Psychiatria Danubina, 2025; Vol. 37, Suppl. 1, pp 284-287 *Conference paper*
 Research article

CLINICAL RISK FACTORS FOR SUICIDALITY IN YOUNG MALES WITH SCHIZOPHRENIA SPECTRUM DISORDERS

Nataliia Belei[1], Ramiza Sharifova[2] & Alexey Pavlichenko[1,3]

[1]Lomonosov Moscow State University, Moscow, Russia
[2]SAGA Group, Samara Institute of Mental Health, Medical University "Reaviz", Samara, Russia
[3]Institute of Mental Health, University "Reaviz", Saint Petersburg, Russia

SUMMARY

Background: *Schizophrenia spectrum disorders (SSD) are linked to a higher risk of suicidality, especially among young adults. Despite progress in psychiatric treatments, suicidality remains a leading cause of early death in this group. Symptoms like depression and anxiety are increasingly seen as major contributors to this risk. This study aims to explore clinical risk factors for suicidality in young males inpatients diagnosed with SSD, focusing on the roles of depression, anxiety, and previous suicidal behavior.*

Methods: *This cross-sectional study was conducted at the Psychiatric Hospital no. 1 named after N.A. Alexeev of the Department of Health of Moscow, involving 40 male inpatients aged 18–35 years. Participants were divided into two groups: those with suicidal behavior (n=20) and those without (n=20). Psychometric assessments included the Columbia Suicide Severity Rating Scale (C-SSRS), Calgary Depression Scale for Schizophrenia (CDSS), Positive and Negative Syndrome Scale (PANSS), and Personal and Social Performance scale (PSP). Descriptive statistics, correlation analysis, regression analysis, and Student's t-tests were used.*

Results: *The group with suicidal behavior had significantly higher scores on the C-SSRS and CDSS, as well as on the PANSS anxiety/depression subscale, compared to the control group. Regression analysis indicated that depression and anxiety accounted for 74% of the variance in suicidality scores. No significant differences in social functioning (PSP) were found between the groups. A history of suicide attempts was not a significant predictor in this sample.*

Conclusion: *Depression and anxiety are significant predictors of suicidality in young males with SSD. Historical suicide attempts showed no significant effect in this sample. The findings underscore the importance of regular screening and timely intervention to lower suicide risk in young adults with SSD.*

Key words: *schizophrenia spectrum disorders – suicidality - young adults - risk factors*

Abbreviations: *SSD – Schizophrenia Spectrum Disorders; SB Group – Suicidal Behavior Group; CG Group – Control Group; C-SSRS – Columbia Suicide Severity Rating Scale; CDSS – Calgary Depression Scale for Schizophrenia; PANSS – Positive and Negative Syndrome Scale; PSP – Personal and Social Performance scale*

* * * * *

INRODUCTION

Schizophrenia spectrum disorders (SSD) are chronic mental health conditions involving disruptions in thought processes, perception, affect, and social functioning (Pavlichenko et al. 2020). Research indicates that individuals with SSD experience an elevated risk of suicidal behavior, particularly among young adult males who may encounter various psychological, social, and biological challenges early in the course of their illness (Attademo et al. 2020, Holmstrand et al. 2015). Epidemiological studies estimate that up to 10% of people diagnosed with schizophrenia die by suicide, and approximately 40-50% have attempted suicide at least once, according to the concept of "learned suicidality" related to the history of self-harm behavior and suicidal attempts (Radomsky et al. 1999, Syunayakov et al. 2022, Ventriglio et al. 2016).

Despite progress in pharmacological treatments and psychosocial interventions, suicidality continues to represent a significant cause of premature death within this group (Radomsky et al. 1999). Contributing factors include affective symptoms, reduced awareness of illness, substance use, social isolation, and cognitive distortions, which collectively underscore the importance of early identification of individuals at elevated risk from both clinical and public health perspectives (Silverman et al. 2007, Paudel et al. 2020). However, limited studies have explored the interactions among these variables within a comprehensive clinical and functional context. There is increasing interest in analyses that integrate psychometric assessment with real-world functional outcomes.

This study aims to examine clinical risk factors for suicidality in a homogeneous sample of young adult inpatients males diagnosed with SSD.

The study aims to compare individuals with recorded suicidal behavior (SB) to a control group (CG) without such behavior, using standardized clinical assessments and demographic variables. Particular attention is given to the predictive roles of depressive and anxious symptom clusters, as well as previous suicide attempts, in evaluating current risk.

SUBJECTS AND METHODS

This clinical investigation was conducted over a seven-month period from April to November, 2024, at the Psychiatric Hospital no. 1 named after N.A. Alexeev

of the Department of Health of Moscow. The study utilized a naturalistic, cross-sectional design and complied with the Declaration of Helsinki. Ethical approval was granted by the hospital's local ethics committee, and all participants provided informed voluntary consent.

