DISSERTATIONES SOCIOLOGICAE UNIVERSITATIS TARTUENSIS
2

DISSERTATIONES SOCIOLOGICAE UNIVERSITATIS TARTUENSIS
2

ESTONIANS' AND RUSSIAN MINORITY'S SUICIDES AND SUICIDE RISK FACTORS: STUDIES ON AGGREGATE AND INDIVIDUAL LEVEL

KAIRI KÕLVES

TARTU UNIVERSITY
PRESS

Faculty of Social Sciences, University of Tartu, Tartu, Estonia

Dissertation is accepted for the commencement of the degree of Doctor of Philosophy (PhD) in sociology on July 12, 2006, by the Council of the Department of Sociology, Faculty of Social Sciences, University of Tartu.

Supervisor:

Professor Airi Värnik, MD, PhD
Estonian-Swedish Institute of Mental Health and Suicidology
Tallinn, Estonia

University of Tartu
Tartu, Estonia

Opponents:

Professor Mikko Lagerspetz, PhD
Tallinn University,
Tallinn, Estonia

Anu Realo, PhD
University of Tartu,
Tartu, Estonia

Commencement will take place on September 29, 2006.

ISSN 1736–0307
ISBN 9949–11–438–1 (trükis)
ISBN 9949–11–439–X (PDF)

Tartu Ülikooli Kirjastus
www.tyk.ee
Tellimus nr. 446

ABSTRACT

Background: Closed society for more than half a century and profound rapid reforms followed since mid eighties of the last century in the USSR gave a unique possibility to observe demographic and behavioural processes in the population. No investigations on suicide behaviour of Russian minorities after re-establishing independence in Baltic states nor meaning of life events in suicide process was performed.

Aims: The aims of this study were to (1) examine how the radically changed socio-political status of the Russian minority after the dissolution of the Soviet Union was reflected in their suicide rates; (2) compare suicides among Russian minority in Estonia with suicides among native Estonians by socio-demographic background, substance use pattern and recent life events to find out immigration-specific factors predicting suicide on individual level; (3) classify the pattern of alcohol use among people who committed suicides and controls matched by region, gender, age and nationality; (4) identify life events among suicide victims and controls during the last three months in Tallinn, Estonia and Frankfurt am Main, Germany.

Material and method: Age adjusted suicide rates for the Russian Federation of the World Health Organisation mortality database was used and data on the population in Estonia by nationality was obtained from the Estonian Statistical Office for the Studies I and II. In Studies III and IV psychological autopsy was conducted with 427 suicidents (91% of the total in 1999) compared to 427 randomly selected controls paired with suicide cases by region, gender, age and nationality. For Study V the information about 156 suicidents in Tallinn and 163 suicidents in Frankfurt was compiled using the psychological autopsy technique. General population controls were matched by age and sex.

Results: Before Estonian independence Russians in Estonia had the lowest suicide rates and after independence the highest suicide rates in comparison with Estonians in Estonia and inhabitants of Russia. On individual level the only variable differing significantly between Russian minority in Estonia and native Estonians' suicide cases was substance use pattern. For both nationalities substance dependence and abuse, being economically inactive and recent family discord were associated with suicide. Having no partner, being unemployed and being an abstainer stayed significant for Estonians, while somatic illness, separation and death of a close person for Russian minority. Comparison of suicides in Tallinn and Frankfurt show that family discord and financial deterioration were more prevalent among suicides in Tallinn. Significant differences between suicides and controls were in family discord, separation and loss of job in Tallinn and somatic illness in Frankfurt.

Conclusions: Migration in terms of change of the geographical location solely seems not to be sufficient determinant provoking suicides until migrants' needs were met with greater attention compared to the local population. On individual level substance use was found to be a significant suicide risk factor for both main ethnic groups in Estonia – Estonians and Russian minority, however, substance misuse was found significantly more in Russian minority suicides. Although there were some differences in the nature of recent life events, the predicting factors of suicide were similar for Russian minority and native Estonians. Comparison of suicide victims and controls in Tallinn and in Frankfurt show that people in Estonia tend to emphasise economic and physical security above all other goals, and feel threatened by the changes taking place in the society.

PAPERS

I Värnik A, Kõlves K, Wasserman D. Suicide among Russians in Estonia: database study before and after independence. British Medical Journal 2005;330:176–7. Internet: 10.1136/bmj.38328.454294.55.

II Värnik A, Kõlves K, Sisask M, Samm A, Wasserman D. Suicide mortality and political transition: Russians in Estonia compared to the Estonians in Estonia and to the population of Russia. Trames 2006;10:268–277.

III Kõlves K, Sisask M, Anion L, Samm A, Värnik A. Factors predicting suicide among Russian minority in Estonia in comparison with Estonians: a case-control study. Under review in Croatian Medical Journal

IV Kõlves K, Värnik A, Tooding L-M, Wasserman D. The role of alcohol in suicide: a case-control psychological autopsy study. Psychological Medicine 2006;36:923–930.

V Kõlves K, Värnik A, Schneider B, Fritze J, Allik J. Recent life events: A case-control study in Tallinn and Frankfurt. Social Science & Medicine 2006;61:2887–2896.

CONTENTS

INTRODUCTION

Definition of suicide

More than 100 years ago Emil Durkheim (1) in his wide-known monograph "Suicide. A study in sociology" defined suicide. His definition was: "the term suicide is applied to all cases of death resulting directly or indirectly from a positive or negative act of the victim himself, which he knows will produce this result". Present definition and whole Durkheim's theory on suicide has been widely criticised, still most of the sociological theories are based on the critics of his work or are modifications of it (2–6).

There is no universal definition of suicide today. By Erwin Stengel's (7) widely used definition suicide is the fatal act of self-injury, undertaken with more or less conscious self-destructive intent, however vague or ambiguous. WHO's Working Group on Preventive Practices in Suicide and Attempted Suicide (8) defined suicide as "an act with fatal outcome, which was deliberately initiated and performed by the deceased, in the knowledge or expectation of its fatal outcome, and through which the deceased aimed realising changes he/she desired".

Today researchers consider that suicide is a multidimensional complex phenomenon and no simple explanation of the phenomenon exists (9). Recent recognition that suicide risk factors are often multidimensional has resulted in massive expansion in research, which has occurred in all fronts, including psychiatry, psychology, social sciences, biology, genetics etc (10).

Epidemiology of suicide

Differences in the definition of suicide may lead to some unreliability in international comparisons of official suicide statistics. However, this is estimated to cause less than 10% of the variation in suicide rates (11, 12). Representatives of WHO direct attention to the fact that the category name and code of the mortality associated with suicide has remained relatively stable through successive editions of the International Statistical Classification of Diseases and Related Health Problems (ICD) from ICD-6 to ICD-10, which makes suicide statistics more or less comparable between countries and in time (13, 14).

WHO estimates are showing highest rates of suicide in Europe, particularly in Eastern Europe (13, 14). In 2003 highest suicide rates in Europe were in Lithuania – 41.1 per 100 000 inhabitants followed by Russian Federation – 33.8 and Belarus – 33.3 per 100 000 inhabitants (15). Suicide statistics in the world are showing constant predominance of suicide rates in males over females, 3.6:1

in 1995. Although suicide rates increase with age, currently suicide rates are increasing in younger age groups (13, 14).

Suicides in the former USSR

The statistics of external causes of deaths, including suicides in the former USSR, are proved to be valid and reliable (16–18). The suicide rate in the former USSR rose during the stagnation period from 17.1 in 1965 to 29.6 per 100 000 inhabitants in 1984 (19). During *perestroika* suicide rates showed a falling trend in all Soviet Republics, decrease of 35% (40% for males, 18% for females) was observed throughout the USSR, especially among men aged 25–54 (20). The falling trend has been associated with strict alcohol policy during *perestroika*, alcohol consumption fell by 33–53% of the 1984 rate in the Soviet republics (21, 22).

Suicides in Estonia

Estonia had a relatively high suicide rate even before the Second World War (WW II) (23). This rate increased during the Soviet occupation, especially among males, reaching 55.7 per 100 000 during the period from 1968 to 1984 (24). After regaining independence in 1991 the suicide rate increased during the socio-political changes, reaching its peak value in 1994 when 41.7 per 100 000 committed suicide (25). Since 1995 the Estonian suicide curve has shown a steady trend downwards (26, 27). In 2003 the Estonian suicide rate was 23.7 per 100 000 according to WHO Health for All Database (28).

Suicides in Russia

Russia had very high suicide rates since at least the early 1970's. The suicide rate rose from around 22 per 100 000 inhabitants in the end of 1960's to about 38 in 1984 (29). In 1985–1986 there was a sharp decrease as in other former Soviet Republics (30). Since 1987 the suicide rate in Russia started to increase, reaching the maximum point 43 per 100 000 in 1994 (29). In 2003 the suicide rate in Russia was 33.8 per 100 000, the second highest in Europe according to WHO Health for All Database (28).

Migration

Migration, change in location can break important ties between the individual and the social system, including bonds to relatives, co-workers, familiar geography, and neighbours. Practically everything changes that surrounds the person: social relations, status, language, dress, type of residential dwelling, climate, and diet (31, 32). Motives to migrate can be several from studying or working to avoiding political or religious persecution, it varies from voluntary to forced. Such a variety of experiences and reasons suggest that the process of migration is extremely heterogeneous and not all migrants are likely to face similar experiences before and after migration (33).

Major stress before, during, and after migration can influence mental condition and adjustment ability. Many studies have shown increased rates of psychopathology among migrant populations (33–36).

Immigration of Russians to Estonia

The population of Estonia was ethnically rather homogenous until WWII. According to the population census before WWII (1934) Estonians constituted 88.1% of the total population and the biggest ethnic minority group was Russian (8.2%) (Table 1) (37).

Table 1. Demographic development and population structure in Estonia by censuses in 1934, 1979, 1989 and 2000 in percentages

Year	1934	1944*	1979	1989	2000
Estonians	88.1	95.0	64.7	61.5	67.9
Russians	8.2	2.0	27.9	30.3	25.6
Ukrainians	0	0	2.5	3.1	2.1
Byelorussia's	0	0	1.6	1.8	1.3
Other	3.7	3.0	3.3	3.3	3.1
Total	100	100	100	100	100

*estimated

In the post-war period, due to the geopolitical change related to the incorporation of Estonia into the Soviet Union, the Russian minority grew to approximately 30% in 1989 (38). In 1993–1996 remigration of Russians, mainly of military forces, took place. In the 2000 census the Estonian population consisted of 67.9% Estonians, 25.6% Russians, and 6.5% other nationalities (37).

BACKGROUND

Prevalence of suicides among immigrants

Several studies have compared prevalence of suicides among immigrants with suicide rates of native born and countries of origin. Previous research has shown a variety in the suicide rates of immigrant groups with different ethnic background as well as in their home countries (39–48). Differences between suicide rates of immigrant groups and native population are not that clear, but most of the immigrant groups have higher suicide rates compared to the rate in their countries of birth. A number of studies have found that migrants who came from countries with high suicide rates had high rates in host countries and similarly for low rates (39, 41, 42, 49, 50). The latter findings indicate that cultural background, social skills, religion and other protective factors might play an important role even after migration (33, 41).

Prevalence of suicides among Russian immigrants

Reports from England and Wales (45), Canada (40) and Sweden (43, 51) have presented very high prevalence of suicides among Russian immigrants compared to their country of origin as well as to the host countries. Johansson et al. (51) have found that suicide rate of Russian males in Sweden was 201.9 per 100 000 in comparison with 41.4 in Russian males and 44.5 in Swedish males in 1986–1989.

Suicide predictive factors

Retrospective research shows that, among the variables which have been studied, mental disorder was the most strongly associated antecedent to suicide (52–54). Personality dispositions, impulsivity, depression, anxiety, and hopelessness have been shown to be the most pervasive psychological characteristics that determine vulnerability to suicide (53). There is strong evidence to suggest that genetic predisposition may contribute to inclination towards suicidal behavior (55). However, besides persistent genetic and personality dispositions, recent unfavorable life events have been associated with increased risk of suicide even when other factors like mental disorders were controlled (56).

Despite a considerable difference in the mean rate, similar factors seem to incline people to commit suicide in different countries. Although conditions, values and people who commit suicide, for example, in India, China and Taiwan are different than those found in the West, predictive factors for suicide

do not differ greatly across cultures (57–59). A study analysing suicide risk factors in developing countries still found that there are some differences between developed and developing countries, but substance abuse, low socio-economic status and previous suicide attempts are universal risk factors and also recent stressful life events play a role in both developing and developed countries, although their nature may differ (60).

Alcohol and drug misuse

Several aggregate-level studies have demonstrated the association between alcohol consumption and suicide (61–63). A series of studies by the Wasserman–Värnik group (16, 20–22, 30, 64, 65) examined changes in alcohol consumption and suicides before, during and after the major anti-alcohol campaign during *perestroika* in the former USSR. They found that at the aggregate level approximately 60% of male and 26% of female suicides in the Baltic republics (Estonia, Latvia and Lithuania), and 70% and 24% respectively in the Slavic republics (Russia, Ukraine and Belarus), were statistically estimated as being attributable to alcohol (21, 22). Nonetheless, studies at the aggregate level run the risk of ecological fallacy.

The retrospective psychological autopsy method allows the proportion of alcohol and drug abusers among people who committed suicide to be estimated at an individual level. Psychological autopsy studies of over 100 unselected suicide cases have shown an association with alcohol abuse and dependence (AAD) for 15–47% of suicides and with drug abuse and dependence for 0–34% of suicides (52, 57, 66–73) (Table 2).

Table 2. Substance dependence and abuse by psychological autopsy studies with more than 100 unselected suicide cases

Study	Site	Years	N	Abuse or dependence	
				Alcohol	Drug
Robins et al. (72)	USA (St. Louis)	1956–1957	134	23%	1%
Dorpat & Ripley (71)	USA (Seattle)	1957–1958	108	27%	0%
Barraclough et al. (70)	England	1966–1968	100	15%	4%
Chynoweth et al. (69)	Australia (Brisbane)	1973–1974	135	20%	34%
Rich et al. (67)	USA (San Diego)	1981–1982	204	47%	31%
Arato et al. (68)	Hungary (Budapest)	1985	200	20%	–
Henriksson et al. (52)	Finland	1987–1988	229	41%	5%
Cheng (66)	East Taiwan	1989–1991	116	44%	4%
Foster et al. (73)	Northern Ireland	1992–1993	118	43%	8%
Vijayakumar & Rajkumar (57)	India (Chennai)	1994–1995	100	34%	2%

Recent life events

Extensive case-control studies have demonstrated that persons committing suicide are likely to have experienced recent life events more often than controls (56–59, 74–76). Life events that are most frequently related to suicide include interpersonal losses and conflicts, problems at work, money problems, and somatic illness. Inability to cope with these problems may lead to deterioration of mental health, attempted or completed suicides (56, 77–82).

Suicide predictive factors among immigrants

There is a lack of studies on individual level concerning specific suicide predictive factors for immigrants. The only study available was psychological autopsy study describing Ethiopian immigrants to Israel (83). They found that 67% were dissatisfied with their employment, 50% with their economic status, 44% with their marital relationships, and 53% with their fluency in the host language. However, no controls were used.

AIMS

The aims of this study were to

1) examine how the radically changed socio-political status of the Russian minority after the dissolution of the Soviet Union was reflected in their suicide rates;

2) compare suicides among Russian minority in Estonia with suicides among native Estonians by socio-demographic background, substance use pattern and recent life events to find out immigration-specific factors predicting suicide on individual level;

3) classify the pattern of alcohol use among people who committed suicides and controls matched by region, gender, age and nationality;

4) identify life events among suicide victims and controls during the last three months in Tallinn, Estonia and Frankfurt am Main, Germany.

