

# Analysis of suicidal attempts based on mental institution patients

## Analiza prób suicydalnych na przykładzie pacjentów szpitala psychiatrycznego

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**Cel pracy.** Poznanie złożonych czynników i okoliczności sprzyjających podejmowaniu prób samobójczych na tle uwarunkowań socjodemograficznych i sytuacji zdrowotnej.

**Materiał i metoda.** Badania przeprowadzono metodą analizy dokumentacji medycznej pacjentów hospitalizowanych w 2008 r. w jednym ze szpitali północnej Polski po podjęciu próby samobójczej. Analizie poddano dokumentację 100 dorosłych pacjentów ze średnią wieku 41,5 lat. W celu przeprowadzenia analizy skonstruowano własne narzędzie badawcze zawierające metryczkę oraz 20 różnych analizowanych kwestii dotyczących okoliczności związanych z próbą samobójczą.

**Wyniki.** Większość pacjentów, podejmujących wcześniej próbę samobójczą, była niżej wykształcona i znajdowała się w niekorzystnych warunkach materialnych. Ponad 3/4 badanych leczyło się z powodu zaburzeń psychicznych (depresja 47,7%, choroba alkoholowa 21,1%, przyjmowanie środków psychoaktywnych 11%, schizofrenia 10%). Trudna sytuacja finansowa wykazywała istotny związek z wielokrotnym podejmowaniem prób samobójczych, z nałogowym piciem alkoholu ( $r=0,210124$ ;  $0<0,05$ ) oraz z przyjmowaniem narkotyków ( $r=0,203952$ ;  $p<0,05$ ). Wśród metod wcześniej podejmowanych prób samobójczych na czołowym miejscu było zatrucie tabletkami 49%, na kolejnym – przez powieszenie 23%, podcięcie żył 12%, rzucanie się pod pociąg lub tramwaj 6%, skoki z wysokości 5%, zatrucie gazem – 3%, skok z autobusu – 1% i utopienie –1%. Próbę samobójczą podjęto jeden raz 43% hospitalizowanych pacjentów. Główną przyczyną nieskuteczności próby samobójczej była interwencja rodziny (38,8%). Tworzenie dokładnego planu działania przed zamachem na własne życie, charakteryzowało osoby starsze wiekiem.

**Wnioski.** Przeważająca większość chorych podejmujących próbę samobójczą cierpiała z powodu choroby psychicznej, najczęściej depresji. Na zachowania suicydalne istotny wpływ miała sytuacja materialna, wiek oraz płeć.

**Słowa kluczowe:** próby samobójcze, czynniki socjodemograficzne, sytuacja zdrowotna, szpital psychiatryczny

**Aim.** To recognize factors and various circumstances leading to suicidal attempts with relation to socio-demographic factors and health condition.

**Material & method.** The study conducted by the medical record analysis method was performed on the records of patients hospitalized due to a suicidal attempt, in a hospital in Northern Poland. The analysis was performed on the files of 100 adults (median age of 41.5 years), using a self-prepared tool for medical record analysis, which contained demographics and 20 questions concerning the analyzed issues connected with a suicidal attempt.

**Results.** Most of the patients, with a history of a suicidal attempt, had low educational attainment and poor material conditions. Over 75% were treated due to mental disorders (depression 47.7%, alcoholism 21.1%, taking psychoactive drugs 11%, and schizophrenia 10%). Poor material conditions were significantly related to multiple suicide attempts ( $r=0.196975$ ;  $p<0.05$ ), and heavy drinking ( $r=0.210124$ ;  $0<0.05$ ) as well as drug addiction ( $r=0.203952$ ;  $p<0.05$ ). Among the methods of earlier suicide attempts the most significant was medication poisoning 49%, hanging 23%, cutting veins 12%, jumping in front of oncoming train or tram 6%, falls from heights 5%, gas poisoning 3%, jumping off the bus 1% and drowning 1%. 43% of patients revealed one attempt to commit suicide. The main reason for an unsuccessful attempt was family intervention (38.5%). Careful planning before the attempt was characteristic of elder patients.

**Conclusions.** Most of the patients who attempted suicide suffered from mental illnesses, mostly depression. The factors which influenced suicidal behaviors were financial situation, age and gender.

**Key words:** suicidal attempts, socio-demographic factors, health condition, mental institution

## Introduction

Suicide poses a serious socio-medical problem. It is conditioned by various factors, and should undergo a multi-level analysis. Suicide itself is also conditioned by personality and cultural factors. There are various reasons, which may lead to suicide. However, not every suicide is preceded by a psychological crisis. This makes the population who attempts suicide heterogeneous [1].

