SUICIDAL IDEATION IN A GROUP OF ADOLESCENTS WITH PSYCHIATRIC PATHOLOGY

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ABSTRACT

Complete suicidal is very rare under the age of 12, but it increases with age, the highest suicidal rate occurring in elderly people. The most common psychiatric disorders associated with suicide are mood disorders (depression), bipolar disorder, schizophrenia, posttraumatic stress disorder, and substance use.

This study aims to confirm or contradict earlier assumptions stating that suicide is associated with people diagnosed with a psychiatric disorder or a neurological condition.

We conducted an analytical observational case-control study that included 80 adolescents aged 12 to 18, 40 of which were in the control group and 40 in the group of cases.

Statistical data obtained from the study is consistent with results of previous studies, that individuals who have a diagnosis of psychiatric or neurological disorder present a higher risk of suicide compared to neurotypical people.

INTRODUCTION

Suicide is very rare under the age of 12, but it increases with age, the highest suicidal rate occurring in elderly people. However, suicide attempts and para-suicidal behavior are encountered with a frequency 100 times higher during teenage and young adult years. Studies have shown that in a community, at least 10-20% of teens have suicidal thoughts in a year, of which only a small proportion come to receive specialized support [1].

In 2009, in the USA, suicide was ranked as the 10th cause of death in the general population and the 2nd cause of death in those aged 15-29 years [2].

The rate of suicide attempts and deaths by suicide varies by sex, age, ethnicity and cultural background [3].

Cultural differences might be linked to availability of methods (eg. Pesticide poisoning in developing countries, guns use in the South-West of the United States), or to the presence of specific cultural syndromes (eg. Ataques de nervios, which in some Latin communities can determine a behaviour similar to a suicide attempt or it can facilitate a suicide attempt) [3].

Men perpetrate suicide more frequently than women irrespective of the age, which many believe is related to their higher tendency towards violent behaviour (as proven by the methods used such as hanging, shooting, stabbing, electric shock). Women, on the other hand, resort to methods such
as poisoning, most often with painkillers or antidepressants. Despite the fact that men record more deaths by suicide, women have a higher lifetime prevalence for suicide attempts [1], [4].

Military personnel and veterans are also at increased risk for suicide. In 2007, the Department of Veteran Affairs reported a suicide rate of about 57 per 100,000 veterans among 18-29 years old men. This situation is worrying because it turns out that the rate is four times higher than among young nonveterans [2].

A longitudinal study carried out in England revealed a strong correlation between suicide attempts in adolescence and a number of adverse effects occurring in adult life, such as the risk of psychiatric disorders, substance abuse, subsequent suicide attempts [4].

Studies conducted on twins and adopted children have shown that both genetic and environmental factors contribute to an increase in suicide rate5. Although psychiatric disorders have a family feature, inheritance of suicidal behavior appears to be independent of that of mental illnesses. For example, among parents with affective disorder, those who have attempted suicide have a 6 times higher risk of having a child with a similar behavior, as opposed to those without any attempts [6].

Suicidal behavior exhibited before the age of 25 has a definite genetic component and the existence of a greater number of affected family members is associated with an earlier age of occurrence of the suicidal act. Moreover, a correlation has been found between the suicidal tendencies in adopted children and their biological relatives but not adoptive families, suggesting that transmission is more closely linked to family genetics than to imitation [7].

Imaging and postmortem studies conducted on patients who have attempted or committed suicide have identified alterations in the number and function of serotonin receptors in some regions of the prefrontal cortex which are involved in the modulation of emotions and behavioral inhibition. These regional alterations correspond to some neurocognitive deficits in executive functioning, working memory, proper risk assessment and problem solving [7], [8].

The most common psychiatric disorders associated with suicide are mood disorders (depression), bipolar disorder, schizophrenia, posttraumatic stress, and substance use [2].

Psychological characteristics associated with suicidal behavior include feelings of worthlessness, dichotomous thinking, negative views about the world and self or distorted beliefs that certain events are caused by uncontrollable forces [8], [9].

Quiet, reserved children who find it difficult to adapt to new situations are more likely to develop emotional disorders. They develop a catastrophic thinking and have a negative perception of the future and feel guilty about the unexpected changes in their lives, which facilitates depression. These cognitive distortions are complemented by reduced flexibility in finding solutions. They are unable to see beyond their own problems, anticipate predominantly negative consequences and do not have the ability to view another resolution [5], [9].

