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Original Article

Analysis of parasuicide, psychiatric care and completed suicides, implications for intervention strategy (Czech Republic, 1996–2000)

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Summary

Background: This retrospective study analyses the differences between suicide with and without previous parasuicide. The Czech Republic was one of the countries with the traditionally highest level of suicide mortality. During collapse of the communist regime and deep societal changes in the Czech Republic after the year 1989 the escalation of suicides was expected. Mortality from suicides decreased, however the gender and age differences increased.

Methods: A total of 2,711 suicides in the Czech Republic (1996–2000) were studied.

Effects of socioeconomic characteristics, psychiatric diagnosis and care, and lifetime history of parasuicide on the risk of death from suicide were estimated using logistic regression.

Results: Twenty-three percent of persons who committed suicide had a prior history of parasuicide and almost twenty percent of them received no psychiatric care after the attempt. Young males with basic education, economically active and diagnosed with substance abuse related disorders and the elderly were least likely to receive psychiatric care before their suicide death.

Conclusions: Implications for age specific primary and secondary prevention are discussed.

Keywords: Suicide – Parasuicide – Psychiatric care – Socio-demographic patterns – Czech Republic – Logistic regression.

Suicidal behaviour has become recognised as a major public health problem. Perhaps more worrisome, evidence provided by the WHO[1] indicates that the global rate of suicide has continued to rise since 1950. On present trends, WHO expects the number to climb to about 1.5 million by 2020. Comparison between countries is made difficult by a number of factors, including the absence of a standard legal definition of suicide, related economic issues, and community attitudes.

The highest standardized suicide rates for both men and women in Europe are found presently in a group of countries that share similar historical and cultural characteristics, such as Lithuania, Russian Federation, Ukraine, Latvia and Estonia (Figure 1). Traditionally Czechs and Hungarians had also one of the highest suicides rates, compared with other European populations[2]. However there was registered significant decrease over the last 30 years, but strongest for the Czech population. The most significant decrease has been achieved in

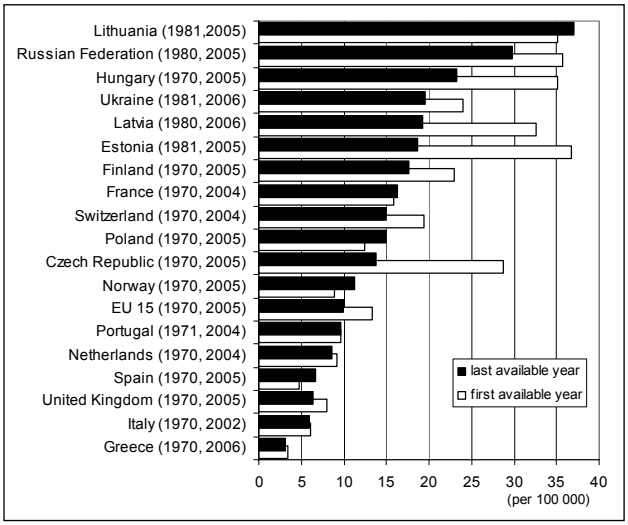

Figure 1 Age-standardized death rates on suicides (all ages) in selected countries, first available year about 1970 and last available about year 2005 (per 100 000 inhabitants)
Source: European health for all database (HFA-DBF), WHO/Europe; November 2007

the oldest age groups for Czechs and Hungarians; a decrease in rate among younger age groups is less evident. Very serious is the negative trend of suicides rates for males below 64 years old from Lithuania and Russian Federation (Figure 2).

Despite the recent decrease in the overall suicide rate in the Czech Republic, suicides rates remain high and vigorous preventive efforts are warranted. Preventive strategy systems and health services planning depend on the understanding of suicidal behaviour. Suicide risk is strongly associated with psychiatric disorders[3, 4], substance abuse[5], economic inactivity/unemployment[6–9], education[10] and marital status. The impact of most risk factors differs significantly by gender[5, 11, 12].

The studies estimated that about half of all people who commit suicide have a lifetime history of parasuicide[10, 13–14].