MATERIAL AND METHODS

Subjects of the study

Studies I and II

The subjects of the Studies I and II consisted of three suicide populations (code E950–E959 by ICD, the World Health Organisation International Classification of Diseases): Russians in Estonia, Estonians in Estonia and population of Russian Federation during 1983–1998. The database has been constituted according to the data from the WHO reports for the Russian Federation concerning age-adjusted death rates (SDR) of suicides. Data on the population in Estonia: Russians in Estonia and Estonians in Estonia were derived from the Statistical Office of Estonia.

The nationality of suicidents was specified on the death certificates. Russians, Ukrainians and Byelorussia's, having the same cultural and linguistic background, and other nationalities, who constituted only 3% of the total population of Estonia, were termed "Russians" in the study. In the Russian Federation 82.6% of inhabitants are Russians, the major minorities of the remaining 17.4% of population were Tatars (20% of non-Russians) followed by Ukrainians (10% of non-Russians) and others (84).

Studies III and IV

Suicidents. Preliminary information about completed suicides was obtained from the police and the Bureau of Forensic Medicine, which permitted interviews to begin two months after the suicidal act according to the methodology used in Finland for the National Suicide Prevention Project (85). The list of suicide cases was verified by data from the Estonian Statistical Office. In 1999, a total of 469 suicide cases (ICD-9 codes E950–E959) were registered. In 427 of these cases (91% of the total, representative in terms of region, gender and age), a psychological autopsy study (86–89) based on face-to-face interviews with relatives and intimates of people who committed suicide, following their signed agreement, was carried out by psychiatrists trained for the study. The average duration of the interview was 1 hour 45 minutes. Interviews were conducted at the interviewee's home in 70% of cases and otherwise at the interviewer's or interviewee's office. Key informants of the deceased were spouses or cohabitees (33%), parents (21%), adult children (16%), brothers or sisters (10%), and other relatives and friends (20%). Additional information was compiled from the medical records in hospital archives. Karolinska Institute Research Ethics Committee North approved ethical aspects.

Controls. The control group (n=427) were randomly selected from the lists of general practitioners (GPs) for the years 2002–03. When the system of GPs was

introduced in Estonia in the early 1990s, GP lists were compiled from population registers and all the local residents were thus represented in GPs' lists regardless of whether they had consulted a doctor for their health problems. Controls were paired with suicide cases by region, gender, age (±2 years) and nationality. Interviews with the control group were carried out by GPs trained for the study, using semi-structured questionnaires similar to those used for psychological autopsy. The controls' response rate was 96%.

Study V

Suicidents. The basic procedure of the date collection has been described above under the Studies III & IV. There were altogether 469 suicides in Estonia in 1999, 159 of them completed in the Tallinn area. In the latter case, face-to-face interviews with relatives of 156 suicide cases (98% of total) were carried out by trained psychiatrists. In two cases relatives declined to participate in the study and in one suicide case relatives could not be found. The average time interval between suicide and the interview was 5.1 (SD=2.4) months. Key informants were spouses (27%), parents (25%), adult children (19%), brothers or sisters (10%), and other relatives and friends (19%).

The basic information about suicides (code E950-E959 by ICD-8 and ICD-9) in Frankfurt am Main was gathered from the Center of Forensic Medicine, which examines all deaths by uncertain or unnatural causes in the region. There were 263 suicides registered during the years 1999 and 2000, and data for 163 suicides (62%) was obtained through face-to-face interviews with relatives. In 20 cases suicidents did not have any first or second degree relatives; the relatives of 22 suicide victims could not be interviewed in the German language and/or were living outside Germany. In 58 cases, informants of the deceased declined to participate in the study. The time interval between suicide and interview was 8.5 months (SD=6.8). There were no significant differences between the included and excluded suicides with respect to gender, mean age for male and female and ethnicity. Key informants of the deceased were spouses (35%), adult children (21%), parents (18%), sisters and brothers (13%), and other relatives and friends (13%).

Controls. In Tallinn general population controls were matched with suicidents by gender, age (±2 years) and ethnicity, since these variables are known as main factors predicting suicide. Controls were randomly selected from GPs' lists, which cover the country's total population. Face-to-face interviews with 156 controls were carried out by GPs trained for the study. Five percent of the randomly selected controls refused to participate in the study and were replaced by persons with same parameters.

In Frankfurt am Main, 396 population-based controls (response rate 57%), comparable to the suicides regarding gender, age and residential area, were interviewed personally by psychiatrists, psychologists and research assistants (90). The controls were chosen by "random digit dialling", a standard measure

for recruiting population-based control persons. For the purpose of having one to one matched controls, out of the group of 396, 163 control persons were randomly chosen with the same sex, age (±2 years), and living area comparable to suicidents.

Instruments

Studies III–V

The questionnaire used for the semi-structured interviews had been drawn up in Finland and translated into Estonian and Russian. The same questionnaire was also used in Germany (Study V). It comprised eight sections. One of which assessed more precisely (39 items) the use of alcohol and other psychoactive substances (85). Details about deceased social connections and working life were collected in other parts of the questionnaire.

The semi-structured interview included a life event questionnaire based on the Recent Life Change Questionnaire formulated by Rahe (91) with modifications from the list of Paykel et al (92).

In Study V the 33 items in the life event questionnaire were divided into 12 categories as in Heikkinen, Aro, & Lönnqvist (79). Item "change in get-togethers with friends" was excluded from the analysis because of its ambiguity. Category "any event" included all 32 life events. Under "separation" were included divorce, separation due to arguments, and breakup of steady dating. Under "death" were categorised death of spouse, death of other family member, and death of close friend. Category "problems at work" included substantial increase and decrease in work hours, increase and decrease in work responsibilities, trouble with employer or employee, and separation due to work. The time period covered three months prior to suicide.

Classification of substance use pattern

In the Studies III and IV substance use pattern of suicides and controls was classified. One of the author-cum-interviewers (AV) coded alcohol and substance use disorders in all suicide and control cases independently, using a blind method based on psychological autopsy data and medical documentation, according to hierarchical DSM-IV principles (93). Alcohol dependence was diagnosed if three or more of the following symptoms had been present at any time over the past 12-month period:

(1) markedly increased or decreased tolerance of alcohol to achieve intoxication or the desired effect
(2) withdrawal syndrome
(3) loss of control over the doses or duration of alcohol intake

(4) persistent desire or unsuccessful efforts to cut down or control alcohol use
(5) much time spent in activities aimed at obtaining alcohol or in recovering from its effects
(6) key social, occupational or recreational activities given up or reduced because of alcohol use
(7) persistence of alcohol use despite the problems it causes or exacerbates.

Alcohol abuse was diagnosed if a maladaptive pattern of alcohol use had led to clinically significant impairment or distress, as manifested in one or more of four symptoms described in DSM-IV, while never meeting the criteria for alcohol dependence.

The pattern of alcohol use in Study IV was classified in the following categories:
(1) alcohol dependence
(2) alcohol abuse
(3) former alcohol use
(4) abstinence
(5) moderate alcohol use
(6) indistinct cases.

The pattern of substance use in Study III was classified in the following categories:
(1) substance dependence and abuse
(2) abstinence during last 12 months (including former alcohol use)
(3) moderate alcohol use
(4) indistinct cases.

'Indistinct cases' were so categorised because of insufficient data. Clinical diagnoses coded according to ICD-10 were available for all suicide cases and controls if the individuals had been referred to medical institutions before the study. Clinical (lifetime) diagnoses proved to coincide with research diagnoses. The coding results were examined and disagreements between raters were resolved through consensus. Kappa inter-rater reliability was 0.988 ($p<0.0001$) for suicides and 0.985 ($p<0.0001$) for controls. There were debatable issues in the diagnosis in four suicide cases and five controls.

Statistical methods

Studies I and II
SDR of suicides were calculated using direct standardisation and European standard population. The average age-adjusted suicide rate was calculated for each study period. The standard deviation was used to show the spread out of the rates. Paired samples t-tests were used to show the differences between the studied groups in different time-periods.

Study III
To estimate the differences between suicides in nationality groups, gender and age adjusted odds ratios (adjusted OR) and 95% confidence intervals (95% CI) were calculated. To estimate the association between matched pairs in terms of potential risk factors, the odds ratio (OR) using conditional logistic regression with 95% confidence intervals (95% CI) was calculated. The Binomial test was used when a specific factor was not observed in a comparison subject, since the odds ratio could not be computed in such cases. To estimate the independent contribution of different risk factors predicting suicide among Estonians and Russians, conditional logistic regression models were performed. Backward selection of variables was carried out to identify those variables to be retained in the final models.

Study IV
Since our cases and controls were individually matched, multivariate conditional logistic regression models, adjusted for family and socio-economic status, were applied to assess the effects of alcohol dependence, alcohol abuse, abstinence and former alcohol use on suicide risk. Moderate users of alcohol were used as a referent group.

Study V
To estimate the differences between suicides in the two sites simple odds ratio (OR) and 95% confidence intervals (95% CI) were used. In order to minimise the differences by gender and age between the two sites, gender and age weighted odds ratios were calculated. Mann-Whitney test's Z was used for continuous variables (number of life events). To estimate the association between matched pairs in terms of life events, the (Liddell) odds ratio (OR') and 95% confidence intervals (95% CI) were used. Yates' continuity corrected Chi-square (χ^2) was used when no specific life event was observed in a comparison subject, since the odds ratio could not be computed in such cases. Conditional logistic regression models were used to estimate the independent contribution of significant life events predicting suicide in Tallinn and in Frankfurt. Backward selection of variables was carried out to identify those variables to be retained in the final models separately for Tallinn and Frankfurt.

Exclusion criteria

In the substance use analysis, 12 pairs in which sufficient data on either the suicide cases or the controls were available to make research diagnoses were classified as indistinct and excluded. Four of the people who committed suicide were prevented from using substances in their last 12 months by being in prison or a nursing home. These pairs, too, were excluded from the statistical analysis in Studies III and V.

Altogether, 57.1% of people who committed suicide were Estonians and 42.9% non-Estonians. Ninety-four percent of non-Estonian suicide victims were Slavic origin – Russians (88%), Ukrainians (7%), Byelorussia's (5%) and Polish (2%) – with homogeneous cultural and linguistic backgrounds, and are subsumed under the term 'Russians' in present study. Other 8 (4%) non-Estonian suicide victims were excluded from the Study III.

RESULTS

Comparison of SDR of suicide among Russians in Estonia, Estonians in Estonia and population of Russia (Studies I and II)

Means of SDR were high for the three nationalities during the period 1983–1990. Lower suicide rates were observed among Russians in Estonia compared with Estonians (p=0.061). During the transition period (1991–1998), an increase in SDR was observed for all three nationalities (39.2% for Russians in Estonia, 25.9% for Russians in Russia, and 17.1% for Estonians). In the second period (1991–1998) the Estonian Russians had a significantly higher suicide mortality rate compared with Estonians (p=0.005) as well as in comparison with Russians in Russia (p=0.032).

The shape of the curves is strongly influenced by male suicidents, constituting almost 80% of total number of suicides between 1983–1998 in all three populations.

The male SDR of suicide for the two different time periods of the study increased remarkably among all studied populations during the second period. The increase for Russian males in Estonia from the first to the second period was the greatest (61.0%) and the smallest was for Estonian males (22.7%). The largest spread out of SDR of male suicide was observed among Russians in Estonia (SD = 7.3), followed by inhabitants of Russia (SD = 6.5) and by Estonians (SD = 4.6) during 1983–1998.

The female SDR of suicide were more stable and lower compared to that of males. Mean SDR of suicide had the greatest increase for Russian females' in Estonia (11.1%), followed by females in Russia (1.5%), and Estonian females show a decrease by 5.5% from the first to the second period. For females in Russia the standard deviation was the lowest during the whole study period. The suicide rates of Russian females' in Estonia had the broadest spread out; Estonian females were in between.

Comparison of Estonian and Russian suicide victims and controls (Study III)

Differences between Estonian and Russian suicide victims

Comparison between Estonian and Russian suicide cases in Estonia by socio-demographic factors and occurrence of recent life events did not show remarkable differences. Significant differences by nationality were found only in substance use pattern. Gender and age adjusted OR showed that Russian suicide victims had higher risk of being substance dependent or abusers and abstainers than Estonian suicide victims, when moderate alcohol users were selected as a referent group.

Both Russian male and female suicidents were more likely to be substance dependent or abusers and there were more abstainers among Russian females in comparison with Estonian suicidents. Concerning recent life events, Russian female suicidents had higher risk of having somatic illness than Estonian female suicidents.

Differences between suicide victims and controls

Estonian and Russian suicide victims were more likely not having a partner (being single, widowed, divorced or separated) and being unemployed and inactive than their controls. For both nationalities substance use pattern differed significantly between suicide victims and their controls – people who committed suicide had a higher risk of being substance dependent or abusers and also abstainers than their controls. Somatic illness, family discord, separation and loss of job during the last three months were more frequent among suicide victims in comparison with controls for both nationalities. Only Estonian suicide victims had a significantly higher risk of financial deterioration than their controls. Russian suicide victims had experienced death among their relatives or friends considerably less often compared to controls and Estonian suicide victims were less likely to have change of residence in comparison with controls.

Risk and protective factors of Estonian and Russian male suicides were similar to total results, for exception of socio-economic status 'being inactive' which did not reach significance for Russian males. Also, female suicide cases differed significantly from their controls by substance use pattern. Both Estonian and Russian female suicide victims were significantly more likely abstainers, but only Russian female suicide victims were more likely substance dependent or abusers. Female suicide victims of both nationalities had a higher risk of family discord in comparison with controls. Russian female suicide victims were more likely to have somatic illness and Estonian females were

more often inactive by socio-economic status than their controls. Death of close relatives or friends proved to be less frequent among Russian female suicide victims compared to their controls.

Conditional logistic regression models showed that factors associated with suicide for both nationalities were substance dependence and abuse, being socio-economically inactive, and family discord during the last three months. Having no partner, being unemployed and abstainer stayed significant in the final model for Estonians, and somatic illness, separation and death of a close person for Russians.

Alcohol abuse and dependence among suicides and controls (Study IV)

Alcohol abuse was found in 10.2% and alcohol dependence in 50.6% of suicide cases. The corresponding data for controls were 7.1% and 14.4% respectively. Alcohol abuse and alcohol dependence were statistically significant predictors of completed suicides, compared with controls, when moderate alcohol users were selected as a referent group. Moreover, for both sexes together, both abstinence and former alcohol use were associated with completed suicide. AAD was diagnosed among 68.3% of male suicides and 28.6% of female suicides.

The youngest age group (under 35) of males who committed suicide showed the lowest AAD proportion (49.5%) and middle-aged (35–59) males who committed suicide the highest (83.9%). The latter group also showed the highest risk of alcohol dependence compared with their controls, with moderate users of alcohol used as a referent group. Abstinence was not associated with suicides for males in the various age groups, while former use was significantly associated with male suicides in the oldest age group.

In both ethnic groups, with moderate alcohol users as a referent group, alcohol abuse and alcohol dependence were associated with suicide. Former alcohol use was associated with suicide only for Russians and abstinence only for Estonians.

Life events among suicides and controls in Tallinn and Frankfurt (Study V)

Occurrence of recent life events

One or more recent life events had occurred in 81% of the cases in the suicide group in Tallinn and in 77% in Frankfurt. Similarly, comparison between suicide victims and controls showed higher risk in the occurrence of recent life events among suicides in both cities. Furthermore, suicides in Tallinn showed a significantly higher mean number of recent life events than their controls.

In both sites only male suicidents had higher risk of occurrence of any recent life event than controls. The mean number of life events was significantly higher only among male suicidents in Tallinn in comparison to their controls. The occurrence of any recent life event was highest in the oldest age group (60+) of suicides in Tallinn and in the youngest age group of suicides in Frankfurt. Suicidents in the oldest age group had higher risk of occurrence of any recent life event in both sites than controls. The mean number of life events decreased with age in both sites.

