overcome the barriers of migration. Members of the second generation, on the other hand, are seldom selected in this way. Another possible explanation is that the higher risk of the second generation represents an age-specific vulnerability. This vulnerability may involve an age-specific sensitivity to the shared adverse living conditions of minority populations in Sweden, as well as more adverse living conditions compared to the first-generation immigrants. The latter has been suggested by reports that the economic crisis of Sweden in the 1990s struck particularly hard on the minority youth that had not yet established themselves on the labour market (National Board of Health and Welfare 2001).

■ Culture-specific determinants

In his classic studies of suicide mortality in nineteenth century Europe, Emile Durkheim (1897) observed that suicide deaths were more common in central and northern Europe compared to southern Europe. Recent statistics describe similar regional differences in suicide death in Europe at the end of the twentieth century as well as higher rates of suicide in Finland in comparison with Sweden (Table 6). This ethnic pattern is recognisable in both generations of immigrants in the present study. The Finnish had the highest suicide rates in both study groups, and the southern Europeans and the Middle Easterners the lowest. When Swedish and foreign-born adults were included in the household, the suicide rate tended to lie somewhere between the majority and the minority rate. Thus, there are strong indications that culture-specific determinants of suicide are important and are carried over from the first- to the second-generation immigrants in Sweden.

Several different culture-specific determinants of suicide that may be relevant for the results of this study have been suggested. The influence of religious beliefs on the risk of suicide was already pointed out by Durkheim (1897) to explain the difference in suicide death between the Protestant north and the Catholic south of Europe. A recent study in 19 different Western countries concluded that personal religious beliefs and,

Table 6 Age-standardised suicide rates in selected European nations in 1995–96 (Source: WHO database)

		Men 1/100 000	Women 1/100 000
Northern Europe	Sweden	16.6	6.9
	Finland	34.7	9.4
	Norway	17.5	5.7
	Denmark	20.2	7.5
	Iceland	16.4	3.3
	Germany	18.2	5.9
	Great Britain	10.1	2.8
Eastern Europe	Poland	22.8	4.0
	Hungary	44.8	12.1
	Czech Republic	21.6	15.1
	Estonia	59.2	10.7
Southern Europe	Spain	10.5	2.8
	Portugal	8.4	2.3
	Italy	9.8	2.8
	Greece	4.7	0.9

for men, exposure to a religious environment, may protect against suicide by reducing its acceptability (Neeleman, Halpern, Leon, et al. 1997). The use and abuse of alcohol has also been implicated as an important factor for suicide rates on the national level (Ramstedt 2001). Alcohol addicts have a high risk for suicide, but more moderate alcohol use can also serve as a key factor in the events that lead to a suicide death (Pirkola, Marttunen, Henriksson, et al. 1999). Ferrada-Noli et al. (1996) described that alcohol abuse is more commonly noted during autopsy of Finnish-born suicide victims in Sweden compared to other nationalities, suggesting that alcohol abuse may be an important factor in explaining the higher risk of suicide in this ethnic group. A comparative study of Turkish and Swedish adolescents demonstrated a more permissive attitude towards disclosure of suicidal thoughts in Turks. This attitude may be an important factor in explaining the lower rate of suicide death in the Middle East group (Eskin 1995).

■ Intercountry adoptees

The intercountry adoptees stand out as an extremely high-risk group for suicide death. In a recent study of adolescent intercountry adoptees in Sweden an adjusted OR of 3.6 was found compared to Swedish-born adolescents (Hjern, Lindblad and Vinnerljung, in press). In the present study, where the population was 5 years older compared to the earlier study, the adjusted OR was higher, 5.0, suggesting that the risk of suicide may be even higher in adulthood than during adolescence. A number of different factors have been mentioned to contribute to the vulnerability of intercountry adoptees. Many have been exposed to extreme poverty and malnutrition in the country of origin (Proos, Hofvander, Wennqvist, et al. 1992). It seems likely that this can have irreversible effects on the early development of the brain in certain children. One may also speculate that psychiatric illness may be a common reason for leaving a child