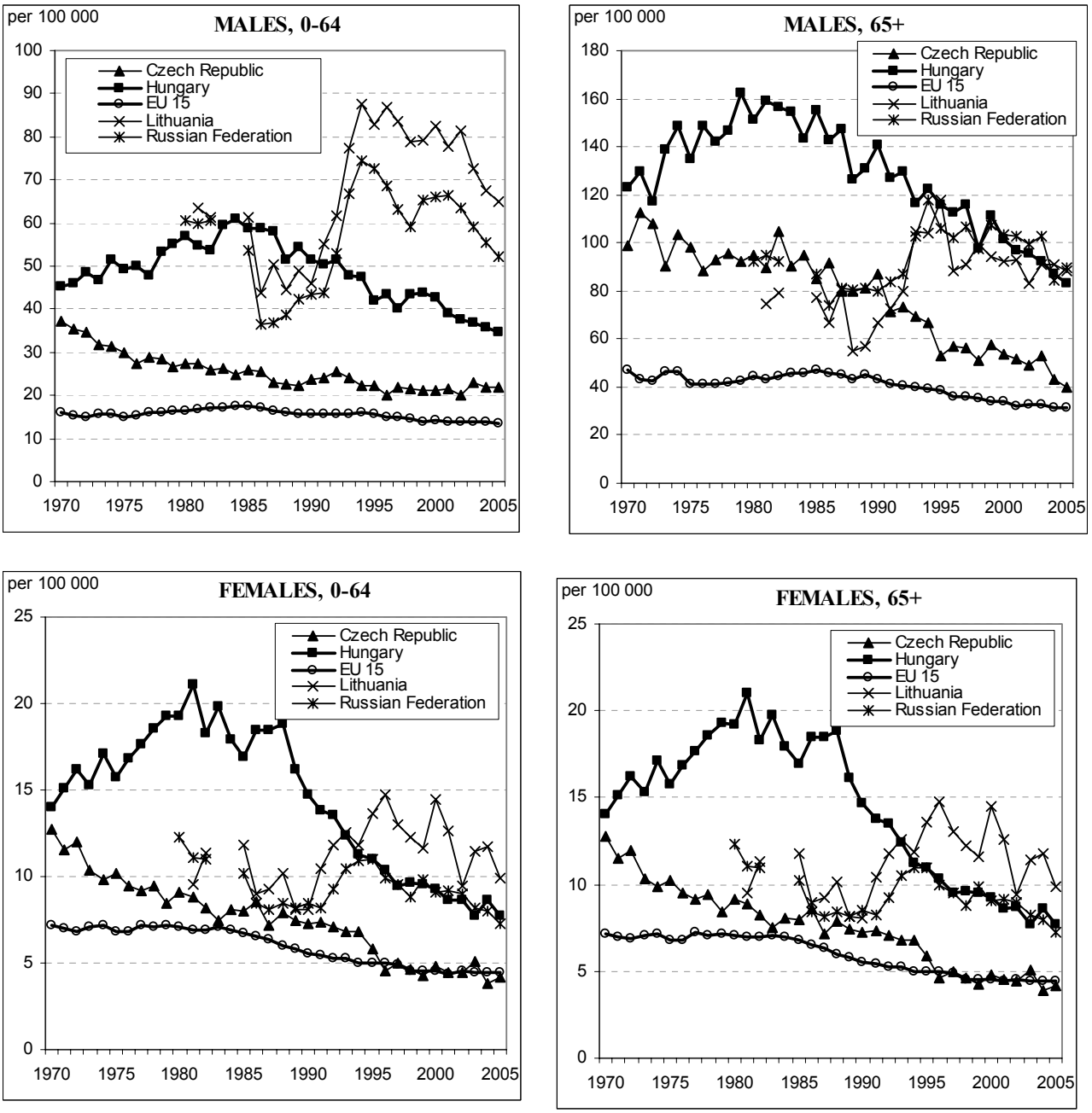

Figure 2 Age-standardized death rates on suicides at age 0–64 years and 65 and older, males, females, the Czech Republic, Hungary, Lithuania, Russian Federation and EU members before May 2004, 1970–2005 (per 100 000 inhabitants)
Source: European health for all database (HFA-DBF), WHO/Europe; November 2007
Notes: (i) EU members before May 2004: the 15 Member States of the European Union prior to 1 May 2004

Service utilization varied by country, socio-demographic characteristics, and age group[7, 10, 14]. Only a few studies have examined service utilization before completed suicide and little is known about the treatments received after parasuicide[15, 16]. Clearly more research is needed on treatments for suicide and parasuicide prevention[14].

The goal of our study is twofold:

1. To evaluate psychiatric, demographic and socio-economic differences between suicide with a history of parasuicide and without previous parasuicide.
2. To identify the differences between the delivery of psychiatric care in cases with and without previous parasuicide based on demographic characteristics and psychiatric diagnoses.