Specialists warn about the recent alarming increase in scale of this social phenomenon [2-4]. According to Polewka et al. [2], in the elderly population, especially over 75 years of age the ratio of suicide attempts is the highest among other age groups. Humans nowadays are influenced by multitude of various stimuli, which generally make them helpless. Such stimuli may initiate suicidal tendencies. The background of such behaviors is found in human psyche, which in most cases is not highly immune to stress. Character features, which predispose to suicidal behaviors involve: low self-esteem, impulsiveness, introversion, neuroticism, and passive-dependent personality [3]. German researchers report that there is a relationship between character features, such as anger, aggression and impulsiveness and suicidal tendencies [5]. Individuals who have attempted to commit suicide, according to Przybyłowska, are characterized by "ostentatious/dramatic" personality [6]. Such individuals are characterized by inappropriately high self-esteem with concurrent problems with controlling emotions, suspiciousness, social alienation, fixed and dynamic conflict in making contacts as well as keeping interpersonal relations [6]. Przybyłowska claims that mostly the youngest family members tend to manifest suicidal behaviors [6].

In literature, suicidal attempt is defined as an action considered by a person, and committed without participation of other people, which does not end up in a tragic way. Before committing suicide, the individual often has suicidal thoughts, which are mainly consideration of various circumstances leading to the suicide itself. Suicidal behaviors usually lead to the risk of losing life [4].

In terms of the suicide attempt epidemiology in Poland the suicide rate is on the average level compared with other countries (14.3 in 100.000 citizens) [7]. In Poland this problem occurs more often in males than females [7]. Reports from other countries are not that explicit. Males choose more dependable i.e. drastic ways of committing suicide [7]. More drastic methods of suicide are also chosen by people with high scores on anger scale [5]. High risk groups for suicidal behaviors are the elderly, who experience lots of losses, and adolescents [6]. Hence, in case of these groups it is advised to increase watchfulness. The most important psycho-social risk factors among individuals addicted

to alcohol include: low coherence level, experiencing multiple dramatic events in life, concentration on negative emotions, tendency to divert attention from stress, problems with interpersonal relations, limited support, low social activity, and often suicide of a close relative [8]. A suicidal attempt or suicidal death in a family history poses a serious suicidal risk [9-13]. A suicidal attempt is also common in people addicted to psychoactive substances [9-11, 14]. Suicidal attempt is viewed as a destructive way of coping with stress. The desire to take one's life away is usually a method to escape from awareness of difficult situation, perceived as impossible to solve.

## Aim

To recognize factors and various circumstances leading to suicidal attempts with relation to socio-demographic factors and health condition.

## Material and Method

The study was conducted in 2010, and based on the medical records collected by one of the mental institutions in Northern Poland. The method of the study was the analysis of medical records collected from adult patients hospitalized due to a suicidal attempt at a mental institution (female and male ward) in 2008. A thorough analysis included medical records of 100 patients, 50 consecutively admitted women and 50 consecutively admitted men, aged 17-76 years. The analysis was performed with a self-prepared tool for medical record analysis, which contained demographics as well as 20 various questions concerning analyzed issues connected with a suicide attempt. Except for demographics (age, gender, marital status, education, material conditions, professional activity and dwelling) it concerned important aspects reflecting suicidal attempts, and general health condition of the patient. Health conditions included: addictions, somatic and mental diseases in the patient and their family, previous treatment and hospital admissions due to mental disorders and other diseases, number of suicide attempts, time frame from the last attempt, type and number of previous suicide attempts, motives, planning, suicidal thoughts, and other additional circumstances leading to a suicide attempt (intoxicants taken, season, etc.).

The medical record analysis was conducted between March, 15 and end of May 2010. The study was conducted with the consent of the Bioethics Committee of Collegium Medicum, Nicolaus Copernicus University in Bydgoszcz. The statistical analysis was conducted with the use of commonly used statistical tests in Statistica 10.0 software. The adopted significance level was  $p=0.05$ .

## Results

The mean age of the patients was  $41.5 \pm 14.45$  years. Among 100 medical records of the patients admitted to the hospital in 2008 (50 females and 50 males), the largest group constituted patients aged 30 years (29%), a slightly smaller group (27%) – of patients aged 41-50 years, every fifth patient (20%) was aged 51-60 years, 15% were aged 31-40 years, and the smallest group (9%) were the elderly. In the studied group ( $n=100$ ) most (47%) patients were married, 36% were single (never married), 10% divorced and 7% widowed. Most patients (65%) lived in towns and cities. Most of the patients had very poor educational background: primary – 39%, or vocational – 29%. There were 25% of the patients with secondary education, and only 7% with higher educational background. Large group of patients got their monthly benefits from annuity (31%) or were unemployed (30%), there were only 16% of professionally active individuals, and regarding the rest of the patients the data was not very precise. Over 3/4 of the patients (78%) lived with their families, 18% alone, and remaining 4% were homeless. Most of the studied individuals had unfavorable financial situation (76%). 23% reported their material status as good, while only 1% of these admitted after a suicide attempt they were in a very good material situation.