Different types of life events

Suicide victims in Tallinn had very high risk of family discord; in Frankfurt this event did not differ between suicides and controls. In both sites suicides had significantly higher risk of somatic illness, separation and financial deterioration than controls. Compared to controls, suicidents in Tallinn as well as Frankfurt had experienced considerably fewer deaths among their relatives or friends.
Comparison between suicide victims showed that suicides in Tallinn had significantly higher risk of family discord, loss of job, problems at work, financial deterioration and changes in residence than suicide victims in Frankfurt.

Comparisons by gender showed that male suicides in Tallinn experienced more often financial deterioration and separation than females. Male suicidents in Tallinn had higher risk of family discord, separation, financial deterioration, and loss of job, and male suicidents in Frankfurt had higher risk of somatic illness than controls. During the studied period female suicidents in Frankfurt were more likely than controls to have suffered from somatic illness and in Tallinn from family discord.

Age-related differences in suicides were found in somatic illness, which was more prevalent among older suicide victims (60+) in both sites. Financial deterioration occurred significantly more often among middle-aged (35–59) and younger (under 35) suicidents in Tallinn. In Tallinn, the suicides of young and middle-aged age groups had experienced more frequently loss of job. In Tallinn,

the risk of family discord was significantly higher among suicidents than controls in all age groups and higher risk of separation in younger and middle-aged suicides. There were no significant differences between suicide victims and controls in different age groups in Frankfurt.

Final conditional logistic regression models showed that recent life events in the last three months, which were associated with suicide, were somatic illness in both cities, family discord and death in Tallinn, and separation in Frankfurt.

DISCUSSION

Methodological considerations

Studies I and II

The procedure of reporting and registering of violent deaths was uniform all over the former Soviet Union and remained the same in the Russian Federation of the Commonwealth of Independent States and also in the independent Estonian Republic. The statistics of external causes of deaths, including suicides in the former USSR, are valid and reliable (16–18).

A methodological limitation in the Studies I and II is due to the small number of deceased per year for Russians in Estonia and Estonians, but still there were 2939 Russian and 4809 Estonian suicidents for total study period (1983–1998).

Studies III–V

Methodological limitations of psychological autopsy include the possibility of incomplete and biased information (87, 88, 94). Data on suicide cases, collected retrospectively from indirect sources (survivors), may introduce reporter bias due to respondents' possible partiality and other attitudes connected with their personal experience of the victims.

In suicide case-control studies, the control groups' composition is an important issue. There have been studies using living controls and deriving information either from their relatives (57, 73) or from direct interviews with the individuals themselves (94, 95). Regarding living controls, alcohol abuse can be denied. Phillips et al. (59) designed a psychological autopsy study where controls were people who died from other injuries.

In the present study, direct personal interviews with living controls matched with the suicide cases by region, gender, age and nationality were used. Since more males than females commit suicide and suicides' age composition differs from that of the general population, it is essential to stress that our control group deviate from the general population.

One limitation was a time lag of some three to four years between the interviews with relatives of people who committed suicide (1999) and those with controls (2002–2003). The implications of this fact were, however, probably minor since matched controls were used.

Response rates in Studies III–V were high both for suicide cases (91%) and for controls (96%) in Estonia. Still, the response rates in Frankfurt (Study V) were moderate (63% in suicides, 57% in control persons), which were similar to those in Canadian and British studies (56, 96, 97).

'Psychological autopsy' may be regarded as a reliable method for *postmortem* psychiatric diagnosis (90, 98–100). Several authors (53, 90, 101), in making diagnoses using structured interviews, have shown high correlation

between self-rating and informant rating. The lack of adjustment for comorbidity with other Axis I disorders (e.g. major depression; (66), and also Axis II disorders and other factors may have confounded the repercussions of alcohol-use disorders on suicide risk.

To test the reliability of data obtained from respondents in Study IV, two to four informants per case in 33 randomly selected cases (8%) were interviewed. The minor discrepancies in reported amount and frequency of alcohol use, and in the consequences of drunkenness, did not change the research diagnoses.

In Study III there is a need to draw attention to the fact that the psychosocial factors are reflected in health behaviour (102) and psychiatric disorders, the latter have been found to be suicide risk factors (54), especially among immigrants (33, 34). Therefore the role of other psychiatric disorders, besides alcohol abuse and dependence in suicides of Russian minority in Estonia needs further study.

One limitation of the statistical analysis in Studies III–V was the low numbers of individuals in some subgroups (females, and males by age groups), which were reflected in the wide confidence intervals.

Suicide as an indicator reflecting social processes

The social aspects of suicide mortality has been convincingly demonstrated in the trends of suicide rates in the 'Eastern Bloc' of Europe (103–105) and particularly in the former Soviet Union and its republics (21, 22, 25, 29, 30, 61, 65, 106–109). Previous studies of Värnik-Wasserman group on suicide rates in the former Soviet Union have shown that suicide trend is reflecting sensitively countries' or districts' inhabitants quality of life, socio-economical and political situation, also the overall public health, stress tolerance of the population, and level of health care and social welfare (17, 19–25, 27, 30, 64, 65, 108–111).

Effect of Russian minorities changed status on suicide rates

During the Soviet era Russians in Estonia had the lowest suicide rates, which might have been due to their privileged status. Russian immigrants in Estonia had privileges in salaries and housing, and their needs received greater attention than local population in Estonia and in Russia. There was no need for integration and acculturation, and Russians maintained their sense of ethnic identity and confidence in belonging to a privileged class.

After Estonian independence in 1991, Estonian Russians had to adapt themselves to new conditions, study Estonian as an official language, and apply for citizenship. The loss of privileged position and ideals, many years after immigration, may have caused the stress leading to suicidal behaviours (112)

and suicide rates significantly higher than for Estonians in Estonia and inhabitants of Russia.

During 1995–1998, a stabilisation and adaptation processes began in Estonian society. Convergence of the Russian and Estonian suicide rates in Estonia in 1998 could be interpreted as an adaptation to sociopolitical changes and efforts of the Estonian government to integrate the Russian minority.

Predicting factors in suicide

Rapid societal transformations cannot affect genetic dispositions or enduring personality traits. A probable mechanism through which society has an impact on an individual's risk of committing suicide is the increase of adverse life events with which he/she has to cope after changes in society. For example, economic recessions with rapidly rising unemployment may increase frequency of life events that are difficult to deal with (113). Results from different studies are controversial and financial difficulties and the loss of job do not necessarily lead to the rise of total suicide rate (114). However, coping with adverse life events may lead to problems with mental health (depression, alcohol abuse etc). For example, financial strain can increase alcohol consumption and marital discord, which in turn can enhance suicide risk (32). Despite considerable differences in the suicide rates and in suicide risk groups, similar risk factors seem to incline people to commit suicide in different countries. Even suicide risk factors in West and East do not differ greatly (57–59).

Comparison between people who committed suicide and controls showed similarly that substance use pattern, family and socio-economic status, and recent life events predict suicide for both Russian minority and native Estonians. There were still some differences, especially in the nature of recent life events. However, comparing life events in Tallinn and Frankfurt has also shown that the number of life events experienced by suicidents in Tallinn and Frankfurt did not differ significantly. Although suicidents in Tallinn and in Frankfurt had higher risk of life events than controls, it seems that it is not the number of life events, but their meaning and disposition that produce the higher risk of suicide.

Life events in suicide

Different types of life events as suicide risk factors

Loss of job and financial deterioration were more common life events among suicidents in Tallinn in comparison to those in Frankfurt, there were no significant differences between Estonian and Russian suicide victims in Estonia.

Losing one's job recently and having financial problems were significant suicide risk factors in Tallinn. In Estonia loss of job was a suicide risk factor for Estonian and Russian. Unemployment became an economic and social problem in Estonia after the collapse of the Soviet Union. However, by the year of this study (1999) the situation had already stabilised, and the unemployment rate in Tallinn was already close to Frankfurt's, 10.2% and 9.5%, respectively.

Differences between the two sites by work and financial events may be explained by the cross-cultural pattern in the values of the two societies. According to the latest World Value Survey (115), Estonia like other ex-Communist countries scored particularly low on the survival/self-expression dimension, which taps a syndrome of trust, tolerance, subjective well-being, political activism, and self-expression – characteristics of post-industrial societies with high level of security. Ex-Communist countries, including Estonia, that experienced economic and social disintegration during transition to a market economy, moved in the opposite direction, placing increased emphasis on survival values. People in ex-Communist countries tend to emphasise economic and physical security above all other goals, and feel threatened by the changes in society (115).

According to the contingent-identity theory (116), suicide is a last-resort response to life-changing events that jeopardise self-concept. In the less developed and modernised societies, to which Estonia still belongs, individuals, especially men, anchor their identities to economic success, physical security, and social prestige. Men from societies that have not yet reached the post-materialistic phase of development may be required to prove their wealth-acquiring proficiency and ability to establish interpersonal relationships during their initiation into adulthood (116).

Both men and women in less developed countries are more likely to experience identity threats in connection with marriage and family. Indeed, the most common life-threatening event in Tallinn was family discord, which was a significant suicide risk factor for males as well as for females in Tallinn, but not in Frankfurt. Indeed family discord was a significant suicide risk factor for Estonian and Russian males and females. Recent separation, which may result from (long-term) family discord, was also more frequent among suicidents in Tallinn; males in Tallinn were particularly vulnerable to separation. For both, Estonian and Russian males recent separation increased suicide risk.

Family values define the second dimension of values – traditional/secular-rational (115). On this dimension, both Estonia and Germany score high on the secular-rational pole. Therefore no differences would be expected in the family-related attitudes. Hence the observed difference in life events related to family discord and separation are not so much about family as about personal ambitions and general social insecurity.

In contrast, illnesses in the family and somatic illnesses were more prominent events in Frankfurt. Good health is considered a necessity for an enjoyment-centered, self-expressive style of life. In a post-materialistic value

system its lack is perceived as a serious threat to the quality of life. According to Inglehart and Baker (115), good health is significantly correlated with self-expression values (r=0.73). Somatic illness during the last three months before suicide was an important suicide risk factor in both cities, and it has been the most frequent life event among suicidents in Frankfurt. However, both Estonian and Russian suicide victims were vulnerable to somatic illness. Psychological autopsy studies among suicidents have shown higher proportion of somatic illness among older suicidents (80, 117), and previous case-control studies have also identified somatic illness as a risk factor for suicide in the elderly (94, 118). We found a similar pattern by age groups in Tallinn and Frankfurt – suicidents in the oldest age group had highest proportion of life events and it was more frequent than among controls. In Frankfurt somatic illness was a significant risk factor also in other age groups. In the oldest age group of suicidents the frequency of somatic illness was similar in the two cities, accordingly 60% in Tallinn and 62% in Frankfurt. Hence suicidents in the oldest age group in Tallinn and Frankfurt have somatic illness as a triggering factor, but triggering factors are different in other age groups, and the lack of psychological support to cope with somatic illness may contribute to suicide risk. This result is in line with a study by Waern, Beskow, Runeson and Skoog (119), who found that doctors were less likely to discuss suicidal feelings with elderly patients in poor physical health.

Death of a close person has suicide preventive effects

Death of a close person (spouse, close relative or close friend) was not found to increase suicide risk but rather prevent it. Death of a close person was having significant protective effect in Tallinn and similar tendency in Frankfurt, in Estonia it was a significant protective factor for Russians. Waern et al. (94) found similar pattern in a study among the elderly. There are several explanations why death of a close person reduces an inclination to commit suicide. For example, death of another person shifts attention from a person's own problems to some other more demanding matters. Alternatively, we can only assume that death of a significant other may reduce the symbolic significance of the suicide – there is nobody, especially among immigrants, to whom to say that a meaningless and unbearable life cannot be continued (116). The protective effect for Russians could be explained by differences in mourning ceremonies between Estonians and Russians in Estonia, traditional mourning ceremonies of Russians are socially more integrative and more conservative (120, 121). On the basis of available data it is impossible to tell which of these plausible explanations is closer to reality.

Alcohol and substance using pattern in suicide

Alcohol dependence and abuse in suicide

Various psychological autopsy studies have shown that alcohol-dependent and alcohol abusers represent 15–47% of suicide cases in some countries (Table 2) (52, 57, 66–73). Estonian results, with 411 cases, showed that 61% of people who committed suicide in Estonia were alcohol-dependent or abusers — a figure considerably higher than those found in other studies with unselected suicide cases.

The proportion of AAD in the present study was found to be higher in male suicides than in female suicides. This is in line with the meta-analysis of Arsenault-Lapierre et al. (122), who found a significantly elevated risk of substance-related disorders among male suicide cases. Compared with the data of our previous findings for Estonia, the proportion of male suicides affected by alcohol found in 1984 (65%, estimated at aggregate level) were broadly unchanged 15 years later (68%, ascertained in the present psychological autopsy study, in 1999). In contrast, the proportion of female suicide cases with AAD diagnoses rose from 5% in 1984 to 29% in 1999 (21, 22) – a situation calling urgently for further investigation.

As in the Finnish study, the highest overall proportion of AAD was found among middle-aged male suicides (123). In the present study AAD was most prevalent among middle-aged males (aged 35−59), for suicide cases and controls alike. This is in line with our previous findings at aggregate level, showing that middle-aged males are most adversely affected by factors contributing to suicide (20, 109).

Substance using pattern differing between Estonian and Russian suicides

The only variable under study differing significantly between Russians and Estonians who committed suicide both for male and female was substance use pattern. Russian suicide victims in Estonia had significantly higher risk of being substance dependent or abuser and being abstainer than Estonian suicide victims.

Leinsalu et al. (124) suggested that increasing alcohol consumption in 1989–2000 contributed firstly to the high mortality rates of the 1990s in Estonia, and secondly to the widening mortality gap between Estonians and Russians. Wasserman-Värnik group (21, 22) found a strong correlation between alcohol consumption and male suicide rates in Slavic and Baltic republics during 1984–1990.

Hence, we can only assume that the higher suicide rate among Russians in Estonia during the 1990s after the strict alcohol restrictions during *perestroika* could be at least partly attributable to higher substance consumption in comparison with Estonians. Still, heavier substance abuse among Russians' in Estonia may have the same roots as their higher suicide rate; both may be caused by the changed status of Russian minority in Estonia. However, by Nemtsov (61) the rate of alcohol-related suicides is very high and alcohol consumption plays a considerable role in suicide rates in Russia.

Abstinence does not have suicide preventive effect

Statistical analysis of substance use pattern has shown that not only substance abuse and dependence, but also abstinence is a suicide risk factor compared to moderate use as a reference category, especially for Estonians. Thus criterion 'abstainer' is defined in the study as a person not using substances during the previous 12-month period, the group includes former users and long-term abstainers, whose motives of behavior should be investigated further. Thun et al. (125) have found in their large cohort study in U.S. that overall mortality was the highest among abstainers and the lowest among moderate alcohol consumers. Still they did not find differences between abstainers, moderate and light drinkers among external causes of death, which was the highest among heavy drinkers.

CONCLUSIONS

Suicide mortality is an argument that characterises socio-political and economic situation and hardiness of the society as a whole and different groups of the population.

The differences in the mean values of the suicide rates for Russian immigrants in Estonia, Estonians in Estonia and Russia's inhabitants in two politically different periods – before and after the dissolution of the USSR – could be interpreted in terms of adaptation. The higher suicide rates for Russians in Estonia in comparison with two other groups occurred only after re-establishing independence of Estonia, probably causing their stronger adaptation shock due to the loss of their previous privileged status, ideals and expectations. Migration in terms of change of the geographical location does not seem to be a sufficient determinant provoking suicides until the migrants' needs are met with greater attention compared to the local population.

Substance use was found to be a significant suicide risk factor for both main ethnic groups in Estonia – Estonians and Russian minority. Also, the substance use pattern was the only variable under study differing significantly between Russian and Estonian suicidents both for male and female. Russian suicide victims in Estonia had significantly higher risk of being substance dependent or abuser. Surprisingly, being abstainer of alcohol was also more frequent among Russian than Estonian suicide victims.