Methods

The present study is based on individual anonymous records from the Register of Suicides, compiled by the Institute of Health Information and Statistics of the Czech Republic. The records contain additional information, which is not available in the common Mortality File (based on death certificates) collected by our team in previous project[2]. The use of the data was in accordance with the statutory obligations to protect confidentiality. Individuals could not be identified from the data provided for analysis.

Sample

Original data set included information about all suicides age 15 years and older in the Czech Republic (1996–2000), 7604 cases of suicides (Table 1). But only 2 711 cases of suicides contained complete information about parasuicide history. Similarity or disparity of specified two groups of data (with known parasuicide history, n = 2711 and without known parasuicide history, n = 4893) for 6 study characteristics (age, marital status, education level, economic activity, psychiatric diagnosis and psychiatric care) we tested by T-test for males and females (Mann-Whitney statistic to test the null hypothesis that two independent samples come from the same population). The results from the T-test demonstrate some differences. The null hypothesis for males can be accepted for marital status; for females can be accepted for age, marital status, economic activity and psychiatric diagnosis. Other characteristics show significant differences in both data sets. The results from the T-test give us opportunity to study subjects (n = 2711) with caution.

Table 1 Suicides with known and unknown parasuicide history according the age groups, males, females, the Czech Republic, 1996–2000 and T-test of suicides with known and unknown history of parasuicide

Age groups	Suicides		Suicides with previous parasuicide			
			Known history		Unknown history	
	Count	%	Count	%	Count	%
			Males			
15–24	611	10,3	201	9,7	410	10,6
25–34	785	13,2	236	11,4	549	14,2
35–44	1 096	18,5	334	16,1	762	19,8
45–54	1 375	23,2	442	21,3	933	24,2
55–64	732	12,3	274	13,2	458	11,9
65–74	682	11,5	298	14,3	384	10,0
75+	651	11,0	293	14,1	358	9,3
Total	**5 932**	**100**	**2 078**	**100**	**3 854**	**100**
Mann-Whitney U: Asymp. sig.			0,001			
			Females			
15–24	114	6,8	44	7,0	70	6,7
25–34	123	7,4	42	6,6	81	7,8
35–44	216	12,9	70	11,1	146	14,1
45–54	337	20,2	119	18,8	218	21,0
55–64	249	14,9	114	18,0	135	13,0
65–74	286	17,1	108	17,1	178	17,1
75+	347	20,8	136	21,5	211	20,3
Total	**1 672**	**100**	**633**	**100**	**1 039**	**100**
Mann-Whitney U: Asymp. sig.			0,163			

Parasuicide, which is a major risk factor for completed suicide, was defined as any nonfatal self-injury, including suicide attempts and self-mutilation[17]. Suicides with unknown information about previous parasuicide (64.3 % out of 7 604) were excluded from our study sample.

A sample of 2 711 suicides diagnosed in accordance with defined criteria were dichotomized into 621 who had a lifetime episode of parasuicide ('attempted suicide') and 2 090 who had not. Overall, the information about psychiatric care provision is available in 2,310 cases. Among the 621 cases with a previous parasuicide, 67 % cases received psychiatric care, and 13 % received no care (information about psychiatric care is missing in 19 % cases). Among the 2,090 cases without a previous parasuicide, only 20 % cases received previous psychiatric care, while 66 % received no psychiatric care (missing14 % cases).

Variables

This study is based on two sets of characteristics: (i) individual characteristics, and (ii) prior psychiatric characteristics (e.g. previous psychiatric disorders, previous psychiatric care, and previous parasuicide). Some continuous variables were grouped into categories to facilitate the subsequent multidimensional analyses. Characteristics studied in this analysis include: age categories (15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75 years and over), marital status (single, married, divorced, and widowed), educational attainment (basic, vocational, and academic), and economic activity (employed, unemployed, disabled or invalidity beneficiary, and other). We also include the categories of previous psychiatric diagnosis (Substance related disorders, F10-19[1]; Schizophrenia and related psychotic disorders, F20-29; Mood disorders, F30-39; and other psychiatric diagnoses, F40-99), 4 types of previous psychiatric care (in-patient care, out-patient care, in and out patient care, and no previous psychiatric care), and whether there is a previous parasuicide.

First, we analyze how suicides with parasuicide history statistically differ from those without a parasuicide history by logistic regressions. Odds ratios were estimated for each of the independent variables (age, marital status, education level, economic activity, psychiatric diagnosis and psychiatric care). The dependent variable is equal 1 if there was a parasuicide history (case) and 0 if there was no parasuicide history (control). Six models as a result from logistic regression modelling were done separately for males and females.