Further analysis concerned the attitude towards addictions. In a group of 100 people ( $n=100$ ), over a half (57%) smoked cigarettes. In this group 39% smoked less than a packet a day, 17% up to two packets, and one over 2 packets a day. The smokers were in a difficult material situation ( $r=0.273880$ ;  $p<0.05$ ). Most of the subjects had never taken any drugs (90%). The rest either had tried them before (5%) or were addicted (5%). The patients were in a difficult financial situation as well and the correlation was significant ( $p<0.05$ ), it was low level, however observable  $r=0.203952$ . Almost every third person (29%) was addicted to alcohol, 60% declared occasional use, and 11% did not drink at all. Heavy drinkers were mostly in unfavorable material condition (24%). There was a low level, however observable, significant correlation ( $r=0.210124$ ;  $p<0.05$ ).

Among somatic diseases in patients' families, the most frequent were heart diseases (39.3%) and cerebral circulation diseases (22.6%). Among mental diseases, the predominant was alcoholism (38%), depression (29%), and schizophrenia (7%). Every fourth patient, after a suicide attempt, experienced trauma to his head connected with the loss of consciousness. Among the patients hospitalized due to a suicide attempt, most were treated due to arterial hypertension (23.7%), 15.8% suffered from rheumatic disease, 13.2% from ischemic heart disease, 9.2% epilepsy, 6.6% hyperthyroidism, and the same proportion from diabetes, 3.9% stroke, 2.6% bronchial asthma, and the rest suffered

from other diseases. Just before a suicide attempt, 80% of the patients were treated due to mental disorders, mostly depression (47.7%), alcohol abuse (21.1%) and psychoactive drugs abuse (11.0%), and schizophrenia (10.1%). In other cases these were other diseases. Over 3/4 of the patients (79.0%) were treated in a mental outpatient clinic or were previously hospitalized in a mental institution. Most of the patients had a history of a single suicide attempt (43%), 25% – two, 21% – three, 4% – four, and 7% tried to commit suicide five times and more. The median time frame from the last attempt was 17 months. The patients who tried to take away their life multiple times on the average made suicidal attempts every 8 months ( $r=-0.461215$ ;  $p<0.05$ ), however, with time, the intervals between the attempts tended to get shorter.

The analysis results showed a significant relationship between the number of suicidal attempts and material condition ( $r=0.196975$ ;  $p<0.05$ ). The patients in difficult material conditions tried to commit suicide more than once.

Among various methods of earlier suicide attempts the most significant was medication poisoning 49%, then hanging 23%, cutting veins 12%, jumping in front of oncoming train or tram 6%, falls from heights 5%, gas poisoning 3%, jumping off the bus 1% and drowning 1%.

In the course of a thorough analysis of suicidal attempts of the studied subjects, a significant differentiation at the level of  $p<0.001$  in the applied method was found for different genders. In women the most predominant was medication poisoning (72%), whereas hanging constituted a very low proportion (6%). In men the most popular method was hanging (34%), medication poisoning (26%), and vein cutting (20%). In men falls from heights were at the level of 8%, and jumping in front of oncoming train or tram constituted 6% of all suicidal attempts. The most typical cause for a suicidal attempt was mental disease (31.5%). It was followed by family problems constituting 15.7%, difficult material condition (7.9%), love life problems (6.7%), permanent disability (5.1%), chronic diseases (4.5%), death of a close relative (2.8%), sudden loss of the source of income (2.2%), and 23.6% of previously admitted patients reported other causes and motives. Among other causes 7.9% pointed to loneliness, and 6.2% to alcoholism. For 1.7% of the patients the reason was alcohol addiction or drugs and for 1.1% hallucinations. There were also single reports of other causes such as: alcoholism of the spouse, lack of support, loans, paternal harassment, going to brothel, fatality, problems at work, rape, hearing voices, sentence and prison. Almost every second (49%) admitted patient was planning a suicidal attempt. The majority of the studied had suicidal thoughts, and for 27% of the patients the

action was the result of a strong stimulus. Every second patient before attempting suicide had taken intoxicants or had drunk alcohol. Large proportion of patients (43%) had not been hospitalized as a result of previous attempts. The hospitalization time frame after a suicidal attempt in 46% of cases was shorter than 2 weeks, and a similar proportion was recorded for 48% cases, when patients stayed in hospital for 3 to 4 weeks. In 6% of cases the hospitalization lasted more than a month. The main reason for unsuccessful attempts was family intervention (38.8%), followed by too low drug intake (17.5%), police (9.7%), personal intervention (7.8%) or help from neighbors (6.8%), friends (5.8%), passers-by (3.9%), calling children (1.9%), and in single cases other reasons.