Although there were some differences in the nature of recent life events, the predicting factors of suicide were similar for Russian minority and native Estonians. Comparing suicide victims and controls in Tallinn and in Frankfurt shows that it is not the number of life events, but their meaning and disposition that produces the higher risk of suicide. Differences between these two societies, post-Soviet Estonia and Germany, could be explained by their different position on the survival/self-expression dimensions recorded by the World Value Survey. People in Estonia tend to emphasise economic and physical security above all other goals, and feel threatened by the changes taking place in the society.

Findings of the current research could serve as an evidence-based material for suicide prevention. Since there are remarkable similarities in suicide predictive factors of Estonians and Russians in Estonia, their suicide preventive means might be similar. Evidently, a restrictive alcohol policy can serve as a mean of reducing suicide in Estonia. Complexity of the suicide process is indicating that suicide prevention program in Estonia needs to cover other areas as well, especially family and working life.

ACKNOWLEDGEMENT

Doctoral dissertation was made possible within the framework of the Estonian Scientific Foundation project no. 5349 “Alcohol and drugs as social risk factors in the prevention of premature death and suicidal behaviour” and project no. 6799, ‘The role of alcohol in the suicide process and in prevention of suicidal behaviour’, support of the Estonian Centre of Behavioural and Health Sciences and Doctoral School of Behavioural and Health Sciences, the collaborative series of studies by the Estonian-Swedish Mental Health & Suicidology Institute and the Swedish National and Stockholm County Council’s Centre for Suicide Research and Prevention of Mental Ill-Health (NASP) at the National Institute for the Psychosocial Medicine, Karolinska Institute in Stockholm.

I would like to express my special thanks to:

My supervisor Professor Airi Värnik, who has introduced me the interesting field of suicidology. Special thanks for giving intellectual and moral support and inspiration for my development.

Professor Danuta Wasserman for giving extensive knowledge and most valuable advice and the opportunity to visit the library at Swedish National Centre for Suicide Research and Prevention at Karolinska Institute in Stockholm.

Liina-Mai Tooding for great lessons and advice in statistics.

Other co-authors of the papers, especially Professor Jüri Allik and Dr. Barbara Schneider for interesting cooperation.

Merike Sisask and Kaisa-Kitri Niit for critical review of the manuscript.

My dear colleagues from Estonian-Swedish Mental Health and Suicidology Institute, especially Ene Palo, Mare Raidla, Algi Samm for collaboration and emotional support.

Warm thanks to my parents Eve and Ago Kõlves, my sister Keili Kõlves and my great friends for supporting me through all these years.

REFERENCES

1. DURKHEIM, E. (2002/1897) *Suicide: A study in sociology.* (London and New York, Routledge).
2. MÄKINEN, I. H. (1997) *On Suicide in European Coutries: Some Theoretical, Legal and Historical Views on Suicide Mortality and Its Concomitants.* (Stockholm, Almqvist & Wiksell International).
3. BILLE-BRAHE, U. (2000) Sociology and suicidal behaviour., in: Hawton, K. & van Heeringen, K. (Eds.) *The International Handbook on Suicide and Attempted Suicide*, pp. 193–207 (Chichester, New York, Weinheim, Brisbane, Singapore, Toronto, John Wiley & Sons, Ltd).
4. STACK, S. (2000) Suicide: a 15-year review of the sociological literature. Part I: cultural and economic factors, *Suicide Life Threat Behav*, 30, 145–62.
5. JOHNSON, B. (1965) Durkheim's one cause of suicide, *Am Sociol Rev*, 30, 865–886.
6. DOUGLAS, J. D. (1967) *The social meaning of suicide* (New Jersey, Princeton University Press).
7. STENGEL, E. (1967) *Suicide & Attempted Suicide* (Harmondsworth, Penguin Books Ltd).
8. WORLD HEALTH ORGANIZATION. (1986) Working group on preventive practices in suicide: Summary report (Copenhagen, World Health Organization Regional Office for Europe).
9. WASSERMAN, D. (2001) A stress-vulnerability model and the development of the suicidal process, in: Wasserman, D. (Ed.) *Suicide – An unnecessary death*, pp. 13–27 (London, Martin Dunitz).
10. HAWTON, K. & VAN HEERINGEN, K. (2000) Introduction, in: Hawton, K. & van Heeringen, K. (Eds.) *The International Handbook on Suicide and Attempted Suicide*, pp. 1–6 (Chichester, New York, Weinheim, Brisbane, Singapore, Toronto, John Wiley & Sons, Ltd).
11. ÖHBERG, A., LÖNNQVIST, J., SARNA, S., VUORI, E. & PENTTILÄ, A. (1995) Trends and availability of suicide methods in Finland. Proposals for restrictive measures, *Br J Psychiatry*, 166, 35–43.
12. KLECK, G. (1988) Miscounting suicides, *Suicide Life Threat Behav*, 18, 219–236.
13. BERTOLOTE, J. (2001) Suicide in the world: an epidemiological overview, 1959–2000, in: Wasserman, D. (Ed.) *Suicide – An unnecessary death*, pp. 3–10 (London, Martin Dunitz).
14. BERTOLOTE, J. & FLEISCHMAN, A. (2002) A global perspective on the epidemiology of suicide, *Suicidologi*, 7, 6–8.
15. WORLD HEALTH ORGANIZATION. European health for all database (http://data.euro.who.int/hfadb/).
16. WASSERMAN, D. & VÄRNIK, A. (1998) Reliability of statistics on violent death and suicide in the former USSR, 1970–1990, *Acta Psychiatr Scand Suppl*, 394, 34–41.
17. VÄRNIK, A., WASSERMAN, D., PALO, E. & TOODING, L. M. (2001) Registration of external causes of death in the Baltic States 1970–1997, *Eur J Public Health*, 11, 84–8.
18. SHKOLNIKOV, V., MCKEE, M. & LEON, D. A. (2001) Changes in life expectancy in Russia in the mid-1990s, *Lancet*, 357, 917–21.

19. VÄRNIK, A. & WASSERMAN, D. (1992) Suicides in the former Soviet republics, *Acta Psychiatr Scand*, 86, 76–8.
20. VÄRNIK, A., WASSERMAN, D., DANKOWICZ, M. & EKLUND, G. (1998) Age-specific suicide rates in the Slavic and Baltic regions of the former USSR during perestroika, in comparison with 22 European countries, *Acta Psychiatr Scand Suppl*, 394, 20–5.
21. WASSERMAN, D., VÄRNIK, A. & EKLUND, G. (1994) Male suicides and alcohol consumption in the former USSR, *Acta Psychiatr Scand*, 89, 306–13.
22. WASSERMAN, D., VÄRNIK, A. & EKLUND, G. (1998) Female suicides and alcohol consumption during perestroika in the former USSR, *Acta Psychiatr Scand Suppl*, 394, 26–33.
23. VÄRNIK, A. (1991) Suicide in Estonia, *Acta Psychiatr Scand*, 84, 229–32.
24. VÄRNIK, A., WASSERMAN, D. & EKLUND, G. (1994) Suicides in the Baltic countries, 1968–90, *Scand J Soc Med*, 22, 166–9.
25. VÄRNIK, A., TOODING, L.-M., PALO, E. & WASSERMAN, D. (2000) Suicide Trends in the Baltic States, 1970–1997, *Trames*, 4, 79–90.
26. VÄRNIK, A., KÕLVES, K., PALO, E. & TOODING, L.-M. (2001) Eesti suitsiidikõver on võtnud S-kuju, *Eesti Arst*, 80, 141–144.
27. VÄRNIK, A., KÕLVES, K., PALO, E. & TOODING, L.-M. (2001) Suitsiidid Eestis 1970–2000., in: Vetik, R. (Ed.) *Eesti inimarengu aruanne 2001*, pp. 42–45 (Tallinn, Iloprint).
28. WHO European health for all database (http://data.euro.who.int/hfadb/).
29. PRIDEMORE, W. A. & SPIVAK, A. L. (2003) Patterns of suicide mortality in Russia, *Suicide Life Threat Behav*, 33, 132–50.
30. WASSERMAN, D., VÄRNIK, A. & DANKOWICZ, M. (1998) Regional differences in the distribution of suicide in the former Soviet Union during perestroika, 1984–1990, *Acta Psychiatr Scand Suppl*, 394, 5–12.
31. CARTA, M. G., BERNAL, M., HARDOY, M. C. & HARO-ABAD, J. M. (2005) Migration and mental health in Europe (the state of the mental health in Europe working group: appendix 1), *Clin Pract Epidemol Ment Health*, 1, 13.
32. STACK, S. (2000) Suicide: a 15-year review of the sociological literature. Part II: modernization and social integration perspectives, *Suicide Life Threat Behav*, 30, 163–76.
33. BHUGRA, D. (2004) Migration and mental health, *Acta Psychiatr Scand*, 109, 243–58.
34. BHUGRA, D. (2003) Migration and depression, *Acta Psychiatr Scand Suppl*, 67–72.
35. SCHRIER, A. C., VAN DE WETERING, B. J., MULDER, P. G. & SELTEN, J. P. (2001) Point prevalence of schizophrenia in immigrant groups in Rotterdam: data from outpatient facilities, *Eur Psychiatry*, 16, 162–6.
36. LONDON, M. (1986) Mental illness among immigrant minorities in the United Kingdom, *Br J Psychiatry*, 149, 265–73.
37. (2001) *Population and Housing Census 2000 II: Citizenship, Nationality, Mother Tongue and Command of Foreign Languages.* (Tallinn, Statistical Office of Estonia).
38. KATUS, K., PUUR, A. & SAKKEUS, L. (2000) Development of national minorities in Estonia., in: Haug, W., Courbage, Y. & Compton, P. (Eds.) *The Demographic*

Characteristics of National Minorities in Certain European States. Vol. 2., pp. 29–92 (Strasbourg, Council of Europe).
39. KLIEWER, E. (1991) Immigrant suicide in Australia, Canada, England and Wales, and the United States, *J Aust Popul Assoc*, 8, 111–28.
40. KLIEWER, E. V. & WARD, R. H. (1988) Convergence of immigrant suicide rates to those in the destination country, *Am J Epidemiol*, 127, 640–53.
41. BURVILL, P. W. (1998) Migrant suicide rates in Australia and in country of birth, *Psychol Med*, 28, 201–8.
42. BURVILL, P. W., WOODINGS, T. L., STENHOUSE, N. S. & MCCALL, M. G. (1982) Suicide during 1961–70 migrants in Australia, *Psychol Med*, 12, 295–308.
43. FERRADA-NOLI, M. (1997) A cross-cultural breakdown of Swedish suicide, *Acta Psychiatr Scand*, 96, 108–16.
44. MÄKINEN, I. H. & WASSERMAN, D. (2003) Suicide Mortality among Immigrant Finnish Swedes, *Arch Suicide Res*, 7, 93–106.
45. RALEIGH, V. S. & BALARAJAN, R. (1992) Suicide levels and trends among immigrants in England and Wales, *Health Trends*, 24, 91–94.
46. FERRADA-NOLI, M., ASBERG, M., ORMSTAD, K. & NORDSTROM, P. (1995) Definite and undetermined forensic diagnoses of suicide among immigrants in Sweden, *Acta Psychiatr Scand*, 91, 130–5.
47. HJERN, A. & ALLEBECK, P. (2002) Suicide in first- and second-generation immigrants in Sweden: a comparative study, *Soc Psychiatry Psychiatr Epidemiol*, 37, 423–9.
48. TROVATO, F. (1992) Violent and accidental mortality among four immigrant groups in Canada, 1970–1972, *Soc Biol*, 39, 82–101.
49. LESTER, D. (1972) Migration and suicide, *Med J Aust*, 1, 941–2.
50. SAINSBURY, P. & BARRACLOUGH, B. (1968) Differences between suicide rates, *Nature*, 220, 1252.
51. JOHANSSON, L. M., SUNDQUIST, J., JOHANSSON, S. E. et al. (1997) Suicide among foreign-born minorities and Native Swedes: an epidemiological follow-up study of a defined population, *Soc Sci Med*, 44, 181–7.
52. HENRIKSSON, M. M., ARO, H. M., MARTTUNEN, M. J. et al. (1993) Mental disorders and comorbidity in suicide, *Am J Psychiatry*, 150, 935–40.
53. CONNER, K. R., DUBERSTEIN, P. R. & CONWELL, Y. (2001) The validity of proxy-based data in suicide research: a study of patients 50 years of age and older who attempted suicide. I. Psychiatric diagnoses, *Acta Psychiatr Scand*, 104, 204–9.
54. CAVANAGH, J. T., CARSON, A. J., SHARPE, M. & LAWRIE, S. M. (2003) Psychological autopsy studies of suicide: a systematic review, *Psychol Med*, 33, 395–405.
55. BALDESSARINI, R. J. & HENNEN, J. (2004) Genetics of suicide: an overview, *Harv Rev Psychiatry*, 12, 1–13.
56. CAVANAGH, J. T., OWENS, D. G. & JOHNSTONE, E. C. (1999) Life events in suicide and undetermined death in south-east Scotland: a case-control study using the method of psychological autopsy, *Soc Psychiatry Psychiatr Epidemiol*, 34, 645–50.
57. VIJAYAKUMAR, L. & RAJKUMAR, S. (1999) Are risk factors for suicide universal? A case-control study in India, *Acta Psychiatr Scand*, 99, 407–11.

58. CHENG, A. T., CHEN, T. H., CHEN, C. C. & JENKINS, R. (2000) Psychosocial and psychiatric risk factors for suicide. Case-control psychological autopsy study, *Br J Psychiatry*, 177, 360–5.
59. PHILLIPS, M. R., YANG, G., ZHANG, Y. et al. (2002) Risk factors for suicide in China: a national case-control psychological autopsy study, *Lancet*, 360, 1728–36.
60. VIJAYAKUMAR, L., JOHN, S., PIRKIS, J. & WHITEFORD, H. (2005) Suicide in developing countries (2): risk factors, *Crisis*, 26, 112–9.
61. NEMTSOV, A. (2003) Suicides and alcohol consumption in Russia, 1965–1999, *Drug Alcohol Depend*, 71, 161–8.
62. RAMSTEDT, M. (2001) Alcohol and suicide in 14 European countries, *Addiction*, 96 Suppl 1, S59–75.
63. SKOG, O.-J. & ELEKES, Z. (1993) Alcohol and the 1950–90 Hungarian suicide trend — is there a causal connection? *Acta Sociologica*, 36, 33–46.
64. WASSERMAN, D. & VÄRNIK, A. (1998) Suicide-preventive effects of perestroika in the former USSR: the role of alcohol restriction, *Acta Psychiatr Scand Suppl*, 394, 1–4.
65. VÄRNIK, A., WASSERMAN, D., DANKOWICZ, M. & EKLUND, G. (1998) Marked decrease in suicide among men and women in the former USSR during perestroika, *Acta Psychiatr Scand Suppl*, 394, 13–9.
66. CHENG, A. T. (1995) Mental illness and suicide. A case-control study in east Taiwan, *Arch Gen Psychiatry*, 52, 594–603.
67. RICH, C. L., RICKETTS, J. E., FOWLER, R. C. & YOUNG, D. (1988) Some differences between men and women who commit suicide, *Am J Psychiatry*, 145, 718–22.
68. ARATO, M., DEMETER, E., RIHMER, Z. & SOMOGYI, E. (1988) Retrospective psychiatric assessment of 200 suicides in Budapest, *Acta Psychiatr Scand*, 77, 454–6.
69. CHYNOWETH, R., TONGE, J. I. & ARMSTRONG, J. (1980) Suicide in Brisbane – a retrospective psychosocial study, *Aust N Z J Psychiatry*, 14, 37–45.
70. BARRACLOUGH, B., BUNCH, J., NELSON, B. & SAINSBURY, P. (1974) A hundred cases of suicide: clinical aspects, *Br J Psychiatry*, 125, 355–73.
71. DORPAT, T. L. & RIPLEY, H. S. (1960) A study of suicide in the Seattle area, *Compr Psychiatry*, 1, 349–59.
72. ROBINS, E., MURPHY, G. E., WIKONSON, R. H., GASSNER, S. & KAYES, J. (1959) Some clinical considerations in the prevention of suicide based on a study of 134 successful suicides, *Am J Public Health*, 49, 888–889.
73. FOSTER, T., GILLESPIE, K. & MCCLELLAND, R. (1997) Mental disorders and suicide in Northern Ireland, *Br J Psychiatry*, 170, 447–52.
74. HAGNELL, O. & RORSMAN, B. (1980) Suicide in the Lundby study: a controlled prospective investigation of stressful life events, *Neuropsychobiology*, 6, 319–32.
75. FOSTER, T., GILLESPIE, K., MCCLELLAND, R. & PATTERSON, C. (1999) Risk factors for suicide independent of DSM-III-R Axis I disorder. Case-control psychological autopsy study in Northern Ireland, *Br J Psychiatry*, 175, 175–9.
76. COOPER, J., APPLEBY, L. & AMOS, T. (2002) Life events preceding suicide by young people, *Soc Psychiatry Psychiatr Epidemiol*, 37, 271–5.
77. PAYKEL, E. S. (2001) The evolution of life events research in psychiatry, *J Affect Disord*, 62, 141–9.