Next, we analyze the differences in the delivery of psychiatric care between suicides with and without previous parasuicide. The dependent variable is equal 1 if there was not psychiatric care after parasuicide (case) and 0 if there was psychiatric care after parasuicide history (control). Five separate models for males and females were estimated, and all models controlled for age.

Unknown categories of variables were coded as missing, and were excluded from the analysis. Adjusted odds ratios (OR) and 95 % confidence intervals are reported below. All analyses were carried out using the SPSS (SPSS Inc, Chicago, USA) statistical packages.

Results

Table 2 summarizes the number of suicides and the proportion with previous parasuicide, by psychiatric and socio-demographic characteristics. In total, 2,711 suicides were analyzed (2,078 male and 633 female). A previous parasuicide was identified in 387 male cases and 234 female cases. Females had twice the proportion of prior suicide attempts, and younger individuals were more likely to have a parasuicide history. Practically 17 percent of suicide cases with parasuicide received no psychiatric care (21.7 % males, and 8.5 % females).

Evaluation of psychiatric, demographic and socio-economic differences between suicide with a history of parasuicide and without previous parasuicide

We estimated 6 logistic regression models in order to evaluate the adjusted probability (risk) of previous parasuicide (dependent variable; risk of parasuicide = 1) for those who committed suicide by studying 6 independent characteristics (Table 3).

Model 1 assesses the probability that a suicide is associated with a prior parasuicide across age groups (relative to the reference category of 75 years and over). Younger individuals are more likely to have a risk of previous parasuicide than older individuals. Males aged 15–24 years are 2.5 times as likely to have a risk of parasuicide as the oldest (OR = 2.5); young females have 4 times the rate of older females (OR = 4.1). Marital status (Model 2) and education level (Model 3) were not found to be significant variables for risk of previous parasuicide distribution. Invalidity beneficiaries, both male and female, had significantly higher suicide rates with a previous attempt than did economically active people (Model 4). There was no difference by the type of psychiatric diagnosis in the relative frequency of parasuicide (see Model 5). Model 6 compares the risk of suicide with and without parasuicide according to different types of psychiatric care. Persons who committed suicide who had in-patient psychiatric care were

[1] These include the International Classification of Disease, currently in its tenth revision (International Classification of Diseases /ICD), used mainly in Europe, as well as the Diagnostic Statistical Manual Version IV (DSM IV), used primarily in the United States.

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Table 2 Demographic and psychiatric characteristics of study subjects: Suicides with known parasuicide history, the Czech Republic, 1996–2000

Characteristics	Males			Females		
	Suicides	With parasuicide	Without care	Suicides	With parasuicide	Without care
	No	(%)	(%)	No	(%)	(%)
AGE GROUPS						
15–24	201	20,4	24,4	44	38,6	11,8
25–34	236	21,6	19,6	42	33,3	0,0
35–44	334	18,3	19,7	70	42,9	0,0
45–54	442	15,8	12,9	119	36,1	7,0
55–64	274	10,2	25,0	114	35,1	2,5
65–74	298	8,4	32,0	108	29,6	9,4
75+	293	9,6	35,7	136	16,9	34,8
Unknown	0			0		
MARITAL STATUS						
Single	421	19,5	17,1	75	36,0	3,7
Married	1115	13,2	24,5	270	33,3	6,7
Divorced	252	17,5	13,6	65	41,5	3,7
Widowed	234	7,7	44,4	200	21,5	16,3
Unknown	56			23		
EDUCATION LEVEL						
Basic	738	11,9	34,1	278	24,5	13,2
Vocational	760	15,7	14,3	155	37,4	5,2
Academic	111	17,1	10,5	19	42,1	0,0
Unknown	469			181		
ECONOMIC ACTIVITY						
Economic active	858	13,9	22,7	147	30,6	4,4
Invalidity beneficiary	189	27,5	3,8	80	53,8	2,3
Unemployed	225	20,0	24,4	36	30,6	9,1
Others	806	10,9	29,5	370	27,0	13,0
Unknown	0			0		
PSYCHIATRIC DIAGNOSIS						
Mood disorders	167	40,1	7,5	117	48,7	1,8
Substance related disorders	102	33,3	8,8	13	69,2	0,0
Schizophrenia	74	40,5	0,0	44	59,1	0,0
Others psychiatric diagnosis	148	31,1	10,9	65	46,2	6,7
Healthy/Unknown	1587			394		
PSYCHIATRIC CARE						
In-patient care	136	58,8	0,0	61	80,3	0,0
Out-patient care	253	32,8	0,0	164	43,9	0,0
In+out-patient care	147	51,0	0,0	79	77,2	0,0
Without psych. care	1226	5,4	100	244	7,0	100
Unknown	316			85		
TOTAL	**2078**	**18,6**	**21,7**	**633**	**37,0**	**8,5**

Table 3 Odds ratios (OR) and 95 percent confidence intervals (CI) for socio-economic and psychiatric predictors of suicides with parasuicide versus without parasuicide, males (n = 2,078), females (n = 633), six models as a results from logistic regression modelling.