to adoption, causing a genetic vulnerability in the adoptees. Bohman found such a mechanism to be important in understanding the increased risk of alcoholism of adoptees born in Sweden in the 1950s (Bohman and von Knorring 1979). Furthermore, the possibility of negative long-term effects of deprivation and orphanage care has to be considered. For instance, it has been shown that children who had spent at least 8 months in a Romanian orphanage displayed more insecure attachment patterns than non-adopted and early adopted controls and at follow-up at 6 years of age more often had signs of conduct and attention problems (O'Connor and Rutter 2000). Discrimination and prejudices against children and youth with a non-Swedish appearance may also be important in explaining the high odds for suicide in intercountry adoptees (Tizard 1991), as well as patterns of interaction in adoptive families. It is possible, for example, that an adoptee may be more reluctant to communicate suicidal thoughts because of the fear that this would be perceived as ungratefulness for the adoption as such.

■ Socio-economic living conditions and suicide death in immigrants

This study demonstrates that socio-economic living conditions contribute to the risk of suicide in first- as well as second-generation immigrants in Sweden, notwithstanding the fact that the minority populations that have the most adverse living conditions also have the lowest suicide rates. The geographical indicators in this study are very crude, and do not adjust for the neighbourhood effects of segregated housing within larger geographical areas. Recent reports (National Board of Health and Welfare 2001) have demonstrated an increasing tendency for minority populations to cluster in low status housing areas in larger and medium-sized cities. Although British studies have demonstrated that the connection between clusters of immigrants and suicide risk is quite complex (Neeleman and Wessely 1999; Cubbin, LeClere and Smith 2000), one may speculate that the situation in Sweden, where people tend to be clustered by social status rather than by ethnicity, has predominantly negative effects (National Board of Health and Welfare 2001). Further research, with a small-area approach, is needed to clarify this issue in the Swedish context.

■ Methodological problems

The methodological problems surrounding death statistics for immigrant populations in Sweden have been discussed in a recent article by Ringbäck et al. (1999). The size of the population of immigrants tends to be overestimated because emigration from Sweden is less often reported to Swedish authorities by foreign-born residents compared to Swedish-born residents. This ten-

dency is particularly important for residents born in countries outside of northeastern Europe. In this study we tried to minimise the effect of this problem by excluding years of individuals with no income in the household from the study as suggested by Ringbäck et al. It is still possible, however, that a certain bias is present, which might explain some of the lower suicide death rates in residents born outside Europe and in southern Europe where emigration without report to authorities is most common. It seems unlikely, however, that this kind of bias explains the difference found between the first- and the second-generation immigrants, since Ringbäck et al. reported that the overestimation of the population was greater among young immigrants.

The study population in this study is entirely made up of individuals born after 1928 that lived in households with children in the census of 1985. Since it is quite possible that families are particularly important as sources of social support for immigrants and the situation of elderly immigrants differs from that of younger immigrants, the results cannot be generalised to immigrants in households without children or to the elderly.

The concepts of first- and second-generation immigrants in this study could also be challenged. Almost 40% of the second-generation study group had been exposed to migration as children themselves. A multivariate analysis of suicide risk in relation to country of birth and relevant confounders, however, demonstrated that this factor is unlikely to explain the difference between the first- and the second-generation study groups. In fact, children who were born outside Sweden tended to have a slightly lower risk for suicide than those born in Sweden (OR 0.8; 95% CI 0.5–1.3).

Conclusion

This study demonstrates that second-generation immigrants have a higher relative risk of suicide death compared to the first generation and should be of particular concern for prevention. Culture-specific determinants of suicide death are carried over from the first- to the second-generation immigrants. Further research is needed to clarify these mechanisms, so that they can be used in prevention. Intercountry adoptees have a high risk of suicide and should be of major concern for suicide prevention programmes.

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