The study included 40 inpatients diagnosed with schizophrenia spectrum disorders (SSD) according to ICD-10 criteria (F20–F29). Patients were recruited from a general male psychiatric ward. Inclusion criteria were: male sex, age between 18 and 35, sufficient clinical stability for structured interviews and assessments, and absence of organic brain pathology. Exclusion criteria comprised intellectual disability, substance abuse during evaluation, and declining participation.

Participants were assigned to two groups:

- *Suicidal behavior (SB) Group (n=20):* individuals with suicidal behavior (including ideation, intent, or previous attempts) either in the current episode or recorded in medical history;
- *Control Group (CG) (n=20):* individuals without any current or past suicidal ideation or behavior.

Diagnostic and assessment procedures involved medical record review, consultations with clinicians, and a structured interview with the patient using psychometric scales administered by a psychiatrist and clinical psychologist. The average duration of the assessment protocol ranged from 90 to 120 minutes per participant.

The following psychometric tools were used:

- *Columbia Suicide Severity Rating Scale (C-SSRS)*, which assesses ideation intensity, preparatory acts, and suicide attempts (Posner et al. 2011);
- *Calgary Depression Scale for Schizophrenia (CDSS)*, designed to evaluate depressive symptoms in individuals with schizophrenia (Addington et al. 1993);
- *Positive and Negative Syndrome Scale (PANSS)*, which measures positive symptoms, negative symptoms, anxiety, and depression (Kay et al. 1987);
- *Personal and Social Performance Scale (PSP)*, used to assess various domains of functioning (Morosini et al. 2000).

Raw data were coded and entered into a digital database. Descriptive statistics (means, standard deviations), bivariate Pearson correlation analyses, multiple linear regression, and independent-sample Student's t-tests were conducted to analyze between-group differences and predictor relationships. Statistical computations were performed using Microsoft Excel (version 2019) and Jamovi (version 2.4.8).

RESULTS

There were no significant differences between the SB and CG groups regarding age, disability status, duration of illness and marital status (see table 1). Despite differences between the groups in terms substance abuse and professional status, it is not relevant to draw conclusions due to the small sample size.

Table 1. Sociodemographic characteristics of SSD patients

Variable	SB Group (n=20)	CG Group (n=20)
Mean age at time of examination	30	31.5
Disability status	5	7
Marital status	1	1
Substance abuse	9	5
Work/study	1	3
Average duration of the disease	8.5	9
History of suicide attempts	8	0

Note: SB – Suicidal Behavior group; SSD – Schizophrenia Spectrum Disorders; CG – Control Group.
Values reflect raw counts or mean scores where indicated.

The SB group demonstrated a mean score of 9.15 on the C-SSRS, which is indicative of a high level of suicide risk. In contrast, the CG group had a mean score of 1.60, indicating a lower measured risk (see table 2). All members of the SB group were classified as high-risk, whereas only a single participant in the CG exhibited elevated scores.

The SB group demonstrated significantly elevated depression/anxiety scores (M = 12.9) on the CDSS, with 13 patients classified as experiencing severe depressive symptoms. Conversely, the CG group recorded a mean score of 2.7, with only one participant displaying mild symptoms.

Total PANSS scores and most subscales did not differ significantly between groups, except for the anxiety/depression subscale, where the SB group scored higher (M = 16.3) than the CG group (M = 8.05).

Table 2. Mean Scores for C-SSRS, CDSS, PANSS Total, PANSS Anxiety/Depression Subscale, and PSP by Study Group

Scale	SB Group, Mean	CG Group, Mean	p-value
C-SSRS	9.15±1.25	1.60±0.85	$p < 0.001$
CDSS	12.9±2.1	2.70±1.3	$p < 0.001$
PANSS, Total score	114±16.8	110±17.7	$p = 0.513$
PANSS, Anxiety/Depression Subscale	16.3±2.0	8.05±2.8	$p < 0.001$
PSP	42.0±6.0	45.0±5.8	$p = 0.587$

Note: C-SSRS – Columbia Suicide Severity Rating Scale; CDSS – Calgary Depression Scale for Schizophrenia; PANSS – Positive and Negative Syndrome Scale; PSP – Personal and Social Performance scale

Mean PSP scores were similar between groups: 42 for the SB group and 45 for the CG group, indicating no statistically significant impairment in functioning due to suicidality

Statistically significant differences between groups were observed for the C-SSRS, CDSS, and PANSS Anxiety/Depression Subscale mean scores, while no significant difference was found for PANSS Total or PSP (see table 2).