Suicidal attempts were the least frequent in August and December, and the most frequent in February, October, and November.

The older the person the more often there was a careful plan of suicidal attempt created ( $r=-0.202216$ ;  $p<0.05$ ), and the more often suicidal thoughts occurred ( $r=-0.438927$ ;  $p<0.001$ ). Whereas younger age was significantly related to actions caused by a stimulus ( $r=0.242730$ ;  $p<0.05$ ). The Kruskal-Wallis test showed a significant influence of mental disease in family history on suicidal thoughts in person committing suicide ( $H=9.580131$ ,  $df=3$ ,  $n=100$ ,  $p=0.0481$ ). The most intense suicidal thoughts were present in persons suffering from depression (86.2%) and schizophrenia (85.7%). Most schizophrenia patients who attempted to commit suicide were not under influence of any psychoactive drugs. Almost half of the patients (44.7%) who suffered from alcoholism attempted to commit suicide as a result of a sudden stimulus.

There were also some significant correlations observed, which concerned suicidal behavior and professional activity (Table I). The less professionally active the person was, the more often suicidal thoughts occurred before attempting suicide ( $r=-0.0292208$ ;  $p<0.01$ ). Conversely, the more professionally active the person was, the more often the suicidal attempt was committed as a result of a sudden stimulus ( $r=0.283603$ ;  $p<0.01$ ). Professionally inactive individuals significantly more often decided to commit suicide by medication poisoning ( $r=-0.341515$ ;  $p<0.001$ ). Among socio-demographic factors, marital status, dwelling and educational background did not differentiate the modes of suicidal behaviors raised in the study tool.

## Discussion

Our study led us to a few important observations. The group of mental patients included in the study – medical record analysis ( $n=100$ ) hospitalized after a suicidal attempt, consisted of individuals of low social status. Most of them had to cope with difficult material conditions and had relatively low educational

Table I. Correlations between occupational activity and suicidal behavior

Variable	N	R	P level
Number of suicidal attempts	100	0.091793	0.363714
Method of previous suicidal attempts	100	-0.341515	0.000506
Reason for suicidal attempt	100	-0.052527	0.603741
Careful planning before suicidal attempt	100	-0.001820	0.985663
Occurrence of suicidal thoughts preceding the attempt	100	-0.292208	0.003178
Suicidal attempt caused by sudden stimulus	100	0.283603	0.004245

background. Suicidal attempts – in a view of some authors – relate to all the social groups. However, as some researchers claim, they apply to the extremes (high social group or low social group), which seems to overlap with the results of medical record analysis [3, 7]. Difficult material conditions of the subjects analyzed after a suicide attempts showed connection between multiple suicidal attempts and heavy drinking and drug addiction. Thus, in order to reduce the number of suicide attempts, poverty should be prevented, domestic violence reduced and therapies in physical and mental diseases should be improved [15]. Earlier suicidal attempts presented in the records intensify the risk of suicide [8, 12, 13, 16, 17]. For this reason each suicidal behavior should cause increased alertness.

This study shows that most of potential suicides suffer from mental illnesses. The proportion in the study was 80%, in which the most common problem was depression (47.7%). Depression has been proved to be a predictor of suicide attempts [12, 14, 18, 19, 20]. According to other authors the occurrence of suicidal attempts in elderly individuals in closely connected with depression [21, 22]. In elderly individuals the important risk factor for depression and suicidal attempt is psycho-social conditioning (isolation, widowhood, and low physical efficiency) [2]. Some researchers additionally point at lack of social support, financial problems, slowing of thinking and a characteristic sense of hopelessness [4]. The risk of depressive manifestations is additionally increased by the presence of various chronic illnesses connected with pain. Moreover, Swedish studies prove that the HPA (*hypothalamus-pituitary-adrenals*) axis hyperactivity is related to mood disorders in the elderly, which might induce suicide behaviors [23]. It is also pointed out that suicidal attempts are connected with the heart and circulatory system diseases [21, 22, 24]. In our studies, almost every fourth patient suffered from arterial hypertension, and circulatory system diseases were dominant in 40% of the patients' families. The Polish literature proves that males are a higher risk group for suicidal attempts [7]. According to some sources, elderly males commit such actions even four times more often than women [4]. For this reason depression in old age should be treated very seriously. Some researchers alert that depression in the elderly is

