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Suicide and suicide attempts in adolescents and young adults in Kraków in the years 2002-2003

Samobójstwa dokonane i próby samobójcze adolescentów i młodych dorosłych w Krakowie w latach 2002-2003

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The aim of the study was to present the increasingly alarming phenomenon of completed suicide in adolescents and young adults. The material analysed had been drawn from the records of post-mortem examinations conducted by the Institute of Forensic Medicine in Kraków. The analysis covered cases of completed suicide committed by 15-30 years old inhabitants of Kraków or its environs between the September 2002 and the September 2003. The group of subjects analysed comprised 47 individuals (9 females and 38 males); 57.4% of these had resided in a big city (Kraków), and the remaining 42.6% – in villages or little towns near Kraków. The data regarding cases of completed suicide were compared with the data regarding suicide attempts by self-intoxication in the period under consideration, extracted from the documentation of the Department of Clinical Toxicology in Kraków. The latter data encompassed 233 cases of suicide attempts by individuals ranging in age from 15 to 29 years, with females constituting 62.2% of these, and males – 37.8%. 65% of the attempters had been residents of Kraków. The analysis of the data from the Institute of Forensic Medicine revealed that nearly half of the suicide victims concerned had been treated for mental disorders, mainly depression and addictive disorders. The occurrence of suicide attempts prior to the fatal act was established in the case of 17 subjects (18.5%). Over half of the subjects (48.9%) committed suicide by hanging themselves, 17% – by falling from a height, 8.6% – by drowning, and 19.1% – by self-intoxication with medications. 77.2% of the subjects committed suicide at home. In the case of 23 subjects (48.9%), the post-mortem examination revealed the presence of alcohol. The analysis of the cases of suicide attempts by self-intoxication revealed a significant percentage of depressive disorders (26%) – of high occurrence especially in the case of

Celem pracy było przedstawienie coraz bardziej niepokojącego zjawiska samobójstw dokonanych oraz prób samobójczych wśród adolescentów i młodych dorosłych. Materiał zebrany w niniejszej pracy opierał się na archiwalnych danych zawartych w protokołach oględzin i sekcji zwłok, wykonanych w krakowskim Zakładzie Medycyny Sądowej. Analizowano przypadki samobójstw dokonanych osób w przedziale wiekowym od piętnastego do trzydziestego roku życia, które od września 2002 do września 2003 – tj. w trakcie roku szkolnego – dokonały samobójstwa na terenie Krakowa i okolic. W grupie tej znajdowało się 47 osób, w tym 9 kobiet i 38 mężczyzn. Miejscem zamieszkania 57,4% badanych było duże miasto (Kraków), pozostałe 42,6% było mieszkańcami podkrakowskich wsi i miasteczek.

Dla porównania, dane o samobójstwach dokonanych odniesiono do materiału na temat prób samobójczych przez samozatrucie pochodzącego z retrospektywnej analizy dokumentacji z Kliniki Toksykologii w Krakowie. Badaniami objęto 233 przypadków samobójstw usiłowanych u osób w wieku 15-29 lat hospitalizowanych z powodu ciężkich zatruc podjętych w celach samobójczych, z czego kobiety stanowiły 62,2% a mężczyźni 37,8%. Miejscem zamieszkania 65% badanych było miasto Kraków. Analiza samobójstw dokonanych w Zakładzie Medycyny Sądowej wykazała, że prawie połowa młodych osób, które dokonały samobójstwa była leczona z powodu zaburzeń psychicznych, głównie z powodu depresji i uzależnień. W badanej grupie wiekowej 17 osób (18,5%) dokonywało już uprzednio prób samobójczych. W ponad połowie przypadków samobójstwa dokonano przez powieszenie (48,9%), następnie upadek z wysokości (17%), utonięcie (8,6%) oraz zatrucie lekami (19,1%). W przeważającej większości (77,2%) samobójstwa dokonano w domu. W 23 przypadkach

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females, whereas alcohol addiction was the predominant diagnosis in the case of males. Furthermore, the majority of the attempters exhibited situational reactions or personality disorders.

Suicide attempts constitute an essential part of the issue of suicide in adolescents and young adults and require further research. What attracts notice, is a high percentage of males among suicide victims, and a high percentage of suicide victims with earlier suicide attempts. The results of the study should be taken into consideration in suicide prevention in groups especially endangered by the risk of completed suicide, such as adolescents and young adults after suicide attempts.