Feelings of helplessness, hopelessness and self-doubt dominate teens with suicidal ideation, and these features possibly coming from the family model or being influenced by bad experiences [5], [8], [9].

Adverse life events and post-infectious states (viral, microbial) are considered triggers that predispose an adolescent to depression [5].

Suicidal gestures in adolescence are usually impulsive responses to stressful situations and not planned actions as it happens in adulthood. The most common precipitating factor is the disciplinary
crisis, when the adolescent has problems at school or with the police, which is added to fear of authoritative parents. Absence from school and the lack of moral and affective support in the family environment contribute to their desire to escape the crisis by committing suicide [1].

AIM

This study aims to confirm or to contradict earlier assumptions stating that suicide is associated with people diagnosed with a psychiatric disorder or a neurological condition and to identify the risk of suicide in the general population exposed to the same risk factors.

More specifically, the goals are:
1. Identifying the suicide risk in adolescents hospitalized in the psychiatric ward of the hospital Prof. Dr. Al. Obregia, Bucharest compared to adolescents undiagnosed with psychiatric or neurological disorders.
2. Identifying psychiatric disorders most frequently associated with the risk of suicide
3. Identifying risk factors most commonly associated with suicide
4. Assessing suicide risk by gender
5. Assessing suicide risk by age

MATERIALS AND METHODS

We conducted an analytical observational case-control study that included 80 adolescents aged 12 to 18: 40 were in the control group and 40 in the group of cases. The latter were teenagers hospitalized in the psychiatric ward of the Psychiatric Hospital Prof. Dr. Al. Obregia, Bucharest, in the year 2015. Informed consent was obtained from both the parents and the adolescents in concordance to the requirements of the ethics committee.

The study is a retrospective one, based on a questionnaire developed by Robert L. Leahy and Stephen J. Holland and published in 2000 in the book “Treatment plans and interventions for depression and anxiety”. It consists of 37 open questions. Based on the answers, 9 sub-scales were quantified: suicidal ideation, self-harm, post-traumatic-stress-disorder (PTSD), depression, anhedony, hope, indifference, access to means of suicide and attention seeking behaviors. Higher values denote a more serious issue.

Inclusion criteria for the group of cases were:
- Adolescents between 12 and 18 years old.
- Adolescents hospitalized in the psychiatric ward of the Psychiatric Hospital Prof. Dr. Al. Obregia, Bucharest.
- Adolescents hospitalized in 2015.
- Adolescents diagnosed with psychiatric or neurological disorders.

RESULTS

The data was analyzed using Excel and Microsoft Office IBM SPSS 16.0.

In order to determine the suitable statistical tests matching the group in question, we checked data distribution using the Shapiro-Wilk test. Parametric tests were used in situations where the p - thus obtained was greater than 0.05. Otherwise, non-parametric measurements were used.

The variables measured had a diverted distribution from the Gaussian one, for which we used non-parametric tests to check the existing differences (Mann-Whitney test for rank verification, respectively Friedman test for multiple lots).
For statistical purposes, diagnoses were grouped into categories, as described in Figure 1.

**Figure 1.** Diagnostic integration in categories with the number of patients in each group

For most of the questions, the subjects in the control group gave negative answers. This fact validates the specificity of the applied scale. The fact that the patients had significantly different responses from those of the control group - regardless of their pathology - is, thus, easily deductible.

The group of patients consisted of 25 boys and 15 girls. There were no significant differences in the parameters measured by gender in the investigated group.

Non-neurotypical subjects achieved a total score significantly higher than neurotypical adolescents (U = 164, n1 = n2 = 40, p <0.001).

Regarding the scores on the applied subscales, patients had significantly different results than controls, except for PTSD scores and access to means of suicide.