not always well diagnosed, and warn against connecting the lowered mood with the natural human aging process [16, 25, 26]. The diagnosis of depression in the elderly may cause some problems, as some somatic manifestations typical of this period of life may serve as a mask for depression [27]. As Jarema claims, 15% of depressive patients commit suicide [28]. Schizophrenia patients are also considered a high risk group for suicide attempts [14, 17]. Apart from depression and schizophrenia, alcoholism is another important risk factor for suicidal attempts [2, 9, 10, 14]. Suicides in individuals addicted to alcohol are significantly more common than in the general population [7, 8]. In the study, alcoholism constituted 21.1% of all existing cases of mental illness. In turn, the analyzed study records in Polewka et al. (n=137) show that 13.2% of the patients with mental diseases were addicted to alcohol [22]. Alcohol is the means of deadening consciousness, and thus making such a decision easier. According to WHO (*World Health Organization*), almost every fourth person (22%) committing suicide had drunk before the actual suicide was committed.

The studies showed that unlike young persons, elderly individuals are involved in careful planning of the act. They also more often try to keep their intentions secret rather than signalize them as younger people do [2]. Also, the elderly more often commit suicide than young people, which is clearly stated in other publications [2].

This should be a warning signal. In adolescents a suicide attempt should be seen as a call for attention, attempt to communicate with persons they care about or as vengeance [3].

Sumiła and Sulska in their studies report that almost half of the patients hospitalized after suicidal attempt with the mean age of 19 years abused psychoactive drugs [3]. Most of them manifested difficulties in coping with problems in much earlier time, and were deliberately self-harmed in the past. In this age group (n=43) the main reason for a suicidal attempt were conflicts at home and difficulties at school [3]. According to the studies, there is a significant correlation between self-imposed injuries and suicide attempts [11]. Norwegian studies (n=2924) prove that earlier history of suicide attempts, young age, early sexual initiation (below 15 years of age) and homosexuality might be predictors of a suicide attempt and self-imposed injuries [13]. A study conducted in Romania on a group of 2908 high school students showed that suicidal attempts were related to the sense of hopelessness, poor performance at school, sexual abuse, physical aggression of fathers, bad relations with parents and being a female [29]. Also a romantic disappointment may lead to a suicide attempt in adolescents [3]. Not being happy with physical appearance was found to be a cause of suicide attempts among American teenagers [19].

Many studies report that opiate abusers are also at risk of suicide attempts [9, 10, 11]. Most cocaine/heroin addicts are women [9, 10]. Most of them suffered from trauma during childhood, had a family history of suicide behaviors and were alcoholics. Also prisoners were found to be a risk group for a suicide attempt [18, 20].

Analyzing Polewka's reports we have come to a conclusion that since 1940's the most common suicide type has been hanging, and it is typical of males. Until the WWII the dominant types of suicides were poisoning and suicides committed with fire arms [24]. The studies show significant differences in types of suicides related to gender. The most common type of suicide for women is medication poisoning (72%), whereas the most common for men is hanging (34%), which is directly connected with the findings of Florkowski et al. [7].

However, the analysis of medical records of mentally ill patients conducted by Bobińska et al. did not show a statistically significant relation between gender and the method of suicidal attempt [30]. The most common method used by these patients, both male and female, was a self-inflicted injury [30].

In the study group, the most of the suicides took place in February, some less frequent attempts were noted in October and November, and the fewest suicide attempts occurred in August and December. As far as the season is concerned the most suicide attempts took place in autumn, and least in the summertime, however this difference here was not statistically significant.

Finally, we have to bear in mind that every suicidal attempt is a huge tragedy both for the person who makes it and their closest relatives.

## Conclusions

1. Most of the patients (80%) hospitalized due to a suicidal attempt were treated for mental diseases, most common illnesses were depression, alcoholism, and schizophrenia.
2. Unfavorable material conditions showed a significant connection with making multiple suicide attempts and heavy drinking and drug addiction.
3. The most common method of committing suicide in the study group was medication poisoning.
4. The method of the suicide attempt differed in relation to gender. Women most commonly used increased doses of pills, men, in a more drastic way, hanged themselves.
5. The older the individual is, the more carefully the suicide is planned. In younger age suicidal attempts result mainly from a sudden stimulus.
6. Suicidal attempts were most common in February, October and November.

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