Introduction

According to the WHO statistics, suicide constitutes the thirteenth leading cause of death in the world population. In the year 2000, about 815 000 people committed suicide, which means that every 40 seconds somebody is taking his own life. In Europe about 43 000 deaths due to suicide are reported per year, mainly in middle-aged men, and 700 000 people per year make a suicide attempt [12].

Suicide and suicide attempts phenomenon in adolescents and young adults is increasingly alarming. In many nations, suicide attempts rate is the highest for adolescents and young adults, and is still rising – especially in young men. Considering suicide attempts, the situation is very similar – in some countries suicide rates for young men are higher than for older age groups [3,4].

In USA, suicide has been recognized as a serious public health problem requiring the creation of the National Strategy for Suicide Prevention (USA, Public Health Service, 1999), which should contain effective methods enabling the identification of people at risk [8].

This report emphasizes the increasing suicide rate for adolescents and young adults in 1952-1996, and the 14% increase in suicide rates for 15-19 year-old adolescents; it also mentions that, among children between the ages of 10 and 14, suicide rate increased by 100% between 1980 and 1996.

As the report of the American Agency of Health and Social Care Department states, over 13% of young Americans between the ages of 15 and 17 were considering committing suicide in 2000. Merely every third of them has obtained psychiatric or psychological care. In the last decade, the number of suicides in USA rose significantly and, at the moment, it is the second leading cause of death among high school students, third – between the ages of 15 and 24, and sixth – in the 5-14 year-olds [12].

The number of completed suicides rises every year also in Poland. In 2001, over 4 900 people took their own lives, whereas in 2002 the number of deaths by suicide reached 5 100. In the Institute of Forensic Medicine in Kraków, over 200 post mortem examinations of people who died by suicide are performed every year. According to the Head Police Headquarters, the suicides

(48,9%) w badaniu sekcyjnym stwierdzono obecność alkoholu. Wyniki dotyczące prób samobójczych potwierdziły również znaczny odsetek zaburzeń depresyjnych (26%), szczególnie u kobiet, natomiast u mężczyzn dominowało uzależnienie alkoholowe. W przeważającej większości stwierdzano również reakcje sytuacyjne i zaburzenia osobowości. Próby samobójcze stanowią istotną część problemu samobójstw młodzieży i młodych dorosłych i wymagają pogłębionej analizy tego zjawiska. Zwraca uwagę wysoki odsetek mężczyzn w grupie samobójstw dokonanych oraz wysoki odsetek osób, u których samobójstwo dokonane poprzedzone było próbami samobójczymi. Wyniki przedstawionych badań mogą posłużyć szeroko pojętej profilaktyce i prewencji samobójstw skierowanej do populacji szczególnego ryzyka, takich jak adolescenci i młodzi dorośli po próbach samobójczych.

Table I

Completed suicide – the gender structure of the analysed group of suicide victims.

Samobójstwa dokonane – liczebność grup wg płci.

Gender	Number of persons	
	N	%
Females	9	19.1
Males	38	80.9
Total	47	100

Table II

Completed suicide – the age structure of the analysed group of suicide victims.

Samobójstwa dokonane – struktura wiekowa.

Age range [years]	Females		Males		Total	
	N	%	N	%	N	%
< 15	-	-	3	7.9	3	6.4
15 - 19	1	11.1	6	15.8	7	14.9
20 - 24	6	66.7	14	36.8	20	42.6
25 - 30	2	22.2	15	39.6	17	36.1

under the age of 20 constitute about 6% of all the cases of suicides in our country, and 20-30 year-old suicides – about 15%. Nevertheless, in Poland, contrary to other countries, no coherent and complex program for preventing suicides has been developed [9,13].

The aim of the present study was to present the increasingly alarming phenomenon of attempted and completed suicides among adolescents and young adults. What is especially important, as the data from the literature of the subject indicate, at least 15% of suicide attempters, finally die a suicidal death [10].

Materials and methods

The material used to present the suicide phenomenon in adolescents and young adults has been drawn from the records of post-mortem examinations conducted by the Institute of Forensic Medicine in Kraków. The analysis covered cases of completed suicide by people between the ages of 12 and 30, who committed suicide between September 2002 and September 2003 – during the school year – in Kraków and its surroundings.