78. HEIKKINEN, M., ARO, H. & LÖNNQVIST, J. (1993) Life events and social support in suicide, *Suicide Life Threat Behav*, 23, 343–58.
79. HEIKKINEN, M., ARO, H. & LÖNNQVIST, J. (1994) Recent life events, social support and suicide, *Acta Psychiatr Scand Suppl*, 377, 65–72.
80. HEIKKINEN, M. E., ISOMETSÄ, E. T., ARO, H. M., SARNA, S. J. & LÖNNQVIST, J. K. (1995) Age-related variation in recent life events preceding suicide, *J Nerv Ment Dis*, 183, 325–31.
81. PAYKEL, E. S., PRUSOFF, B. A. & MYERS, J. K. (1975) Suicide attempts and recent life events. A controlled comparison, *Arch Gen Psychiatry*, 32, 327–33.
82. RICH, C. L., YOUNG, D. & FOWLER, R. C. (1986) San Diego suicide study. I. Young vs old subjects, *Arch Gen Psychiatry*, 43, 577–82.
83. ARIELI, A., GILAT, I. & AYCHEH, S. (1996) Suicide among Ethiopian Jews: a survey conducted by means of a psychological autopsy, *J Nerv Ment Dis*, 184, 317–9.
84. STATISTICAL COMMITTEE OF NIS. (1992) Demografitsheskij jezhjegodnik 1991 (Demographic yearbook 1991) (Moscow, Statkomitet SNG).
85. LÖNNQVIST, J. (1988) National suicide prevention project in Finland: a research phase of the project, *Psychiatria Fennica*, 19, 125–132.
86. SHNEIDMAN, E. (1981) The psychological autopsy, *Suicide Life Threat Behav*, 11, 325–340.
87. BESKOW, J., RUNESON, B. & ASGARD, U. (1990) Psychological autopsies: methods and ethics, *Suicide Life Threat Behav*, 20, 307–23.
88. BESKOW, J., RUNESON, B. & ASGARD, U. (1991) Ethical aspects of psychological autopsy, *Acta Psychiatr Scand*, 84, 482–7.
89. JACOBS, D. & KLEIN-BENHEIM, M. (1995) The psychological autopsy: a useful tool for determining proximate causation in suicide cases, *Bull Am Acad Psychiatry Law*, 23, 165–82.
90. SCHNEIDER, B., MAURER, K., SARGK, D. et al. (2004) Concordance of DSM-IV Axis I and II diagnoses by personal and informant's interview, *Psychiatry Res*, 127, 121–36.
91. RAHE, R. H. (1977) Epidemiological studies of life change and illness, in: Lipowski, Z. J., Lipsitt, D. R. & Whybrow, P. C. (Eds.) *Psychosomatic Medicine. Current Trends & Clinical Applications*, pp. 421–434 (New York, Oxford University Press).
92. PAYKEL, E. S., MYERS, J. K., DIENELT, M. N. et al. (1969) Life events and depression. A controlled study, *Arch Gen Psychiatry*, 21, 753–60.
93. AMERICAN PSYCHIATRIC ASSOCIATION. (1994) *Diagnostic criteria from DSM-IV* (Washington, D.C., The American Psychiatric Association).
94. WAERN, M., RUBENOWITZ, E., RUNESON, B. et al. (2002) Burden of illness and suicide in elderly people: case-control study, *BMJ*, 324, 1355.
95. CONWELL, Y., DUBERSTEIN, P. R., COX, C. et al. (1996) Relationships of age and axis I diagnoses in victims of completed suicide: a psychological autopsy study, *Am J Psychiatry*, 153, 1001–8.
96. APPLEBY, L., COOPER, J., AMOS, T. & FARAGHER, B. (1999) Psychological autopsy study of suicides by people aged under 35, *Br J Psychiatry*, 175, 168–74.
97. LESAGE, A. D., BOYER, R., GRUNBERG, F. et al. (1994) Suicide and mental disorders: a case-control study of young men, *Am J Psychiatry*, 151, 1063–8.

98. BRENT, D. A., PERPER, J. A., MORITZ, G. et al. (1993) The validity of diagnoses obtained through the psychological autopsy procedure in adolescent suicide victims: use of family history, *Acta Psychiatr Scand*, 87, 118–22.
99. HAWTON, K., APPLEBY, L., PLATT, S. et al. (1998) The psychological autopsy approach to studying suicide: a review of methodological issues, *J Affect Disord*, 50, 269–76.
100. KELLY, T. M. & MANN, J. J. (1996) Validity of DSM-III-R diagnosis by psychological autopsy: a comparison with clinician ante-mortem diagnosis, *Acta Psychiatr Scand*, 94, 337–43.
101. MCKEEMAN, J. L. & ERICKSON, M. T. (1997) Self and informant ratings of SCID-II Personality Disorder items for nonreferred college women: effects of item and participant characteristics, *J Clin Psychol*, 53, 523–33.
102. AVERINA, M., NILSSEN, O., BRENN, T. et al. (2005) Social and lifestyle determinants of depression, anxiety, sleeping disorders and self-evaluated quality of life in Russia – a population-based study in Arkhangelsk, *Soc Psychiatry Psychiatr Epidemiol*, 40, 511–8.
103. MÄKINEN, I. H. (2000) Eastern European transition and suicide mortality, *Soc Sci Med*, 51, 1405–20.
104. LESTER, D. (1998) Suicide and homicide after the fall of communist regimes, *Eur Psychiatry*, 13, 98–100.
105. SARTORIUS, N. (1995) Recent changes in suicide rates in selected eastern European and other European countries, *Int Psychogeriatr*, 7, 301–8.
106. GAILIENE, D. (2004) Suicide in Lithuania during the years of 1990 to 2002, *Arch Suicide Res*, 8, 389–95.
107. RANCANS, E., SALANDER RENBERG, E. & JACOBSSON, L. (2001) Major demographic, social and economic factors associated to suicide rates in Latvia 1980–98, *Acta Psychiatr Scand*, 103, 275–81.
108. VÄRNIK, A. (1997) Suicide in the Baltic Countries and in the former republics of the USSR., pp. 169 (Stockholm, Karolinska Institute).
109. TOODING, L.-M., VÄRNIK, A. & WASSERMAN, D. (2004) Gender and age-specific dynamics of suicides in the Baltic states during the transition period, *Trames*, 8, 299–308.
110. VÄRNIK, A. (1997) Meeste ja naiste suitsiidid Eestis aastail 1970–1994. *Eesti Arst*, 76, 260–263.
111. VÄRNIK, A., KÕLVES, K., TOODING, L. M. & PALO, E. (2003) Estonians' and non-Estonians' suicides [in Estonian], in: Värnik, A. (Ed.) *Estonian-Swedish Suicidology Institute 10th annyversary collected papers Suicide studies* (Tallinn, Iloprint).
112. HOVEY, J. D. (2000) Acculturative stress, depression, and suicidal ideation among Central American immigrants, *Suicide Life Threat Behav*, 30, 125–39.
113. PRETI, A. & MIOTTO, P. (1999) Suicide and unemployment in Italy, 1982–1994, *J Epidemiol Community Health*, 53, 694–701.
114. NEUMAYER, E. (2004) Recessions lower (some) mortality rates: evidence from Germany, *Soc Sci Med*, 58, 1037–47.
115. INGLEHART, R. & BAKER, W. E. (2000) Modernization, cultural change, and the presence of traditional values, *Am Sociol Rev*, 65, 15–51.
116. GIRARD, C. (1993) Age, gender, and suicide: a cross-national analysis, *Am Sociol Rev*, 58, 553–574.

117. RICH, C. L., WARSTADT, G. M., NEMIROFF, R. A., FOWLER, R. C. & YOUNG, D. (1991) Suicide, stressors, and the life cycle, *Am J Psychiatry*, 148, 524–7.
118. CONWELL, Y., LYNESS, J. M., DUBERSTEIN, P. et al. (2000) Completed suicide among older patients in primary care practices: a controlled study, *J Am Geriatr Soc*, 48, 23–9.
119. WAERN, M., BESKOW, J., RUNESON, B. & SKOOG, I. (1999) Suicidal feelings in the last year of life in elderly people who commit suicide, *Lancet*, 354, 917–8.
120. TORP-KÕIVUPUU, M. (2003) The Transformation of the Death Cult over Time: The Example of the Burial Customs in Historic Võrumaa County, *Folklore www.folklore.ee*, 22, 62–91.
121. PONOMARJOVA, G. (1999) Russian orthodox' in Estonia [in Russian] (Tartu University).
122. ARSENAULT-LAPIERRE, G., KIM, C. & TURECKI, G. (2004) Psychiatric diagnoses in 3275 suicides: a meta-analysis, *BMC Psychiatry*, 4, 37.
123. ISOMETSÄ, E., HENRIKSSON, M., MARTTUNEN, M. et al. (1995) Mental disorders in young and middle aged men who commit suicide, *BMJ*, 310, 1366–7.
124. LEINSALU, M., VÄGERO, D. & KUNST, A. E. (2004) Increasing ethnic differences in mortality in Estonia after the collapse of the Soviet Union, *J Epidemiol Community Health*, 58, 583–9.
125. THUN, M. J., PETO, R., LOPEZ, A. D. et al. (1997) Alcohol consumption and mortality among middle-aged and elderly U.S. adults, *N Engl J Med*, 337, 1705–14.

SUMMARY IN ESTONIAN

Eestlaste ja vene vähemuse enesetapud ja enesetapu riskitegurid: üldkogumi ja indiviidi tasandi uuringud

Enam kui pool sajandit suletud ühiskonnas toimunud erakordselt kiired muutused 1980ndate teisel poolel, nn. naturaalse eksperimendi situatsioon endises Nõukogude Liidus, andsid unikaalse võimaluse jälgida demograafilisi ja käitumuslikke protsesse ülemineku ühiskonnas. Uuringud on näidanud, et suitsiidikõver peegeldab tundlikult ühiskonnas toimuvaid protsesse, võimaldades esile tuua riskigrupid. Teadaolevalt ei ole uuritud vene vähemuse suitsidaalset käitumist ega elusündmuste rolli suitsiidiprotsessis pärast Baltiriikide iseseisvuse taastamist 1990ndate alguses.

Käesoleva väitekirja eesmärk oli (1) uurida kuidas kajastub suitsiidikordajates vene vähemuse drastiliselt muutunud sotsiaal-poliitiline staatus pärast Nõukogude Liidu kokkuvarisemist; (2) võrrelda Eesti vene vähemuse ja eestlaste suitsiide lähtuvalt sotsiaal-demograafilisest taustast, uimastite tarbimisest ja vahetute elusünduste toimumisest, et selgitada välja immigratsioonispetsiifilised tegurid, mis prognoosivad suitsiidi indiviidi tasandil; (3) klassifitseerida alkoholitarbimisharjumused suitsidentidel ja kontrollisikutel, kes vastasid suitsidentidele lähtuvalt elukoha piirkonnast, soost, vanusest ja rahvusest; (4) identifitseerida vahetud elusündmused suitsidentidel ja kontrollisikutel Tallinnas Eestis ja Frankfurdis (Main) Saksamaal.

Uuringutes I ja II on kasutatud Venemaa vanusele standarditud suitsiidikordajaid Maailma Terviseorganisatsiooni andmebaasist (WHO Health for All Database) ja Eesti vastavaid andmeid rahvuseti Eesti Statistikaametist. III ja IV uuringu andmed on kogutud Eesti-Rootsi vaimse tervise ja suitsidoloogia instituudis 1999.aastal läbiviidud ‘Psühholoogilise autopsia uuringust Eestis’, mille raames uuriti psühholoogilise autopsia meetodil 427 suitsiidijuhtumit, keda võrreldi neile elukoha piirkonna, soo, vanuse ja rahvuse poolest vastavate kontrollisikutega. V uuringu raames koguti psühholoogilise autopsia meetodil andmed 156 Tallinna ja 163 Frankfurdi (Main) suitsiidijuhtumi kohta, keda võrreldi neile soo ja vanuse poolest vastavate kontrollisikutega.

Uuringud I ja II näitasid, et enne Eesti iseseisvust olid Eesti venelaste keskmine suitsiidikordaja madalam võrreldes Eesti eestlastega ja Venemaa elanikega, pärast Eesti iseseisvumist muutus olukord vastupidiseks – Eesti venelaste keskmine suitsiidikordaja oli kõrgem kui teistel võrdlusrühmadel. Eestimaa venelaste kõrget suitsiidide taset üleminekuperioodil võib seostada drastiliste muutustega nende staatuses, priviligeeritud staatuse asemel tuli üle võtta immigrandi staatus. Migratsioon kui geograafilise asukoha muutus iseenesest ei ole piisav determinant suitsiidide esilekutsumiseks, kui migrantide vajadused leiavad suuremat tähelepanu võrreldes kohaliku elanikkonnaga.

Indiviidi tasandil erinesid Eesti venelaste ja eestlaste suitsiidide puhul uuringu III tulemuste põhjal ainult uimastite tarbimise harjumused, nimelt olid vene rahvusest suitsidendid sagedamini uimatite väärtarvitajad ja mõnevõrra sagedamini ka uuringule eelnenud aastal karsklased. Suitsiidi prognoosivate teguritena ilmnesid nii eestlastel kui venelastel uimastite sõltuvus ja kuritarvitamine, mittetöötamine ja konfliktid perekonnas, eestlastel lisandusid veel partneri puudumine, töötus ja karsklus, Eesti venelastel somaatiline haigus, lahkuminek ja lähedase surm. Tähelepanu väärib asjaolu, et lähedase surmal ilmnes vene vähemuse puhul kaitsev efekt. Vaatamata mõningatele erinevustele elusündmuste iseloomus on eestlastel ja venelastel suitsiidi prognoosivad tegurid sarnased.

Vastavalt uuringu IV tulemustele on Eesti suitsidentidest 61% olid alkoholisõltlased või alkoholi kuritarvitajad, mis on märkimisväärselt kõrgem võrreldes teiste maade uuringute tulemustega. Alkoholisõltlasi ja kuritarvitajaid oli enam meessuitsidentide hulgas võrreldes naissuitsidentidega ning meeste puhul keskealiste (35–59) vanusrühmas. Uuring kinnitas indiviidi tasandil, et alkoholi väärtarvitamisega seotud suitsiide osakaal on Eestis väga kõrge, samuti on alkoholi väärtarvitamine oluline suitsiidi riskitegur.