On the attention-seeking subscale, cases group recorded a significantly increased score compared to the control group where the score was 0 (U=480; n1=n2=40; p <0.001). Regarding the subscale access to means of suicide, it appears that both groups achieved a similar score(U= 673; n1=n2=40; p =0.163). By analysing the scores achieved on the indifference subscale it appears that the group of patients has a higher score than the control group (U= 444; n1=n2=40; p <0.001). Analysing the scores achieved on the hope scale, it appears that low hope is characteristic to the nonneurotypic group. Regarding the score obtained on the anhedonia subscale it is noted that feelings of anhedonia are characteristic to the group of patients( U=560; n1=n2=40; p =0.001). The score obtained on the depression subscale shows that depressive symptoms are characteristic to the patients group(U=480; n1=n2=40; p <0.001). However, both groups report similar exposure to PTSD. It also appears that the subjects of the non-neurotipic group are significantly prone to self harm (U=580; n1=n2=40; p <0.001). The nonneurotypical group also received a higher score than the neurotypical group on the suicidal ideation scale (U=520; n1=n2=40; p <0.001).

**Figure 2.** The average score depending on the pathology.

All subjects in the non-neurotypical group were under medical treatment, according to ICD-10 diagnostic, while none of the subjects in the control group received medication.
According to the Kruskall-Wallis test, there were no significant differences between the total score obtained by patients with different pathologies. ($\chi^2 (13)=16.239; p=0.236$).

In what scores obtained on the subscales are concerned, there were no significant differences between pathologies and the hope subscale score ($\chi^2 (13) = 22.758, p = 0.045$).

The average score varied significantly depending on the age of the patients ($X^2 (6) = 15.619; p = 0.016$).

There was a significant difference on the age distribution in all the assessed subscales, with the exception of depression and access to means of suicide.

Table 1. Kruskal-Wallis test values for the determined subscales. Circled values represent statistical significance.

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Statistical Value</th>
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<tbody>
<tr>
<td>Hope</td>
<td>114.430</td>
</tr>
<tr>
<td>Inference</td>
<td>10.147</td>
</tr>
<tr>
<td>Access to means of self harm</td>
<td>6</td>
</tr>
<tr>
<td>Anhedonia</td>
<td>1.043</td>
</tr>
<tr>
<td>Depression</td>
<td>12.446</td>
</tr>
<tr>
<td>Attention seeking</td>
<td>10.042</td>
</tr>
<tr>
<td>PTSD</td>
<td>1.917</td>
</tr>
<tr>
<td>Depression</td>
<td>12.446</td>
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DISCUSSIONS AND CONCLUSIONS

Statistical data obtained from the study are consistent with results of previous studies, with regards to the fact that individuals who have a diagnosis of psychiatric or neurological disorder associate a higher risk of suicide compared to neurotypical people.

The strength of this study is the use of information provided directly by adolescents investigated, through the questionnaire. The structure of the questionnaire consists of open questions that offer patients the possibility to give free answers, which the examiner can interpret.

Sources of error:
- Honesty of the adolescents in completing the questionnaires.
- Examiner’s subjectivity in encoding and interpretation of responses.
- The level of education of the adolescents and comprehension of questions in the questionnaire.
- Difficulty in establishing a similar control group by age and sex.
- Joining primary diagnosis of comorbidities that could potentiate the risk of suicide.
- Lack of information about genetic predisposition of the patient.
- Adolescents in the group of cases were under psychiatric treatment.

These results may confirm the hypothesis presented by previous studies according to which suicide is more common among adolescents with psychiatric disorders than among those without.

Although both groups had similar scores in terms of access to the means of self harm and posttraumatic stress, adolescents in the control group had negative answers to the rest of the questions, while those in group of cases had mostly positive responses, irrespective of the pathology. Therefore, statistical data showed that the risk of suicide does not vary significantly depending on the psychiatric disorder.

Risk factors or symptoms most commonly associated with positive responses among adolescents in nonneurotypic group were anhedonia, attention seeking, and access to self-harm means.

There were no significant differences on the parameters measured by gender in the investigated group. The average score on all the subscales investigated is significantly higher in patients older than 15.

Based on these results, we conclude that the test has a good specificity. Moreover, it is noted that, regardless of diagnosis, patients with psychiatric or
neurological disorders get higher values, regardless of their pathology. This indicates a low specificity of the scale for adolescents and preadolescents, requiring supplementation with other complementary tests in order to assign appropriate diagnoses.

CONFLICT OF INTEREST

The authors have no potential conflict of interest to disclose in relationship to this manuscript.

REFERENCES