The data regarding cases of completed suicide were compared with the data regarding suicide attempts by self-intoxication in the period under consideration, extracted from the documentation of the Department of Clinical Toxicology in Kraków. The latter data encompassed 233 cases of suicide attempts by individuals ranging in age from 15 to 29 years, with females constituting 62.2% of these, and males – 37.8%. 65% of the attempters had been residents of Kraków.

Results

The group of suicide victims analyzed

comprised 47 individuals, 9 females (19.1%) and 38 males (80.9%). Generally, 30-year-old and younger suicide victims constitute 1/5 of the overall number of suicide victims. This trend is even more apparent in men, as suicides from the above age range constitute about 1 of all the male suicide victims (table I). The proportion of males to females in the group of suicides reached 4.2:1, and was higher than the average observed in the cross-sectional investigations into all completed suicides committed in the last years (average 3.3:1 in 1991-2000). According to the latest official figures released by the Press Department of the Head Police Headquarters, in the group of suicides aged 30 and younger in Poland the gender ratio in 2000 was 6.1:1 (males : females), and in 2001 – as high as 7.2:1. Age structure categorized by gender is presented in the table II. What attracts notice is the highest number of completed suicides among people between 20 and 24 years of age, both in the case of males and of females. Approximately 57.4% of the subjects resided in a big city (Kraków), and the remaining 42.6% lived in the villages or little towns near Kraków – table III.

Another issue is the methods chosen by the suicides to take their lives – table IV. In nearly half of the cases (48.9%), subjects committed suicide by hanging themselves, 19.1% – by self-intoxication, 17% by falling from a height and 8.6% by drowning themselves. Hanging was the most common method, which is typical of our country. The

Table III
Completed suicide – the place of residence of suicide victims.
Samobójstwa dokonane – miejsce zamieszkania.

Place of residence	Gender					
	Females		Males		Total	
	N	%	N	%	N	%
Kraków	5	55.5	22	57.9	27	57.4
Towns or villages near Kraków	4	44.5	16	42.1	20	42.6
Total	9	100	38	100	47	100

Table IV
Completed suicide – methods of committing suicide in the analysed group of suicide victims.
Samobójstwa dokonane – sposób dokonania samobójstwa.

Method	Gender					
	Females		Males		Total	
	N	%	N	%	N	%
Hanging	3	33.3	20	52.6	23	48.9
Self-intoxication	4	44.5	5	13.2	9	19.1
Jumping from a height	1	11.1	7	18.4	8	17.0
Drowning	1	11.1	3	7.9	4	8.6
Being run over by a car	-	-	2	5.3	2	4.3
Cuts or stab wounds	-	-	-	-	-	-
Gunshot	-	-	-	-	-	-
Other methods*	-	-	1	2.6	1	2.1
Total	9	100	38	100	47	100

* Others: hanging + self-electrocution

Table V
Completed suicide – the presence of mental disorders in suicide victims.
Samobójstwa dokonane – obecność zaburzeń psychicznych.

Mental disorders	Gender	
	Females	Males
Alcoholism	-	2
Depression, mood (affective) disorders	3	7
Schizophrenia or delusional disorders	-	1
Other disorders*	-	4
Non-classified disorders	1	-
Total	4	14

*Other disorders: Neurotic disorders and reactions to stress, organic disorders, drug addiction

Table VI
Completed suicide – the presence of ethanol in suicide victims.
Samobójstwa dokonane – obecność alkoholu etylowego.

Ethanol	Gender					
	Females		Males		Total	
	N	%	N	%	N	%
Exceeding or equal to 0.5 g/L	3	33.3	20	52.6	23	48.9
Lower than 0.5 g/L or not detected	5	55.6	18	47.4	23	48.9
Lack of data	1	1.1	-	-	1	2.2
Total	9	100	38	100	47	100

choice of the above method in the group analyzed, however, was less frequent than in the whole suicide population, where it accounts for 60% of all suicidal deaths. By contrast, suicide by self-intoxication was much more frequent in the group analyzed than in the general population of suicides, where, as a rule, it is responsible for the death of about 10% of all suicide victims. This trend was particularly apparent in the group of females, and the means for self-

intoxication included mostly medicaments – often a mixture of several types. The percentage of persons who had chosen death by a fall from a height was also higher than usually. What attracts notice, is the lack of wrist cutting, the lack of the use of firearms, and the minimal occurrence of the so called combined suicides – suicides completed by more than one method – in adolescents and young adults.