Characteristics (independent)	Dependent variable **Parasuicide – Yes = 1/No = 0**				Dependent variable: **Parasuicide - Yes = 1/No = 0**			
	MALES				**FEMALES**			
	OR	95 % CI for OR		Sig.	OR	95 % CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Model 1: AGE GROUPS								
RC: 75+				**<0.01**				**<0.01**
15–24	**2,46**	1,52	3,97	**<0.01**	**4,05**	1,95	8,44	**<0.01**
25–34	**3,28**	2,08	5,16	**<0.01**	**3,02**	1,42	6,41	**<0.01**
35–44	**2,40**	1,55	3,71	**<0.01**	**4,19**	2,21	7,94	**<0.01**
45–54	**1,84**	1,20	2,82	**<0.01**	**3,45**	1,96	6,06	**<0.01**
55–64	1,15	0,70	1,90	0,58	**3,35**	1,89	5,92	**<0.01**
65–74	0,88	0,53	1,48	0,64	**2,22**	1,23	4,01	**<0.01**
Model 2: MARITAL STATUS*								
RC: Single				0,30				0,08
Married	0,83	0,60	1,15	0,27	1,16	0,64	2,09	0,62
Divorced	1,10	0,74	1,62	0,65	1,92	0,93	3,95	0,08
Widowed	0,69	0,37	1,25	0,22	0,86	0,39	1,89	0,71
Model 3: EDUCATION LEVEL*								
RC: Basic				0,20				0,10
Vocational	1,12	0,84	1,49	0,44	1,58	0,99	2,48	0,06
Academic	1,57	0,95	2,60	0,08	1,87	0,72	4,90	0,20
Model 4: ECONOMIC ACTIVITY*								
RC: Economically active				<0.01				<0.01
Invalidity benefic.	**2,46**	1,71	3,56	**<0.01**	**3,49**	1,96	6,20	**<0.01**
Unemployed	1,41	0,99	2,01	0,06	1,05	0,49	2,24	0,91
Other non-econ. act.	**1,45**	1,08	1,94	**0,01**	1,49	0,92	2,41	0,10
Model 5: PSYCHIATRIC DIAGNOSIS*								
RC: Substance related disorders				0,13				0,62
Schizophrenia	1,30	0,70	2,41	0,41	0,75	0,20	2,84	0,67
Mood disorders	1,67	0,99	2,84	0,06	0,55	0,16	1,90	0,34
Oth.psychiatric diag.	1,02	0,59	1,76	0,95	0,51	0,14	1,87	0,31
Model 6: PSYCHIATRIC CARE*								
RC: No psychiatric care				<0.01				<0.01
In-patient care	**23,67**	15,48	36,20	**<0.01**	**51,40**	22,79	115,94	**<0.01**
Out-patient care	**8,44**	5,86	12,14	**<0.01**	**10,11**	5,62	18,18	**<0.01**
In+out-patient care	**16,91**	11,21	25,48	**<0.01**	**43,57**	21,08	90,04	**<0.01**

RC- Reference category; OR -odds ratios; CI - confidence interval, bold when p <0,05
* ORs adjusted for age

Table 4 Odds ratios (OR) and 95 percent confidence intervals (CI) for socio-economic and psychiatric predictors of the **absence of psychiatric care for cases without previous parasuicide only**, males (n = 1,458), females (n = 349), five models as a results from logistic regression modelling.