Tallinna ja Frankfurdi suitsiidijuhtumite võrdlus uuringus V näitas, et elusündmuste arvus ei ilmnenud märkimisväärseid erinevusi, vaatamata sellele ilmnesid teatud erinevused elusündmuste iseloomus. Konfliktid perekonnas ja finantsraskused erinesid sagedamini Tallinna suitsidentidel võrreldes Frankfurdi suitsidentidega. Statistiliselt olulised erinevused suitsidentide ja kontrollide võrdlemisel ilmnesid Tallinnas perekonfliktide, lahusoleku ja töökoha kaotuse puhul ja Frankfurdis somaatilise haigestumise korral. Seega võib järeldada, et elusündmuste iseloom määrab suitsiidiriski. Erinevusi post-sovietliku Eesti ja Saksamaa vahel on võimalik seletada nende erineva positsiooniga ellujäämise/eneseväljenduse skaalal (survival/self-expression dimensions) lähtuvalt World Value Survey tulemustest. Eesti inimesed hindavad enam majanduslikku ja füüsilist turvalisust ja tunnevad end ohustatuna ühiskonnas toimuvatest muutustest.

Käesoleva väitekirja uuringuid on võimalik kasutada tõenduspõhise materjalina suitsiidide preventsiooniks. Kuna tulemused näitavad, et nii eestlaste kui ka Eesti venelaste suitsiide prognoosivad sarnased tegurid, siis võivad suitsiidide preventsiooni vahendid olla sarnased. Selgelt ilmnes, et ranget alkoholipoliitikat võib kasutada võimaliku suitsiide vähendava vahendina. Suitsiidiprotsessi komplekssus viitab vajadusele tegeleda ka teiste eluvaldkondadega, et saavutada maksimaalset efekti suitsiidide ennetamisel.

PUBLICATIONS

Värnik A, Kõlves K, Wasserman D. Suicide among Russians in Estonia: database study before and after independence. British Medical Journal 2005;330:176–7. Internet: 10.1136/bmj.38328.454294.55.

Värnik A, Kõlves K, Sisask M, Samm A, Wasserman D. Suicide mortality and political transition: Russians in Estonia compared to the Estonians in Estonia and to the population of Russia. Trames 2006;10:268–277.

Kõlves K, Sisask M, Anion L, Samm A, Värnik A. Factors predicting suicide among Russian minority in Estonia in comparison with Estonians: a case-control study. Under review in Croatian Medical Journal

Kõlves K, Värnik A, Tooding L-M, Wasserman D. The role of alcohol in suicide: a case-control psychological autopsy study. Psychological Medicine 2006;36:923–930.

Kõlves K, Värnik A, Schneider B, Fritze J, Allik J. Recent life events: A case-control study in Tallinn and Frankfurt. Social Science & Medicine 2006;61:2887–2896.

Factors predicting suicide among Russian minority in Estonia in comparison with Estonians: a case-control study

Kairi Kõlves[12], Merike Sisask[1], Liivia Anion[1], Algi Samm[1] & Airi Värnik[12]

[1] Estonian-Swedish Mental Health & Suicidology Institute, Estonian Centre of Behavioural and Health Sciences
Õie 39, Tallinn 11615, Estonia
[2] Tartu University, Faculty of Social Sciences
Tiigi 76, Tartu 50410, Estonia

Running head: Factors predicting suicide among Russian minority

ABSTRACT

Aim. The purpose of the study was to compare suicides among Russian minority in Estonia (hereinafter Russians) with suicides among native Estonians by socio-demographic background, substance use pattern and recent life events to find out immigration-specific factors predicting suicide.

Methods. Psychological autopsy study with 427 people who committed suicide and 427 randomly selected controls were paired with suicide cases by region, gender, age and nationality.

Results. The only variable differing significantly between Russian and Estonian suicide cases was substance use pattern. Logistic regression models showed that factors associated with suicide for both nationalities were substance dependence and abuse (Russians: OR=12.9, 95% CI=4.2–39.2; Estonians: OR=8.1, 95% CI=3.9–16.4), being economically inactive (Russians: OR=5.5, 95% CI=1.3–22.9; Estonians: OR=3.1, 95% CI=1.3–7.1) and recent family discord (Russians: OR=3.2, 95% CI=1.1–9.9; Estonians: OR=4.5, 95% CI=2.1–9.8). Having no partner (Estonians: OR=3.0, 95% CI=1.6–5.5), being unemployed (Estonians: OR=5.5, 95% CI=2.0–15.4) and being an abstainer (Estonians: OR=6.7, 95% CI=2.5–17.6) stayed significant in the final model for Estonians, while somatic illness (Russians: OR=4.1, 95% CI=1.4–11.7), separation

(Russians: OR=32.3, 95% CI=2.9–364.1) and death of a close person (Russians: OR=0.2, 95% CI=0.04–0.7) for Russians.

Conclusion. The predicting factors of suicide were similar among Estonian Russians and Estonians; there were still some differences in the nature of recent life events. A suggestion arose that the highest suicide rate among Estonian Russians during the 1990s could be at least partly attributable to their higher substance consumption.

Keywords: Suicide, risk and protective factors, substance, Russian minority, life events

Competing interests
Nothing to declare.

INTRODUCTION

Several studies have compared suicide rates among immigrants with suicide rates of native born and countries of origin. Previous research has shown variance in the suicide rates of immigrant groups with different ethnic background as well as in their home countries (1–7). Differences between suicide rates of immigrant groups and native population are not that clear, but most of the immigrant groups have higher suicide rates compared to the rate in their countries of birth. A number of studies have found that migrants who came from countries with high suicide rates had high rates in host countries and similarly for low rates (1,2,4,8,9).

Reports from England and Wales (3), Canada (5) and Sweden (6,10) have presented very high suicide rates among Russian immigrants compared to their country of origin as well as to the host countries. Johansson et al. (10) have found that suicide rate of Russian males in Sweden was 201.9 per 100 000 in comparison with 41.4 in Russian males and 44.5 in Swedish males in 1986–1989.

Värnik et al. (11) compared suicide rates of Russians in Estonia, Estonians in Estonia, and inhabitants of Russia before (1983–1990) and after (1991–1998) Estonian independence. Before Estonian independence Russian minority in Estonia had the lowest suicide rates, after independence the highest suicide rates compared to the country of origin and native Estonians. In 1998 Russian and Estonian suicide rates in Estonia showed convergence (11), however during Estonian independence 1991–2001 mean suicide rate of Estonian Russians was 38.2 and of Estonians 31.9 per 100 000 (12).

There is a lack of studies on the individual level concerning specific suicide risk factors for immigrants. By our knowledge the only study available was a

psychological autopsy study describing suicides of Ethiopian immigrants to Israel (13). They found that 67% of suicide victims were dissatisfied with their employment, 50% with their economic status, 44% with their marital relationships, and 53% with their fluency in the host language. However, no controls were used.

Since there were differences in suicide rates between Russian minority in Estonia and native Estonians, the purpose of the present study was to compare suicides of these main ethnic groups in Estonia by socio-demographic background, substance use pattern and recent life events to find out immigration-specific factors predicting suicide on individual level.

MATERIAL AND METHODS

Data collection

Suicides

Preliminary list of completed suicides was obtained from the police and the bureau of forensic medicine and it was verified by the data of the Estonian Statistical Office. In 1999 in total 469 suicide cases (code E950-E959 by ICD-9) were registered. A psychological autopsy study (14) was carried out in 427 suicide cases (91% of total, representative in terms of region, gender and age) based on face-to-face interviews with relatives and intimates of suicide victims conducted by psychiatrists trained for the study. The questionnaire used for the semi-structured interviews was drawn up in Finland (15). Additional information was compiled from the medical records in hospital archives. Karolinska Institute Research Ethics Committee North approved ethical aspects.

Control group

The individuals in control group (n=427) were randomly selected from the lists of general practitioners (GPs) for the years 2002–2003. When the system of GPs was introduced in Estonia in the early 1990s, GP lists were compiled from population registers and all the local residents were thus represented in GPs' lists regardless of whether they had consulted a doctor for their health problems. Controls were paired with suicide cases by region, gender, age (±2 years) and nationality. Interviews with the control group were carried out by GPs trained for the study, using semi-structured questionnaires similar to those used for psychological autopsy. The controls' response rate was 96%.

Description of subjects

Altogether, 57.1% of people who committed suicide were Estonians and 42.9% non-Estonians. Ninety-four percent of non-Estonian suicide victims were Slavic origin – Russians (88%), Ukrainians (7%), Byelorussia's (5%) and Polish (2%) – with homogeneous cultural and linguistic backgrounds, and are subsumed

under the term ‘Russians’ in present study. Other 8 (4%) non-Estonian suicide victims were excluded from the study.

There was significant difference in the mean age of Estonians and Russians suicides (t=2.96, *P*=0.003). Differences by gender between Estonian and Russian suicides and controls were close to significance (χ^2=3.32, *P*=0.068). Estonian and Russian suicide victims did not differ significantly by the key informant (χ^2=1.64, *P*=0.649) (Table 1).

Instrument

The instrument applied was based on the questionnaire elaborated for the National Suicide Prevention Project in Finland (15). The semi-structured interview included everyday life, life event and substance use questionnaires. Life event questionnaire was based on the Recent Life Change Questionnaire formulated by Rahe (16) with modifications from the list of Paykel and coworkers (17). Life events categories analyzed in the study are more detailed elsewhere (18).

Alcohol and drug diagnoses

One of the author-cum-interviewers (AV) coded alcohol and drug use in all suicide and control cases independently by blind method, using the psychological autopsy data and medical documentation, according to hierarchical DSM-IV principles (19,20). Pattern of substance use was classified as follows: 1) substance dependence or abuse, 2) abstinence (including former use), 3) indistinct and 4) moderate use of alcohol. Alcohol users not assigned to categories (1) to (3) above were considered ‘moderate’.

Background of Russian immigrants in Estonia

The population of Estonia was ethnically rather homogenous until the Second World War (WWII). According to the population census before WWII (1934), Estonians constituted 88.1% of the total population and the biggest ethnic minority group was Russian (8.2%) (21).

In the post-war period, due to the geopolitical change related to the incorporation of Estonia into the Soviet Union, the Russian minority grew to approximately 30% in 1989 (21). In 1993–1996 remigration of Russians, mainly of military forces, took place. In the 2000 census the Estonian population consisted of 67.9% Estonians, 25.6% Russians, and 6.5% other nationalities (22).

Statistical analysis

The statistical analyses were performed with SPSS version 11.5 and StatsDirect version 2.3.7. To estimate the association between matched pairs in terms of potential risk factors, the odds ratio (OR) using conditional logistic regression with 95% confidence intervals (95% CI) was calculated. The Binomial test was used when a specific factor was not observed in a comparison subject, since the

odds ratio could not be computed in such cases. To estimate the differences between suicides in nationality groups, gender and age adjusted odds ratios (adjusted OR) and 95% confidence intervals (95% CI) were calculated. To estimate the independent contribution of different risk factors predicting suicide among Estonians and Russians, conditional logistic regression models were performed. Backward selection of variables was carried out to identify those variables to be retained in the final models. The level of statistical significance was set at $\alpha = 0.05$.

Drop-out

In the substance use analysis, 12 pairs in which sufficient data on either the suicide cases or the controls were available to make research diagnoses were classified as indistinct and excluded. Four of the people who committed suicide were prevented from using substances in their last 12 months by being in prison or a nursing home. These pairs, too, were excluded from the statistical analysis. Thus, ten pairs of Russians (5.7%) and six pairs of Estonians (2.5%) were excluded from the analysis.

RESULTS

Differences between Estonian and Russian suicide victims

Comparison between Estonian and Russian suicide cases in Estonia by socio-demographic factors and occurrence of recent life events did not show remarkable differences. Significant differences by nationality were found only in substance use pattern (Table 2). Gender and age adjusted OR showed that Russian suicide victims had higher risk of being substance dependent or abusers and abstainers than Estonian suicide victims, when moderate alcohol users were selected as a referent group.

Both Russian male and female suicide victims were more likely to be substance dependent or abusers (male: age adjusted OR=2.0, 95% CI=1.1–3.7; female: age adjusted OR=4.6, 95% CI=1.3–16.7) and there were more abstainers among Russian females (age adjusted OR=3.8, 95% CI=1.1–13.7) in comparison with Estonian suicide victims. Concerning recent life events, Russian female suicide victims had higher risk of having somatic illness than Estonian female suicide victims (age adjusted OR=4.9, 95% CI=1.5–15.6).

Differences between suicide victims and controls

Estonian and Russian suicide victims were more likely not having a partner (being single, widowed, divorced or separated) and being unemployed and inactive than their controls (Table 3). For both nationalities substance use pattern differed significantly between suicide victims and their controls – people who committed suicide had a higher risk of being substance dependent or abusers and also abstainers than their controls. Somatic illness, family discord,

separation and loss of job during the last three months were more frequent among suicide victims in comparison with controls for both nationalities. Only Estonian suicide victims had a significantly higher risk of financial deterioration than their controls. Russian suicide victims had experienced death among their relatives or friends considerably less often compared to controls and Estonian suicide victims were less likely to have change of residence in comparison with controls.

Risk and protective factors of Estonian and Russian male suicides were similar to total results, for exception of socio-economic status 'being inactive' which did not reach significance for Russian males (Table 4). Also, female suicide cases differed significantly from their controls by substance use pattern. Both Estonian and Russian female suicide victims were significantly more likely abstainers, but only Russian female suicide victims were more likely substance dependent or abusers. Female suicide victims of both nationalities had a higher risk of family discord in comparison with controls. Russian female suicide victims were more likely to have somatic illness and Estonian females were more often inactive by socio-economic status than their controls. Death of close relatives or friends proved to be less frequent among Russian female suicide victims compared to their controls (Table 4).

Logistic regression models

To estimate the independent contribution of possible factors predicting suicide for Estonians and Russians in Estonia, conditional logistic regression models were performed. Backward selection of variables was carried out to identify those variables to be retained in the final models separately for both nationalities. Conditional logistic regression models showed that factors associated with suicide for both nationalities were substance dependence and abuse, being socio-economically inactive, and family discord during the last three months. Having no partner, being unemployed and abstainer stayed significant in the final model for Estonians, and somatic illness, separation and death of a close person for Russians (Table 5).

DISCUSSION

The present study on the individual level has shown that the only variable under study differing significantly between Russians and Estonians who committed suicide both for male and female was substance use pattern. Russian suicide victims in Estonia had significantly higher risk of being substance dependent or abuser and being abstainer than Estonian suicide victims.

Previous studies on aggregate level have shown high suicide rates for migrants, especially for Russian immigrants (3,5,6,10). However, Estonian study (11) comparing suicide rates of Russians in Estonia, Estonians in Estonia, and inhabitants of Russia before (1983–1990) and after (1991–1998) Estonian

independence has shown that Russians in Estonia had the lowest suicide rates before and the highest suicide rates after Estonian independence in comparison with Estonians in Estonia and inhabitants of Russia. High suicide rates among Estonian Russians' during the transition period after independence may have been caused by the drastic changes in their status: from privileged position to the immigrant status. The demand for integration and acculturation, many years after immigration, could have caused stress-reaction for Russians in Estonia (11).

Leinsalu et al. (23) compared Estonians' and Russian minority's mortality and showed that between 1989 and 2000 the mortality from alcohol poisoning, alcoholic liver cirrhosis, homicide and suicide increased both among Estonians and Russians, but the increase was considerably higher among Russians. The results of their study suggested that increasing alcohol consumption in 1989–2000 contributed firstly to the high mortality rates of the 1990s in Estonia, and secondly to the widening mortality gap between Estonians and Russians.

Wasserman-Värnik group (24,25), studying changes in alcohol consumption and suicides before, during and after the major anti-alcohol campaign in the former USSR, found a strong correlation between alcohol consumption and male suicide rates in Slavic and Baltic republics during 1984–1990. Approximately 60% of male and 26% of female suicides in the Baltic republics (Estonia, Latvia and Lithuania), and 70% and 24% in the Slavic republics (Russia, Ukraine and Belarus), respectively, were attributable to alcohol (24,25).