There is an undisputed strong connec-

tion between suicide and mental disorder. Information on mental diseases frequently occurred in medical referrals and in interviews with members of the family. On the basis of the data collected, it was stated that over 38% of the young people who had committed suicide had been treated for mental disorders, mainly for depression and alcohol or other substances addiction – table V.

Alcohol and its abuse undisputedly still remain in strong connection with suicide. In 23 cases (48.9%) post-mortem examination revealed the presence of alcohol on the 0.5 g/L level or higher – table VI. The correlation is similar to the one in general population, where males are overrepresented too, obviously.

In table VIII the age and gender of the patients hospitalised in the Department of Clinical Toxicology in Kraków in 2002-2003 are presented. There were 233 cases of suicide attempts by individuals ranging in age from 15 to 29 years, with females constituting 62.2% of these, and males – 37.8%. 65% of the attempters had been residents of Kraków. In the majority of cases medicines were used in the suicide attempts (table IX). In the majority of cases, the degree of intoxication was estimated as low or medium; nevertheless, on the admission to hospital, about 25% of the patients were in the state of a deep coma (of the third and fourth degree according to the Matthew's scale).

The analysis of cases of suicide attempts by self-intoxication in the group revealed a significant percentage of depressive disorders (26%) - of high occurrence especially in the case of females, whereas alcohol addiction was the predominant diagnosis in the case of males. Furthermore, the majority of the attempters exhibited situational reactions or personality disorders. About 10% of the attempters had had prior suicide attempts. In a considerable number of cases, interpersonal problems and family conflicts (connected, for example, with alcoholism, unemployment, or the disintegration of family ties) were detected in the background.

The analysis of the cases of completed suicide and suicide attempts taking into consideration seasons of the year did not bring any essential results; furthermore, there was no connection between completed suicide or suicide attempts and the stress resulting from school year (tables VII, X).

Discussion

In the world literature of the subject, depression, substance abuse, history of depression and prior suicide attempts are still the most important suicide risk factors among adolescents and young adults [5]. The lack of peers' acceptance, the history of physical abuse, stressful life events and a dysfunctional family are of great importance too. The development of neurobiological research resulted in meaningful findings concerning heteroaggressive and autoaggressive behaviours [1].

The European research into suicide among young people revealed that as much as 90% of suicide victims suffered from some mental disease. Depression and al-

Table VII
Completed suicide – the month of death of the suicide victims analysed.
Samobójstwa dokonane – miesiąc popełnienia samobójstwa.

Month	Gender					
	Females		Males		Total	
	N	%	N	%	N	%
September - November	2	22.2	8	21.1	10	21.3
December - February	3	33.4	10	26.3	13	27.7
March - May	2	22.2	12	31.5	14	29.7
June - July	2	22.2	8	21.1	10	21.3
Total	9	100	38	100	47	100

Table VIII
The age and gender structure of the hospitalized patients after a suicide attempts.
Płeć i wiek pacjentów hospitalizowanych z powodu prób samobójczych.

Age [years]	Males	Females	Total
≤ 19	30	66	96
20 - 29	58	79	137
Total	88 (37.8%)	145 (62.2%)	233 (100%)

Table IX
A type of substance used in the suicide attempt in the analysed group of hospitalized patients.
Próby samobójcze – czynnik toksyczny będący przyczyną zażycia hospitalizowanych pacjentów.