Characteristics (independent)	Dependent variable: **Absence of psychiatric care – Yes=1/No=0**				Dependent variable: **Absence of psychiatric care – Yes=1/No=0**			
	MALES				**FEMALS**			
	OR	95 % CI for OR		Sig.	OR	95 % CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Model 1: AGE GROUPS								
RC:45-54				<0.01				<0.01
15–24	**2,63**	1,49	4,65	**<0.01**	1,97	0,64	6,11	0,24
25–34	1,58	0,96	2,61	0,07	1,62	0,62	4,23	0,33
35–44	1,10	0,75	1,63	0,63	**2,48**	0,99	6,18	**0,05**
55–64	**1,56**	1,02	2,38	**0,04**	1,28	0,61	2,67	0,52
65–74	**1,71**	1,13	2,58	**0,01**	1,84	0,88	3,83	0,10
75+	**3,30**	2,03	5,36	**<0.01**	**5,00**	2,37	10,57	**<0.01**
Model 2: MARITAL STATUS*								
RC: Single				0,11				0,31
Married	1,30	0,88	1,90	0,18	0,97	0,43	2,16	0,94
Divorced	0,91	0,57	1,44	0,68	0,68	0,24	1,98	0,48
Widowed	1,80	0,96	3,39	0,07	1,55	0,55	4,33	0,41
Model 3: EDUCATION LEVEL*								
RC: Basic				0,02				0,22
Vocational	1,00	0,74	1,36	1,00	0,83	0,44	1,54	0,55
Academic	**0,48**	**0,28**	**0,82**	**0,01**	0,27	0,06	1,18	0,08
Model 4: ECONOMIC ACTIVITY*								
RC: Economically active				<0.01				0,01
Invalidity benefic.	0,25	0,16	0,38	<0.01	0,16	0,06	0,47	<0.01
Unemployed	0,68	0,45	1,04	0,07	0,79	0,30	2,10	0,64
Other non econ.act.	1,39	0,96	2,01	0,08	0,69	0,35	1,38	0,30
Model 5: PSYCHIATRIC DIAGNOSIS**+								
RC: Substance related disorders				0,02				
Schizophrenia	0,29	0,09	0,94	0,04				
Mood disorders	0,82	0,38	1,75	0,60				
Oth.psychiatric diag.	1,49	0,72	3,07	0,29				

RC- Reference category; OR – odds ratios; CI – confidence interval, bold when p <0,05.
* ORs adjusted for age; + Model 5 for females wasn´t calculated for small frequencies

much more likely to have had a prior parasuicide compared to patients without any psychiatric care, and to those who only had out-patient care.

Differences between the delivery of psychiatric care in cases with and without previous parasuicide based on demographic characteristics and psychiatric diagnoses

We analyzed the differences of previous psychiatric care (dependent variable; risk without psychiatric care = 1) between persons who committed suicide without a previous history of parasuicide**,** without previous suicidal warning (Table 4). For males, those least likely to have received psychiatric care before the suicide were the youngest (OR = 2.63) and the oldest (OR = 3.30), those with basic education, economically active, and diagnosed with substance related disorders. On the other hand the most likely male recipients of psychiatric care were suicide completers with academic education (OR = 0.48), invalidity beneficiaries (OR = 0.25), and those diagnosed with Schizophrenia (OR = 0.29). For females, those least likely to have received psychiatric care before the suicide were the

Table 5 Odds ratios (OR) and 95 percent confidence intervals (CI) for socio-economic and psychiatric predictors of the **absence of psychiatric care for cases with previous parasuicide only**, males (n = 304), females (n = 199), five models as a results from logistic regression modelling.

Characteristics (independent)	Dependent variable: **Absence of psychiatric care – Yes=1/No=0**				Dependent variable: **Absence of psychiatric care – Yes=1/No=0**			
	MALES				**FEMALES**			
	OR	95 % CI for OR		Sig.	OR	95 % CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Model 1: AGE GROUPS								
RC:45–54				0,22				0,04
15–24	2,18	0,80	5,93	0,13	1,78	0,27	11,71	0,55
25–34	1,65	0,62	4,42	0,32				
35–44	1,66	0,65	4,25	0,29				
55–64	2,26	0,75	6,81	0,15	0,34	0,03	3,43	0,36
65–74	**3,19**	1,07	9,51	**0,04**	1,38	0,26	7,33	0,71
75+	**3,76**	1,33	10,67	**0,01**	**7,11**	1,66	30,42	**0,01**
Model 2: MARITAL STATUS*								
RC: Single				0,13				0,94
Married	1,68	0,74	3,82	0,21	0,76	0,08	7,46	0,81
Divorced	0,80	0,27	2,34	0,68	0,42	0,02	7,79	0,56
Widowed	**4,53**	1,01	20,63	**0,05**	0,75	0,06	9,47	0,83
Model 3: EDUCATION LEVEL*								
RC: Basic				0,00				0,98
Vocational	**0,33**	**0,17**	**0,65**	**<0.01**	0,91	0,19	4,34	0,91
Academic	0,23	0,05	1,05	0,06				
Model 4: ECONOMIC ACTIVITY*								
RC: Economic active				0,04				0,71
Invalidity benefic.	0,13	0,03	**0,56**	**0,01**	0,40	0,03	4,69	0,47
Unemployed	1,15	0,51	2,57	0,74	2,12	0,17	26,51	0,56
Others	1,13	0,54	2,40	0,74	1,17	0,19	7,39	0,87
Model 5: PSYCHIATRIC DIAGNOSIS**+								
RC: Substance related disorders				0,67				
Schizophrenia	0,00	0,00	7,82	0,77				
Mood disorders	0,35	0,06	1,94	0,23				
Oth.psychiatric diag.	0,56	0,10	3,15	0,51				