Hence, we can only assume that the higher suicide rate among Russians in Estonia during the 1990s after the strict alcohol restrictions during *Perestroika* could be at least partly attributable to higher substance consumption in comparison with Estonians. Still, heavier substance abuse among Russians' in Estonia may have the same roots as their higher suicide rate; both may be caused by the changed status of Russian minority in Estonia. However, by Nemtsov (26) the rate of alcohol-related suicides is very high and alcohol consumption plays a considerable role in suicide rates in Russia.

Suicide risk and protective factors for Russians in Estonia and Estonians

In the present study comparison between people who committed suicide and controls showed similarly that substance use pattern, family and socio-economic status, and recent life events predict suicide for both Russian minority and native Estonians. There were still some differences, especially in the nature of recent life events. Logistic regression model showed that family discord only was a significant risk factor for Estonians, whereas Russians were more vulnerable to family discord, separation and somatic illness.

Studies have shown that suicide is a complex phenomenon with several risk and protective factors. For example, financial strain can increase alcohol consumption and marital discord, which in turn can enhance suicide risk (27). Despite considerable differences in the suicide rates and in suicide risk groups,

similar risk factors seem to incline people to commit suicide in different countries. Even suicide risk factors in West and East do not differ greatly (28–30). A study analyzing suicide risk factors in developing countries still found that there are some differences between developed and developing countries, but substance abuse, low socio-economic status and previous suicide attempts are universal risk factors and also recent stressful life events play a role in both developing and developed countries, although their nature may differ (31).

Death of a close person (spouse, close relative or close friend) was not found to increase suicide risk but rather prevent it and it was a significant protective factor for Russians. Waern et al. (32) found similar pattern in a study among the elderly. We can only assume that death of a significant other may reduce the symbolic significance of the suicide – there is nobody, especially among immigrants, to whom to say that a meaningless and unbearable life cannot be continued (33). The protective effect for Russians could be explained by differences in mourning ceremonies between Estonians and Russians in Estonia, traditional mourning ceremonies of Russians are socially more integrative and more conservative (34,35).

Statistical analysis of substance use pattern has shown that not only substance abuse and dependence, but also abstinence is a suicide risk factor compared to moderate use as a reference category, especially for Estonians. Thus criterion 'abstainer' is defined in the study as a person not using substances during the previous 12-month period, the group includes former users and long-term abstainers, whose motives of behavior should be investigated further. Thun et al. (36) have found in their large cohort study in U.S. that overall mortality was the highest among abstainers and the lowest among moderate alcohol consumers. Still they did not find differences between abstainers, moderate and light drinkers among external causes of death, which was the highest among heavy drinkers.

Similarly to previous studies, which have shown gender differences in risk factors for suicide (37), the present study has found that for both nationalities the risk and protective factors of male and female suicides differed.

Methodological consideration

Methodological limitations of psychological autopsy as a method include the possibility of incomplete and biased information (32,38). Data on suicide cases, collected retrospectively from indirect sources (survivors), may introduce reporter bias due to respondents' possible partiality and other attitudes connected with their personal experience of the victims. In the present study there was no significant difference between Estonian and Russian suicide cases by the key informant.

In suicide case-control studies, the control groups' composition is an important issue. There have been studies using living controls and deriving

information either from their relatives (30,39), or by direct interviews with the individuals themselves (32,40).

In the present study, direct personal interviews with living controls matched by region, gender, age and nationality were used. One of the limitations was a time lag of some three to four years between the interviews with relatives of suicide victims (1999) and with controls (2002–2003). The potential effect of this fact is probably minor, since the matched controls were used. In comparison to other studies (41,42) the response rate of the present study was high for both controls (96%) and suicide cases (91%).

One limitation of the statistical analysis was the low number of individuals in some subgroups (females, and males by age groups), which was reflected in the wide confidence intervals.

The psychosocial factors are reflected in health behavior (43) and psychiatric disorders, the latter have been found to be suicide risk factors (44), especially among immigrants (45,46). Therefore the role of other psychiatric disorders in the suicides of Russian minority in Estonia needs further study.

Contributions of individual authors

Study concept and design: AV, KK, MS
Acquisition of data: KK, AV
Analysis and interpretation of the data: AV, KK, MS, LA, AS
Drafting of the manuscript: KK
Critical revision of the manuscript: AV, KK, MS, LA, AS
Statistical analysis: KK

Acknowledgement

This study was made possible within the framework of the Estonian Scientific Foundation's project number 5349, 'Alcohol and drugs as social risk factors in the prevention of premature death and suicidal behaviour', and project number 6799, 'The role of alcohol in the suicide process and in prevention of suicidal behaviour'. We thank Kaisa-Kitri Niit for the thorough scrutiny of the language.

REFERENCES

1. Burvill PW. Migrant suicide rates in Australia and in country of birth. Psychol Med. 1998;28(1):201–8.
2. Burvill PW, Woodings TL, Stenhouse NS, McCall MG. Suicide during 1961–70 migrants in Australia. Psychol Med. 1982;12(2):295–308.
3. Raleigh VS, Balarajan R. Suicide levels and trends among immigrants in England and Wales. Health Trends. 1992;24:91–94.
4. Kliewer E. Immigrant suicide in Australia, Canada, England and Wales, and the United States. J Aust Popul Assoc. 1991;8(2):111–28.
5. Kliewer EV, Ward RH. Convergence of immigrant suicide rates to those in the destination country. Am J Epidemiol. 1988;127(3):640–53.

6. Ferrada-Noli M. A cross-cultural breakdown of Swedish suicide. Acta Psychiatr Scand. 1997;96(2):108–16.
7. Mäkinen IH, Wasserman D. Suicide Mortality among Immigrant Finnish Swedes. Arch Suicide Res. 2003;7:93–106.
8. Lester D. Migration and suicide. Med J Aust. 1972;1(18):941–2.
9. Sainsbury P, Barraclough B. Differences between suicide rates. Nature. 1968; 220(173):1252.
10. Johansson LM, Sundquist J, Johansson SE, Bergman B, Qvist J, Traskman-Bendz L. Suicide among foreign-born minorities and Native Swedes: an epidemiological follow-up study of a defined population. Soc Sci Med. 1997;44(2):181–7.
11. Värnik A, Kõlves K, Wasserman D. Suicide among Russians in Estonia: database study before and after independence. BMJ. 2005;330(7484):176–7.
12. Värnik A, Kõlves K, Tooding LM, Palo E. Estonians' and non-Estonians' suicides [in Estonian]. In: Värnik A, editor. Estonian-Swedish Suicidology Institute 10th anniversary collected papers Suicide studies. Tallinn: Iloprint, 2003.
13. Arieli A, Gilat I, Aycheh S. Suicide among Ethiopian Jews: a survey conducted by means of a psychological autopsy. J Nerv Ment Dis. 1996;184(5):317–9.
14. Shneidman E. The psychological autopsy. Suicide Life Threat Behav. 1981; 11(4):325–340.
15. Lönnqvist J. National suicide prevention project in Finland: a research phase of the project. Psychiatria Fennica. 1988;19:125–132.
16. Rahe RH. Epidemiological studies of life change and illness. In: Lipowski ZJ, Lipsitt DR, Whybrow PC, editors. Psychosomatic Medicine. Current Trends & Clinical Applications. New York: Oxford University Press, 1977:421–434.
17. Paykel ES, Myers JK, Dienelt MN, Klerman GL, Lindenthal JJ, Pepper MP. Life events and depression. A controlled study. Arch Gen Psychiatry. 1969;21(6):753–60.
18. Kõlves K, Värnik A, Schneider B, Fritze J, Allik J. Recent life events and suicide: A case-control study in Tallinn and Frankfurt. Soc Sci Med. 2006.
19. American Psychiatric Association. Diagnostic criteria from DSM-IV. Washington, D.C.: The American Psychiatric Association, 1994.
20. Kõlves K, Värnik A, Tooding LM, Wasserman D. The role of alcohol in suicide: a case-control psychological autopsy study. Psychol Med. 2006;36(7):923–30.
21. Katus K, Puur A, Sakkeus L. Development of national minorities in Estonia. In: Haug W, Courbage Y, Compton P, editors. The Demographic Characteristics of National Minorities in Certain European States. Vol.2. Strasbourg: Council of Europe, 2000:29–92.
22. Population and Housing Census 2000 II: Citizenship, Nationality, Mother Tongue and Command of Foreign Languages. Tallinn: Statistical Office of Estonia, 2001.
23. Leinsalu M, Vägero D, Kunst AE. Increasing ethnic differences in mortality in Estonia after the collapse of the Soviet Union. J Epidemiol Community Health. 2004;58(7):583–9.
24. Wasserman D, Värnik A, Dankowicz M, Eklund G. Suicide-preventive effects of perestroika in the former USSR: the role of alcohol restriction. Acta Psychiatr Scand. Suppl. 1998;394:1–44.
25. Wasserman D, Värnik A, Eklund G. Male suicides and alcohol consumption in the former USSR. Acta Psychiatr Scand. 1994;89(5):306–13.
26. Nemtsov A. Suicides and alcohol consumption in Russia, 1965–1999. Drug Alcohol Depend. 2003;71(2):161–8.

27. Stack S. Suicide: a 15-year review of the sociological literature. Part II: modernization and social integration perspectives. Suicide Life Threat Behav. 2000; 30(2):163–76.
28. Phillips MR, Yang G, Zhang Y, Wang L, Ji H, Zhou M. Risk factors for suicide in China: a national case-control psychological autopsy study. Lancet. 2002; 360(9347):1728–36.
29. Cheng AT, Chen TH, Chen CC, Jenkins R. Psychosocial and psychiatric risk factors for suicide. Case-control psychological autopsy study. Br J Psychiatry. 2000;177:360–5.
30. Vijayakumar L, Rajkumar S. Are risk factors for suicide universal? A case-control study in India. Acta Psychiatr Scand. 1999;99(6):407–11.
31. Vijayakumar L, John S, Pirkis J, Whiteford H. Suicide in developing countries (2): risk factors. Crisis. 2005;26(3):112–9.
32. Waern M, Rubenowitz E, Runeson B, Skoog I, Wilhelmson K, Allebeck P. Burden of illness and suicide in elderly people: case-control study. BMJ. 2002; 324(7350):1355.
33. Girard C. Age, gender, and suicide: a cross-national analysis. Am Sociol Rev. 1993;58:553–574.
34. Torp-Kõivupuu M. The Transformation of the Death Cult over Time: The Example of the Burial Customs in Historic Võrumaa County. Folklore. www.folklore.ee 2003;22:62–91.
35. Ponomarjova G. Russian orthodox' in Estonia [in Russian]. Tartu University, 1999.
36. Thun MJ, Peto R, Lopez AD, Monaco JH, Henley SJ, Heath CW, Jr., et al. Alcohol consumption and mortality among middle-aged and elderly U.S. adults. NEMJ. 1997;337(24):1705–14.
37. Qin P, Agerbo E, Westergard-Nielsen N, Eriksson T, Mortensen PB. Gender differences in risk factors for suicide in Denmark. Br J Psychiatry. 2000;177:546–50.
38. Beskow J, Runeson B, Asgard U. Psychological autopsies: methods and ethics. Suicide Life Threat Behav. 1990;20(4):307–23.
39. Foster T, Gillespie K, McClelland R. Mental disorders and suicide in Northern Ireland. Br J Psychiatry. 1997;170:447–52.
40. Conwell Y, Duberstein PR, Cox C, Herrmann JH, Forbes NT, Caine ED. Relationships of age and axis I diagnoses in victims of completed suicide: a psychological autopsy study. Am J Psychiatry. 1996;153(8):1001–8.
41. Appleby L, Cooper J, Amos T, Faragher B. Psychological autopsy study of suicides by people aged under 35. Br J Psychiatry. 1999;175:168–74.
42. Lesage AD, Boyer R, Grunberg F, Vanier C, Morissette R, Menard-Buteau C, et al. Suicide and mental disorders: a case-control study of young men. Am J Psychiatry. 1994;151(7):1063–8.
43. Averina M, Nilssen O, Brenn T, Brox J, Arkhipovsky VL, Kalinin AG. Social and lifestyle determinants of depression, anxiety, sleeping disorders and self-evaluated quality of life in Russia – a population-based study in Arkhangelsk. Soc Psychiatry Psychiatr Epidemiol. 2005;40(7):511–8.
44. Cavanagh JT, Carson AJ, Sharpe M, Lawrie SM. Psychological autopsy studies of suicide: a systematic review. Psychol Med. 2003;33(3):395–405.
45. Bhugra D. Migration and depression. Acta Psychiatr Scand. Suppl. 2003(418):67–72.
46. Bhugra D. Migration and mental health. Acta Psychiatr Scand. 2004;109(4):243–58.

Table 1. Russian and Estonian suicide victims by gender, age and key informant

	Russian No. (%)	Estonian No. (%)	Total No. (%)
Gender			
Male	133 (76.0%)	203 (83.2%)	336 (80.2%)
Female	42 (24.0%)	41 (16.8%)	83 (19.8%)
Mean age (in years)	45.1	50.5	48.3
Key informant			
Parents	39 (22.3%)	46 (18.9%)	85 (20.3%)
Spouses or partners	49 (28.0%)	69 (28.3%)	118 (28.2%)
Children	28 (16.0%)	34 (13.9%)	62 (14.8%)
Other relatives or friends	59 (33.7%)	95 (38.9%)	154 (36.8%)

Table 2. Factors related to suicide, Russian and Estonian suicide victims (gender and age adjusted OR)

	Russian suicidents	Estonian suicidents	adjusted	
	No. (%)	No. (%)	OR (95% CI)	*P*
Sociodemographic				
Family status				
No partner	94 (54.7%)	144 (59.0%)	0.8 (0.5–1.2)	0.284
Partner	79 (45.1%)	100 (41.0%)	1.0	
Socio-economic status				
Unemployed	46 (26.3%)	47 (19.3%)	1.4 (0.8–2.3)	0.222
Inactive	61 (34.9%)	98 (40.2%)	1.0 (0.6–1.7)	0.902
Employed	68 (38.9%)	99 (40.6%)	1.0	
Substance using pattern				
Substance dependence and abuse	114 (69.1%)	142 (59.4%)	2.4 (1.4–4.1)	0.001
Abstinence	25 (15.2%)	30 (12.6%)	2.3 (1.1–4.9)	0.028
Moderate use	26 (15.8%)	67 (28.0%)	1.0	
Recent life events (last 3 months)				
Somatic illness				
Present	44 (25.1%)	64 (26.4%)	1.2 (0.7–2.0)	0.451
Absent	131 (74.9%)	178 (73.6%)	1.0	
Illness in family				
Present	13 (7.4%)	10 (4.1%)	1.8 (0.7–4.2)	0.192
Absent	162 (92.6%)	232 (95.9%)	1.0	
Death				
Present	9 (5.1%)	19 (7.8%)	0.6 (0.3–1.5)	0.285
Absent	166 (94.9%)	223 (92.1%)	1.0	
Family discord				
Present	70 (40.0%)	82 (33.9%)	1.2 (0.8–1.8)	0.455
Absent	105 (60.0%)	160 (66.1%)	1.0	
Separation				
Present	33 (18.9%)	34 (14.0%)	1.3 (0.8–2.3)	0.301
Absent	142 (81.1%)	208 (86.0%)	1.0	
Financial deterioration				
Present	44 (25.1%)	63 (26.0%)	0.9 (0.6–1.4)	0.612
Absent	131 (74.9%)	179 (74.0%)	1.0	
Loss of job				
Present	16 (9.1%)	20 (8.3%)	1.0 (0.5–2.0)	0.982
Absent	159 (90.9)	222 (91.7%)	1.0	
Change of residence				
Present	20 (11.4%)	21 (8.7%)	1.4 (0.7–2.7)	0.338
Absent	155 (88.6%)	221 (91.3%)	1.0	

Table 3. Factors related to suicide, Russian and Estonian suicide victims in comparison with controls (OR using conditional logistic regression)