Toxic agent	Male	Female	Total
phenothiazines	7	5	12
other neuroleptics	3	2	5
anti-depressants	6	5	11
anxiolytics	0	2	2
barbiturates	0	1	1
benzodiazepines	6	14	20
antiepileptic medicines	6	12	18
non-steroid anti-inflammatory medicines	7	23	30
narcotic analgesics	0	1	1
respiratory system medicines	2	8	10
cardiovascular medicines	0	6	6
other medicines	2	7	9
mixed-type medicines	20	43	63
medicines + ethanol	23	12	35
drugs of abuse	1	0	1
gasses	1	0	1
pesticides	1	1	2
hydrocarbons	2	0	2
heavy metals	0	3	3
ethylene glycol	1	0	1
Total	88	145	233

fective disorders (in the case of about 1/2 of males and 2/3 of females) were the most common ones. Information on mental diseases frequently occurred in medical referrals and in interviews with members of the family. On the basis of the data collected, it was stated that over 38% of the young people who had committed suicide had been treated for mental disorders, mainly for depression and alcohol or other substances addiction. In view of these results, it should be borne in mind that suicide risk among

young people suffering from affective disorders is higher than in the remaining part of population, and this type of disorders is very often unidentified or misdiagnosed in the case of adolescents. A lot of difficulties in prevention is caused by the fact that young people more often than adults take their own lives during the first episode of depression. The social factors are also of great importance here. The first alarming symptoms might be overlooked by parents and even by physicians. The researchers suggest that

suicide risk in a unipolar and bipolar affective disorder is similar. In spite of some obvious limitations and difficulties, it was found that in the case of 8 subjects (17%) the fatal suicidal act had been preceded by one or more suicide attempts [12].

The identification of risk factors is extremely important for the purpose of suicide prevention. Longitudinal studies carried out in USA and Denmark investigated suicide risk factors for adolescents and young adults [8,2]. The strategy of diagnosing the risk of suicidal behaviors among adolescents was developed and presented there. The assessment involved the identification of a complex constellation of various factors such as: demographic factors, suicidal behaviors, individual psychopathology, interpersonal problems, family conflicts, psychopathology in the family, access to means and methods of suicide, suicides in the family, relatives and friends, and protective factors. The leading motives of suicidal behaviors among adolescents and young adults included mental disorders, family disagreements, love disappointments and problems at school [2].

An American researcher, David Lester from the Center for the Study of Suicide emphasizes the paradox of suicide risk in adolescents in our times. In his publications, he suggests that the increase in suicide rates for the young hasn't been observed in every country, neither was it equal for both genders. Defending Henry and Short's theory, Lester claims that, in the countries providing higher quality of life for its residents, suicide rates are higher while homicide rates are lower. Therefore, paradoxically, high suicide rate might be a consequence of an increasing quality of life. Furthermore, as Shaffer pointed out in his study, there is more people of high intelligence (IQ>130) among young suicides than it might be expected [6,7].

As it follows from the American studies, only 36% of the adolescents who were identified as endangered by the risk of suicide received assistance. Less than 1/5 were treated privately by a psychiatrist or a psychologist; others were given support by a school psychologist or a teacher (SAHMSA report) [11].

There is a common agreement that the early identification of the risk of suicidal behaviors and the provision of professional psychiatric - psychological assistance constitute the most effective method of preventing attempted and completed suicide.

Conclusion

1. Suicide attempts constitute an essential part of the issue of suicide in adolescents and young adults and require further research.

2. What attracts notice, is a high percentage of males among suicide victims, and a high percentage of suicide victims with earlier suicide attempts.

3. The results of the study should be taken into consideration in suicide prevention in groups especially endangered by the risk of completed suicide, such as adolescents and young adults after suicide attempts.

Table X

The frequency of a suicide attempts in consecutive months of year, in relation to gender and age of the hospitalized patients group.

Częstość prób samobójczych w kolejnych miesiącach, z uwzględnieniem płci i grup wiekowych hospitalizowanych pacjentów.

Month of the year	Males			Females			Whole group		
	≤ 19	20-29	total	≤ 19	20-29	total	≤ 19	20-29	total
September	4	6	10	6	4	10	10	10	20
October	3	4	7	5	9	14	8	13	21
November	5	3	8	5	14	19	10	17	27
December	3	3	6	12	6	18	15	9	24
January	2	4	6	7	9	16	9	13	22
February	2	3	5	1	6	7	3	9	12
March	2	5	7	4	5	9	6	10	16
April		6	6	8	9	17	8	15	23
May	3	5	8	8	6	14	11	11	22
June		6	6	4	4	8	4	10	14
July	2	6	8	4	6	10	6	12	18
August	4	7	11	2	1	3	6	8	14
Total	30	58	88	66	79	145	96	137	233

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