RC- Reference category; OR -odds ratios; CI - confidence interval, bold when p <0,05.
* ORs adjusted for age; + Model 5 for females wasn´t calculated for small frequencies

oldest (75 and over; OR = 5.0), and the recipients of invalidity benefits (OR = 0.16).

Finally, we analyzed the differences of previous psychiatric care between persons who committed suicide with a prior history of parasuicide (Table 5). Those least likely to have received psychiatric care after parasuicide were the oldest males (OR = 3.76) and females (OR = 7.11), and widowed males (OR = 4.53).

Discussion

Differences between age groups

Suicide with history of parasuicide was committed most frequently by young people (aged 15–24) compared to the elderly (aged 75 and over). The finding in the Czech population is in accordance with results from other populations. The ratio of attempted to completed suicides decreases with

age. Langley and Bayatti[18] estimated the ratio of attempted to completed suicides in adolescence to be 200:1, while the estimated risk for the general population is from 8:1 to 33:1[19] and further decreases to approximately four attempts for each completed suicide in later life[20, 21].

The oldest men and women were also least likely to receive psychiatric care before their suicide death and those who committed suicide without a previous attempt preferred highly lethal methods - hanging and strangulation[2]. It supports an interpretation that the determination to die is greater among the older population[22, 23]. This is in accordance with some neurobiological studies that found that suicide in later life could be a result of disruption of neural pathways critical to the regulation of mood, cognition and behaviour[24–26]. In an Australian study, increased numbers of modern antidepressants such as Selective Serotonine Reuptake Inhibitors, SSRIs, prescribed mostly by general practitioners, seem to be the main reason for decreasing suicide rates in older persons[27].Even though the occurrence of depression in the older Czech population is probably underestimated and not adequately addressed by primary care physicians, the decrease in suicide rates among older population during the last decade[28] could result from the increased effort to educate primary care physicians on depression and their increasing willingness to prescribe SSRI antidepressants.. On the other hand, it is known that the treatment of painful conditions in old age is not optimal[29]. For one, the Czech tradition unfortunately underlines the risk of addiction to analgesics, and even in very painful conditions their prescribed dosages are low. In addition, many elderly believe that pain is inseparably linked with aging and complain less about their pain. Physicians pay more attention to the suffering of younger patients, partly as a result of the same cultural tradition. We suppose that the resulting suffering from pain could be another contributing – but preventable – factor in older people and should be kept in mind.

Psychological and community factors in mental health care among elderly

There are also social and psychological factors contributing to the higher rates of suicide among old people. Studies comparing the living situation of persons who committed suicide with census data conclude that elderly people who committed suicide were more likely to have lived alone than other older adults in the community[30]. More important than the extent of contacts with other people seems to be the ability and willingness of others to recognize the warning signs of suicidal ideation and to offer help. Communities with rich networks of interpersonal contacts on various levels represent more favourable social environment than anonymous city life. When families and neighbours play a less significant role in an elder's life, the role of physicians and other caring professionals becomes more important in the prevention of elderly suicide. Salvatore[31] stated "most elder suicide victims saw a doctor within a month of their deaths. Nearly 40 % did so within a week. Physicians may not recognize such patients as depressed." Since the Czech Republic has undergone a radical social transformation after 1989 toward to the western life style and values, education of professionals and volunteers working with the elderly is an important part of suicide prevention.

Gender differences

Women were more than twice as likely to have had a prior parasuicide before committing suicide than men. A Swiss suicide prevention study concluded that "women seek help, men die"[32]. There is evidence that male dispositions such as emotional inexpressiveness and reluctance to seek help, together with substance abuse, prevent men from searching for help[32]. In a Gotland study[33] of an educational program that taught GP's to better diagnose and treat depression, resulting rates of disability caused by depression and suicides decreased only for females. The number of male suicides was almost completely unaffected by the educational program. Authors believe that a possible explanation for this is that male depressive suicide victims are possibly not reached by the medical health care system.