	Russians in Estonia		Estonians	
	OR (95% CI)	*P*	OR (95% CI)	*P*
Sociodemographic				
Family status				
No partner	1.8 (1.1–2.8)	0.018	3.2 (2.1–5.0)	< 0.001
Partner	1.0		1.0	
Socio-economic status				
Unemployed	4.6 (2.1–9.8)	< 0.001	7.3 (3.3–16.1)	< 0.001
Inactive	2.9 (1.3–6.5)	0.009	3.7 (2.0–6.9)	< 0.001
Employed	1.0		1.0	
Substance using pattern				
Substance dependence and abuse	12.3 (5.8–26.1)	< 0.001	10.8 (5.7–20.4)	< 0.001
Abstinence	3.2 (1.4–7.3)	0.006	4.9 (2.2–10.9)	< 0.001
Moderate use	1.0		1.0	
Recent life events (last 3 months)				
Somatic illness				
Present	4.3 (2.1–8.9)	< 0.001	2.5 (1.6–4.0)	< 0.001
Absent	1.0		1.0	
Illness in family				
Present	0.7 (0.4–1.5)	0.371	0.7 (0.3–1.5)	0.321
Absent	1.0		1.0	
Death				
Present	0.2 (0.1–0.6)	0.001	0.9 (0.4–1.6)	0.622
Absent	1.0		1.0	
Family discord				
Present	7.5 (3.6–15.7)	< 0.001	5.5 (3.1–9.7)	< 0.001
Absent	1.0		1.0	
Separation				
Present	11.0 (3.4–35.9)	< 0.001	4.1 (1.9–8.9)	< 0.001
Absent	1.0		1.0	
Financial deterioration				
Present	1.4 (0.8–2.4)	0.260	1.6 (1.0–2.5)	0.039
Absent	1.0		1.0	
Loss of job				
Present	4.0 (1.3–12.0)	0.013	not calcuable	< 0.001
Absent	1.0			
Change of residence				
Present	0.9 (0.5–1.8)	0.866	0.5 (0.3–0.9)	0.022
Absent	1.0		1.0	

Table 4. Factors related to suicide, Russian and Estonian suicide victims (males and females) in comparison with controls (OR using conditional logistic regression)

	Russian males		Estonian males		Russian females		Estonian females	
	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*
Sociodemographic								
Family status								
No partner	2.2 (1.3–3.7)	0.005	4.0 (2.4–6.6)	< 0.001	0.8 (0.3–2.2)	0.594	1.4 (0.6–3.4)	0.493
Partner	1.0		1.0		1.0		1.0	
Socio-economic status								
Unemployed	6.2 (2.4–15.6)	< 0.001	7.3 (3.2–16.7)	< 0.001	1.6 (0.3–7.8)	0.545	6.1 (0.1–137.5)	0.254
Inactive	2.7 (1.0–7.4)	0.058	2.8 (1.4–5.5)	0.003	2.6 (0.7–9.7)	0.145	15.7 (1.7–143.1)	0.015
Employed	1.0		1.0		1.0		1.0	
Substance using pattern								
Substance dependence/abuse	9.8 (4.4–21.6)	< 0.001	9.8 (5.2–18.7)	< 0.001	35.7 (3.6–354.4)	0.002	not calcuable	0.972
Abstinence	2.4 (0.8–6.9)	0.105	4.3 (1.6- 11.2)	0.003	5.6 (1.2–25.9)	0.029	6.0 (1.3–26.8)	0.019
Moderate use	1.0		1.0		1.0		1.0	
Recent life events (last 3 months)								
Somatic illness								
Present	4.0 (1.6–9.8)	0.002	2.6 (1.6–4.5)	0.003	5.0 (1.4–17.3)	0.011	2.0 (0.7–5.9)	0.206
Absent	1.0		1.0		1.0		1.0	
Illness in family								
Present	1.0 (0.4–2.4)	0.999	0.7 (0.3–1.6)	0.374	0.4 (0.1–1.4)	0.147	0.7 (0.1 -4.0)	0.657
Absent	1.0		1.0		1.0		1.0	
Death								
Present	0.3 (0.1–0.7)	0.007	0.9 (0.5–1.9)	0.853	0.1 (0.02–0.99)	0.050	0.6 (0.1–2.5)	0.484
Absent	1.0		1.0		1.0		1.0	

Table 4.

	Russian males		Estonian males		Russian females		Estonian females	
	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*	OR (95% CI)	*P*
Family discord								
Present	7.7 (3.3–18.0)	< 0.001	5.9 (3.1–11.2)	< 0.001	7.0 (1.6–30.8)	0.010	4.0 (1.1–14.2)	0.032
Absent	1.0		1.0		1.0		1.0	
Separation								
Present	30 (4.1–220)	0.001	5.3 (2.2–12.8)	0.002	1.5 (0.3–9.0)	0.657	0.5 (0.05–5.5)	0.571
Absent	1.0		1.0		1.0		1.0	
Financial deterioration								
Present	1.4 (0.8–2.6)	0.230	2.0 (1.3–3.3)	0.004	1.0 (0.2–5.0)	0.999	0.3 (0.1–1.2)	0.080
Absent	1.0		1.0		1.0		1.0	
Loss of job								
Present	7.0 (1.6–30.8)	0.010	not calcuable	< 0.001	1.0 (0.1–7.1)	0.999	not calcuable	0.964
Absent	1.0				1.0			
Change of residence								
Present	1.1 (0.5–2.2)	0.853	0.4 (0.2–0.8)	0.007	0.5 (0.1 – 2.7)	0.424	2.0 (0.4–10.9)	0.424
Absent	1.0		1.0		1.0		1.0	

Table 5. Conditional logistic regression models predicting suicide among Russians and Estonians

	OR (95% CI)	*P*
Russians		
Socio-economic status		
Unemployed	2.5 (0.8–7.9)	0.107
Inactive	5.5 (1.3–22.9)	0.020
Employed	1.0	
Substance using pattern		
Substance dependence and abuse	12.9 (4.2–39.2)	< 0.001
Abstinence	2.9 (0.9–9.8)	0.087
Moderate use	1.0	
Recent life events (last 3 months)		
Family discord		
Present	3.2 (1.1–9.9)	0.038
Absent	1.0	
Somatic illness		
Present	4.1 (1.4–11.7)	0.009
Absent	1.0	
Death		
Present	0.2 (0.04–0.7)	0.017
Absent	1.0	
Separation		
Present	32.3 (2.9–364.1)	0.005
Absent	1.0	
Estonians		
Family status		
No partner	3.0 (1.6–5.5)	0.005
Partner	1.0	
Socio-economic status		
Unemployed	5.5 (2.0–15.4)	0.001
Inactive	3.1 (1.3–7.1)	0.009
Employed	1.0	
Substance using pattern		
Substance dependence and abuse	8.1 (3.9–16.4)	< 0.001
Abstinence	6.7 (2.5–17.6)	< 0.001
Moderate use	1.0	
Recent life events (last 3 months)		
Family discord		
Present	4.5 (2.1–9.8)	< 0.001
Absent	1.0	

CURRICULUM VITAE

Kairi Kõlves

Sünniaeg ja koht:	22. jaanuar 1977, Valga
Kodakondsus:	Eesti
Aadress, telefon, *e-mail*:	Kastani 5–4 Tartu, 56 456 734, kaikolves@hot.ee
Praegune töökoht, amet:	MTÜ Eesti-Rootsi Vaimse Tervise ja Suitsidoloogia Instituut (kuulub Eesti Käitumis- ja Terviseteaduste Keskusesse), teadur

Haridus

Tartu Ülikool, 1999, BA, sotsioloogia
Tartu Ülikool, 2001, MA, sotsioloogia
Keelteoskus: eesti, inglise, saksa, vene

Töökogemus (teenistuskäik)

MTÜ Suitsidoloogia Instituut, metoodik 2000–2001
MTÜ Eesti-Rootsi Vaimse Tervise ja Suitsidoloogia Instituut, teadur 2001–

Teadus- ja arendustegevus

Peamised uurimisvaldkonnad: suitsiidi sotsiaalsed, poliitilised, majanduslikud riskitegurid, suitsidaalse käitumise epidemioloogia

Publikatsioonid

Värnik A, Kõlves K, Palo E, Tooding L-M. Eesti suitsiidikõver on võtnud S-kuju. Eesti Arst 2001; 80:141–144.

Kõlves K, Värnik A, Tooding L-M. Life events in suicide psychological autopsy study at 10 year interval. In Grad O. (Ed.) Suicide risk and Protective Factors in the New Millennium. Ljubljana 2001; 193–199.

Värnik A, Kõlves K. Eestlaste ja mitte-eestlaste enesetapud. Estonian's and non-Estonian's suicides. Eesti-Rootsi Suitsidoloogia Instituut. Tallinn-Tartu 2001

Värnik A, Kõlves K, Palo E, Tooding L-M. Suitsiidid Eestis 1970–2000. Eesti Inimarengu Aruanne 2001

Värnik A, Väli M, Kõlves K. The pattern of alcohol use among suicidents. Medicina Legalis Baltica 2002,13:15–20.

Värnik A, Saveljev K, Kõlves K. Suitsiidiohvri lein: olukord Eestis. Sotsiaaltöö, 3, 2002

Kõlves K, Värnik A. 427 suitsiidi psühholoogiline süvauuring: riskigrupid ja riskitegurid. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 53–57.

Kõlves K, Värnik A & Wasserman D. Suitsiidimeetodid Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 30–31.
Kõlves K, Sisask M. WHO SUPRE-MISS uuringu kontrollgrupp – suitsidaalsus populatsioonis ja probleemid ühiskonnas. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 70–73.
Värnik A, Kõlves K, Tooding L-M, Palo E. Eestlaste ja mitte-eestlaste suitsiidid. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 32–39.
Merike S, Kõlves K, Värnik A & Wasserman D. WHO-SUPRE – Ülemaailmne suitsiidikatsete uuring Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 65–69.
Saveljev K, Kõlves K, Värnik A. Suitsiidisurma lein: olukord Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 58–61.
Kõlves K, Sisask M ja Värnik A. I osa: Suitsidaalsus ühiskonnas ja suitsiidikatse sooritanute uuring; Marandi T ja Värnik A. II osa: Suitsiidikatse sooritanu käsitlus haigla erakorralise meditsiini osakonnas. Tallinn, 2004.
Kõlves K, Värnik A, Tooding L-M, Väli M & Wasserman D. Alkoholi ja narkootikumi tarbimisharjumused prognoosivad suitsiidi. Eesti Arst 2004; 83:671–6.
Sisask M, Kõlves K & Värnik A. Suitsidaalsus ühiskonnas ja suitsiidikatse sooritamist prognoosivad tegurid. Eesti Arst 2004;83:744–9.
Värnik A, Kõlves K, Wasserman D. Suicide among Russians in Estonia: database study before and after independence. British Medical Journal 2005;330:176–7. Internet: 10.1136/bmj.38328.454294.55.
Kõlves K, Värnik A, Tooding L-M, Wasserman D. The role of alcohol in suicide: a case-control psychological autopsy study. Psychological Medicine 2006;36:923–930.
Kõlves K, Värnik A, Schneider B, Fritze J, Allik J. Recent life events: A case-control study in Tallinn and Frankfurt. Social Science & Medicine 2006;61:2887–2896.
Värnik A, Kõlves K, Sisask M, Samm A, Wasserman D. Suicide mortality and political transition: Russians in Estonia compared to the Estonians in Estonia and to the population of Russia. Trames 2006;10:268–277.

Tunnustused

Eesti Käitumis- ja Terviseteaduste Keskuse publikatsioonipreemia 2006

Muu teaduslik organisatsiooniline ja erialane tegevus

Esinenud suuliste ettekannetega 6 rahvusvahelisel ja 10 Eesti konverentsil

CURRICULUM VITAE

Kairi Kõlves

Date and place of birth:	22 January 1977, Valga
Citizenship:	Estonian
Address, telephone, *e-mail*:	Kastani 5–4 Tartu, 56 456 734, kaikolves@hot.ee
Institution and position held:	NGO Estonian-Swedish Mental Health and Suicidology Institute, researcher

Education

University of Tartu, 1999, BA, sociology
University of Tartu, 2001, MA, sociology
Languages: Estonian, English, Germany, Russian

Professional employment

NGO Suicidology Institute, methodic 2000–2001
NGO Estonian-Swedish Mental Health and Suicidology Institute, researcher since 2001

Scientific activities

Research area: social, political, economical risk factors of suicide, epidemiology of suicidal behavior

Publications

Värnik A, Kõlves K, Palo E, Tooding L-M. Eesti suitsiidikõver on võtnud S-kuju. Eesti Arst 2001;80:141–144.

Kõlves K, Värnik A, Tooding L-M. Life events in suicide psychological autopsy study at 10 year interval. In Grad O. (Ed.) Suicide risk and Protective Factors in the New Millennium. Ljubljana 2001; 193–199.

Värnik A, Kõlves K. Eestlaste ja mitte-eestlaste enesetapud. Estonian's and non-Estonian's suicides. Eesti-Rootsi Suitsidoloogia Instituut. Tallinn-Tartu 2001

Värnik A, Kõlves K, Palo E, Tooding L-M. Suitsiidid Eestis 1970–2000. Eesti Inimarengu Aruanne 2001

Värnik A, Väli M, Kõlves K. The pattern of alcohol use among suicidents. Medicina Legalis Baltica 2002,13:15–20.

Värnik A, Saveljev K, Kõlves K. Suitsiidiohvri lein: olukord Eestis. Sotsiaaltöö, 3, 2002

Kõlves K, Värnik A. 427 suitsiidi psühholoogiline süvauuring: riskigrupid ja riskitegurid. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 53–57.

Kõlves K, Värnik A & Wasserman D. Suitsiidimeetodid Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 30–31.
Kõlves K, Sisask M. WHO SUPRE-MISS uuringu kontrollgrupp – suitsidaalsus populatsioonis ja probleemid ühiskonnas. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 70–73.
Värnik A, Kõlves K, Tooding L-M, Palo E. Eestlaste ja mitte-eestlaste suitsiidid. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 32–39.
Merike S, Kõlves K, Värnik A & Wasserman D. WHO-SUPRE – Ülemaailmne suitsiidikatsete uuring Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 65–69.
Saveljev K, Kõlves K, Värnik A. Suitsiidisurma lein: olukord Eestis. Toimetanud Värnik A. Suitsiidi-uuringud. Tallinn 2003; 58–61.
Kõlves K, Sisask M ja Värnik A. I osa: Suitsidaalsus ühiskonnas ja suitsiidikatse sooritanute uuring; Marandi T ja Värnik A. II osa: Suitsiidikatse sooritanu käsitlus haigla erakorralise meditsiini osakonnas. Tallinn, 2004.
Kõlves K, Värnik A, Tooding L-M, Väli M & Wasserman D. Alkoholi ja narkootikumi tarbimisharjumused prognoosivad suitsiidi. Eesti Arst 2004;83:671–6.
Sisask M, Kõlves K & Värnik A. Suitsidaalsus ühiskonnas ja suitsiidikatse sooritamist prognoosivad tegurid. Eesti Arst 2004;83:744–9.
Värnik A, Kõlves K, Wasserman D. Suicide among Russians in Estonia: database study before and after independence. British Medical Journal 2005;330:176–7. Internet: 10.1136/bmj.38328.454294.55.
Kõlves K, Värnik A, Tooding L-M, Wasserman D. The role of alcohol in suicide: a case-control psychological autopsy study. Psychological Medicine 2006;36:923–930.
Kõlves K, Värnik A, Schneider B, Fritze J, Allik J. Recent life events: A case-control study in Tallinn and Frankfurt. Social Science & Medicine 2006;61:2887–2896.
Värnik A, Kõlves K, Sisask M, Samm A, Wasserman D. Suicide mortality and political transition: Russians in Estonia compared to the Estonians in Estonia and to the population of Russia. Trames 2006;10:268–277.

Aknowledgement

Publication award of Estonian Centre of Behavioral and Health Sciences 2006

Other scientific activities

Oral presentations on international and local conferences