



UNIVERSITATEA DE MEDICINĂ,
FARMACIE, ȘTIINȚE ȘI TEHNOLOGIE
„GEORGE EMIL PALADE”
DIN TÂRGU MUREȘ

**“GEORGE EMIL PALADE” UNIVERSITY OF MEDICINE, PHARMACY, SCIENCE AND
TECHNOLOGY OF TÂRGU MUREȘ –
DOCTORAL SCHOOL OF DOCTORAL STUDIES IN MEDICINE AND PHARMACY**

A multivalent approach of the role of cholesterol in psychopathology

PhD Thesis

Summary

Scientific Coordinator:

Prof. Dr. Brassai Attila

PhD Candidate:

Dimény Edina

Târgu Mureș 2021

Introduction: Regarding to the definition adopted by the W.H.O. it states that suicide is "the act of deliberately killing oneself, with the more or less intention of giving up upon his life, and being more or less aware of his reasons." Suicidal ideation refers to a person's thoughts of taking his own life. Suicidal concerns include the person's suicidal ideas and thoughts related to all the logistics of the procedure of the autolytic act (planning, circumstances, method, time, right place, etc.). A suicide attempt is a non-fatal, self-directed, potentially injurious behavior with intent to die as a result of the behavior. Suicide is a major public health problem and is one of the leading causes of death worldwide. Based on the latest W.H.O. statistics, in 2016. the global suicide rate is approx. 10,5/100.000; 13,5/100.000 for men and 7,7/100.000 for women. In Europe, this rate for different sexes shows the same discrepancy: 24,7/100.000 for men and 6,6/100.000 for women. Suicide is the second leading cause of violent death and the 12th leading cause of death in general. Suicide attempts are estimated to be 20 times more frequent than completed suicides showing an alarming sign. Europe has the highest suicide rate, and the lowest rate is in the Eastern Mediterranean Region. Romania ranks 135th with a suicide rate of 10,4/100.000 in 2016. and 9,74/100.000 in 2019. slightly below the average global rate and above the average European Union rate (12,8) reported on genders: 13,6/100.000 for men and 2,3/100.000 for women. Suicide is a multifactorial phenomenon that can be approached from different perspectives: theological, philosophical, demographic, sociological, psychological, biological, evolutionary, health, biochemical, legal, preventive, global, political and supranational. But, the psychiatric approach is one of the strongest bases of suicide today.

Aim of the study: The present study approaches the psychopathology of suicide in various ways and includes two major themes. The first one analyses the characteristics of psychosociodemographic factors in a well-defined group of psychiatric patients suffering from suicidal ideations. The second study focuses on the importance of cholesterol, aside of other important neurobiological factors, in clinical psychiatry, emergency interventions and screening. The aim of these is to confirm and to be able to formulate a functional, scientific conclusion and by this, developing a holistic perspective on suicide.

Material and method: We performed an observational, analytical, randomized study at the Psychiatry Department II. and Psychiatry Clinic III. Of the Clinical Hospital of Neurology and Psychiatry of Braşov, among adult psychiatric patients admitted in 2014. This current study involves 200 psychiatric patients. These patients, admitted to the emergency room, presented severe suicide risk - along with other psychopathological signs and symptoms observed and registered in the clinical observation record. Throughout the study I followed the recommendations of the Helsinki Declaration, and the study protocol was approved by the ethics committee of the institute, respectively by the head of department. All patients signed a consent form before enrolling in the study. For the assessment of the suicide risk, we used The Modified Scale for Suicide Ideation (Miller et al. 1986), a psychological tool validated on the population of non-psychiatric adults and psychiatric patients with Cronbach alpha coefficient between 0.87 and 0.94. In order to be used, we used its Romanian translation. The used software for our data analysis is R 4.10. freeware.

Results: After applying the psychological test in our sample of 200 cases, we obtained: 52 patients in category 1, low risk category; 49 in category 2. (moderate risk) and 99 in category 3. (high-risk suicide category). The following demographic data were analyzed: age, sex, place of residence, highest level of education, occupational functioning, social living conditions, marital status and quality of the social support network. Certain demographic indicators may be associated with increased suicidal behavior. The included psychiatric indicators which increase the suicide risk are: mental disorders in family medical history and in the personal medical history as well, chronic treatment with psychotropics, number of suicide attempts. In the data analysis we chose to perform regression on standardized scores. As a result, the independent variables explain 25% of the variant of the MMSI score ($R^2 = 0.25$, $F(14,185) = 4.11$).

The frequency distribution of total serum cholesterol values in different risk categories based on MSSI scores performed shows that 83 patients have a total cholesterol level below 4.5 mmol/L (84%). By calculating the χ^2 test, referring to the high and low suicide risk categories, we obtained a $p < 0.001$ (CI = 95%), which suggests a strong relationship between the high risk of suicide and serum cholesterol below 4.5 mmol/L in our sample.

After performing the simple regression in which we included only cholesterol, we repeated the regression adding all the psycho-sociodemographic predictors of severity. The regression explains 53% of the variants in the MSSI score (coefficient of determination, $R^2 = 0.53$, $F(15,184) = 13.82$. Compared to the result of the regression obtained earlier, where the explanatory variable was 25%, the effect of cholesterol on suicide risk is seen clear.

Discussion: Our study focused on serum cholesterol levels and suicidal behavior, including as well socio-demographic risk factors. Based on our analyzes of total serum cholesterol levels in patients with varying degrees of severity of suicidal ideation, it may be suggested that there is a link between suicidal behavior and low serum cholesterol levels in the sample studied.

Conclusion: Our present study shows a cross-sectional picture of the psycho-socio-demographic characteristics of a given sample. A number of parameters increase the risk of developing self-harming behavior. Although there is clear evidence that cholesterol plays an important role in the onset of psychiatric symptoms, it should be clear that cholesterol itself does not cause behavioral disorders, but induces a number of neuro-bio-chemical changes, thus, influencing the prevalence of certain behavioral patterns (even pathological) by modulating specific neural pathways.