Pearson correlations indicated positive associations between C-SSRS and CDSS scores ($r = 0.811$, $p < 0.001$), as well as between C-SSRS and the PANSS anxiety/depression subscale ($r = 0.822$, $p < 0.001$). Correlations between C-SSRS and total PANSS, positive/negative subscales of PANSS, or PSP scores were weak or not statistically significant (see table 3).

Table 3. Correlations of Psychometric Indicators with C-SSRS on patients with Schizophrenia spectrum disorders

Variable	Pearson r	p-value
CDSS	0.811	< 0.001
PANSS, Anxiety/ Depression Scale	0.822	< 0.001
PANSS, Total Score	0.189	0.242
PSP	-0.114	0.484

Note: C-SSRS correlations shown with other clinical scales. Pearson correlation coefficients and p-values provided

A linear regression model indicated that combined scores on the CDSS and the PANSS anxiety/depression subscale accounted for 74% of the variance in suicidality scores ($R^2 = 0.74$). These results suggest that affective symptoms are associated with suicidality risk assessment (see table 4 an table 5).

Table 4. Indicators of Model Conformity Demonstrating the Between-Group Difference

Model	R	R^2
1	0.861	0.740

Note: R – multiple correlation coefficient; R^2 – proportion of variance in suicidality explained by the regression model

DISCUSSION

These findings indicate that depression and anxiety are significant risk factors for suicidality in young males with SSD. Higher scores on the CDSS and the anxiety/depression subscale of the PANSS were associated with increased suicidal ideation and behavior, aligning with previous studies (McCutcheon et al. 2023, Nock et al. 2008). This suggests that affective symptoms may be relevant not only as comorbidities but also as components related to suicidal vulnerability in SSD.

The inability to confirm the hypothesis that prior suicide attempts are the strongest predictor of current suicidality may be due to limitations in sample size and statistical power (8 individuals with a history of suicide attempt in the SB group). The relatively small number of participants with a history of attempts may have reduced the likelihood of detecting statistically significant effects. These results indicate that current affective symptoms might serve as more sensitive indicators of acute suicidality compared to retrospective behavioral measures.

Notably, our findings indicated no statistically significant differences between groups regarding personal and social functioning, as measured by the PSP. This observation implies that suicidality in SSD can present even in the absence of evident social decline, thereby challenging the assumption that impaired functioning is a prerequisite for heightened suicide risk. Accordingly, clinicians are advised to exercise ongoing vigilance, including for patients who demonstrate apparent social stability.

The observed predictive model, where CDSS and PANSS affective subscale scores explained 74% of the variance in suicidality, provides a basis for early risk stratification. Due to their correlations, these tools may be incorporated into standard psychiatric assessments to facilitate identification of individuals at risk.

The limitations of this study include the use of a relatively small and homogenous sample inpatients, a cross-sectional design that restricts causal inferences, and the lack of analysis concerning ongoing pharmacological or psychotherapeutic interventions.

CONCLUSIONS

This study shows that affective symptoms measured by CDSS and PANSS Anxiety/Depression Subscale are strong predictors of suicide risk and should be regarded as key clinical markers. A history of suicide attempts was not a significant predictor in this sample. Additionally, our study found no statistically significant differences in functional outcomes between patients with suicidal behavior and those without, indicating the importance of comprehensive risk assessment for all patients, regardless of their functional status.

Table 5. Coefficients of the Model based on C-SSRS Focusing on the Factors Links

Predictor	Weight	SE	t	p
Constant	-1.807	1.0277	-1.76	0.087
CDSS	0.282	0.0925	3.05	0.004
PANSS, Anxiety/Depression Scale	0.409	0.1191	3.44	0.001

Note: CDSS – Calgary Depression Scale for Schizophrenia; PANSS – Positive and Negative Syndrome Scale; C-SSRS – Columbia Suicide Severity Rating Scale /Regression coefficients for predictors of C-SSRS score

Future research on suicidal behavior among young individuals with SSD should involve a larger sample size and incorporate additional variables, such as the type of treatment, treatment adherence, neurobiological markers, and cognitive profiles.

Acknowledgements:

We express our sincere gratitude to Professor Paul Cumming of Bern University, Bern, Switzerland, and Associate Professor Daria Smirnova, Head of the Institute of Mental Health, University "Reaviz", Saint Petersburg, Russia, for language review of the manuscript, its critical reading and valuable commentaries.

Ethical Considerations: Authors confirmed the compliance with all relevant ethical regulations.

Conflict of interest: *None to declare.*

Contribution of individual authors:

Natalia Belei: study design, literature review, data collection, statistical analysis, manuscript writing.