This is probably applicable to our study as well. We found that economically active males 15–25 years old were least likely to receive psychiatric care before their suicide death.

Differences between the delivery of psychiatric care in cases with and without previous parasuicide

Careful assessment of those who have attempted suicide by a treating physician and subsequent follow-up is important, as the history of attempted suicide is a significant predictor of completed suicide[14, 34]. However, almost twenty five percent of suicide with parasuicide received no psychiatric care (21.7 % males, and 8.5 % females). Among them the oldest people of both genders and young men (age 15–24) and widowed men with basic education were least likely to receive psychiatric care. Similar to our findings, a large recent cohort study reported lower incidence of hospitalization for parasuicide in men than in women[15]. Another project aimed at approaching subjects who committed parasuicide but did not receive or accept a recommendation for care through the regular routines[16]. This study found that a third of those who did not receive or rejected follow-up initially agreed to follow-up when contacted a second time by the project team. These individuals were referred to appropriate authorities such as social welfare offices, family counselling, or psychosocial staff within psychiatry or primary care environments.

Limitations of the study

The study sample includes only those who committed suicide. The physicians recorded the demographic characteristics immediately after the death. Information about the prior history of suicide (psychiatric care and psychiatric diagnosis) was appended to the dataset only when the circumstance of suicide was totally explained. Suicides with unknown information about previous parasuicide (64.3 % out of 7 604) were excluded from our study sample. Since we only study those who successfully committed suicide and do not have access to a dataset of individuals with only parasuicide, we cannot make conclusions about what interventions reduce the later suicide rates of a population of parasuicide committers.

Conclusions and practical implications

One of the main findings of this study is the fact that suicide with history of parasuicide was committed most frequently by young people compared to the elderly. Women were more than twice as likely to have had a prior parasuicide before committing suicide. The oldest men and women were also least likely to receive psychiatric care before their suicide death. Importantly almost twenty five percent of suicide with parasuicide did not receive psychiatric care. The oldest people of both genders and young men and widowed men with basic education were least likely to receive psychiatric care after parasuicide.

We presume that intervention and prevention strategies should vary for each target group. The interventions for persons who committed suicide without previous parasuicide should aim at improving detection (i. e. a primary prevention strategy, such as reduction of the number of new cases through social intervention and early detection of mental disorders by primary care physicians).

Educational programs targeted to younger males, with an emphasis on identifying depressive signs as symptoms of a curable biological disorder and not as somehow a failure in their role as males (that is, depressive symptoms are inconsistent with the masculine stereotype) can help this population to seek help. While the campaigns aimed at primary care physicians' recognition and treatment of depression can be successful for older population groups, young people do not visit general practitioners very often. A successful campaign should target this population directly, using the potential positive role of the media in education, including the impact of media reporting on suicide and providing information on help available.

Health professionals should be better informed about age-specific symptoms of mood disorders, with hopelessness and suicidal ideation as particular risk factors of suicidal behaviour.

The interventions for persons who committed suicide with previous parasuicide should attempt to change the existing intervention strategy after suicidal acts (i. e. a secondary prevention strategy – more effective management of suicidal individuals, including vigorous treatment of their possible psychiatric disorders), with more careful assessment of elderly suicide attempters. Although the information on efficacy of treatments for parasuicide is limited, it is possible that an adequate-length in-patient treatment is important. However the acute benefit of hospitalization must be weighed against the long-term problem that suicidal behaviour may be more likely in the future[35], because suicidal ideation may be more likely to appear again in the future when a stressful event emerges. For high-risk individuals who refused voluntary further treatment but did not meet conditions for involuntary admission, post-crisis suicide prevention could be implemented. A systematic program of contact through non-demanding letters or phone calls, in which "contact was limited to expressing interest in the person's well-being" with persons who are at risk of suicide and who refuse to remain in the health care system appears to exert a significant preventive influence for at least two years[36].

However not all parasuicides result from mental illness. For the attempters without mental illness alternative care is warranted, with psychological crisis intervention in the first place. While self-help groups could possibly provide help to some such victims, there is not a tradition of self-help movements in the Czech Republic, so barriers to their utilization may be formidable. Despite the availability of telephone crisis lines and crisis intervention centres, the care of parasuicide victims is far from optimal.

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