Ramiza Sharifova: literature review.

Alexey Pavlichenko: study design, data collection, manuscript writing.

All authors approved the final manuscript.

References

1. *Addington D, Addington J & Maticka-Tyndale E. (1993). Assessing depression in schizophrenia: the Calgary Depression Scale. The British Journal of Psychiatry. Supplement, (22), 39–44.*
2. *Attademo L, Bernardini F & Spatuzzi R: Suicidality in Individuals with Schizoid Personality Disorder or Traits: A Clinical Mini-Review of a Probably Underestimated Issue. Psychiatr Danub 2021; 33:261–265. https://doi.org/10.24869/psyd.2021.261*
3. *Holmstrand, C., Bogren, M., Mattisson, C., & Brådvik, L. (2015). Long-term suicide risk in no, one or more mental disorders: the Lundby Study 1947-1997. Acta psychiatrica Scandinavica, 132(6), 459–469. https://doi.org/10.1111/acps.12506*
4. *Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophrenia bulletin, 13(2), 261–276. https://doi.org/10.1093/schbul/13.2.261*
5. *McCutcheon RA, Keefe, R. S. E., & McGuire, P. K. (2023). Cognitive impairment in schizophrenia: aetiology, pathophysiology, and treatment. Molecular psychiatry, 28(5), 1902–1918. https://doi.org/10.1038/s41380-023-01949-9*
6. *Morosini, P. L., Magliano, L., Brambilla, L., Ugolini, S., & Pioli, R. (2000). Development, reliability and acceptability of a new version of the DSM-IV Social and Occupational Functioning Assessment Scale (SOFAS) to assess routine social functioning. Acta psychiatrica Scandinavica, 101(4), 323–329.*
7. *Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (2008). Suicide and suicidal behavior. Epidemiologic reviews, 30(1), 133–154. https://doi.org/10.1093/epirev/mxn002*
8. *Paudel, S., Coman, D., & Freudenreich, O. (2020). Subjective experience of cognitive difficulties as an important attribute of quality of life among individuals with schizophrenia spectrum disorders. Schizophrenia research, 215, 476–478. https://doi.org/10.1016/j.schres.2019.09.008*
9. *Pavlichenko, A. V., Kulygina, M. A., & Kostyuk, G. P. (2020). Shizofreniya i drugie psikhoticheskie rasstroistva v MKB-11 i DSM-5: razvitie kontseptsii i sovremennoe sostoyanie [Schizophrenia and other psychotic disorders in ICD-11 and DSM-5: evolution of the concepts and current status]. Zhurnal nevrologii i psikhiatrii imeni S.S. Korsakova, 120(6. Vyp. 2), 5–12. https://doi.org/10.17116/jnevro20201200625*
10. *Posner, K., Brown, G. K., Stanley, B. et al (2011). The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. The American journal of Psychiatry, 168(12), 1266–1277. https://doi.org/10.1176/appi.ajp.2011.10111704*
11. *Radomsky, E. D., Haas, G. L., Mann, J. J., & Sweeney, J. A. (1999). Suicidal behavior in patients with schizophrenia and other psychotic disorders. The American journal of psychiatry, 156(10), 1590–1595. https://doi.org/10.1176/ajp.156.10.1590*
12. *Silverman, M. M., Berman, A. L., Sanddal, N. D., O'carroll, P. W., & Joiner, T. E. (2007). Rebuilding the tower of Babel: a revised nomenclature for the study of suicide and suicidal behaviors. Part 1: Background, rationale, and methodology. Suicide & life-threatening behavior, 37(3), 248–263. https://doi.org/10.1521/suli.2007.37.3.248*
13. *Syunyakov, T., Pavlichenko, A., Morozov, P., Fedotov, I., Filatova, V., Gayduk, A., Ignatenko, Y., Spikina, A., Yashikhina, A., Patsali, M., Fountoulakis, K., & Smirnova, D. (2022). Modeling Suicidality Risks and Understanding the Phenomenon of Suicidality Under the Loupe of Pandemic Context: National Findings of the COMET-G Study in the Russian Population. Consortium psychiatricum, 3(2), 15–36. https://doi.org/10.17816/CP167*
14. *Ventriglio, A., Gentile, A., Bonfitto, I., Stella, E., Mari, M., Steardo, L., & Bellomo, A. (2016). Suicide in the Early Stage of Schizophrenia. Frontiers in psychiatry, 7, 116. https://doi.org/10.3389/fpsyt.2016.00116*

Correspondence:
Alexey Pavlichenko, MD
Institute of Mental Health, University "Reaviz"
8/2 Kalinina Street, 199098 Saint Petersburg, Russia
E-mail: apavlichenko76@gmail.com