

Beyond Suicide Attempts: Non-Suicidal Self-Injury and its Association with Depression and Substance use in First-Episode Psychosis

Shivangi Aggarwal¹, Chirag Barot², Chintan Savani^{3*}, Vejiben Odedara⁴

¹Department of Psychiatry, Saraswati Medical College, Lucknow, India

²Department of Psychiatry, Medical College Baroda & SSG Hospital, Vadodara, India

³Savani Neuropsychiatry Clinic, Surat, India

⁴Department of Psychiatry, GMERS Medical College & Hospital, Porbandar, India

*Corresponding Author: Dr Chintan Savani

Email: chintansavani98@gmail.com

Received: 25.04.2026 | Revised: 15.06.2026 | Accepted: 22.08.2026 | Published: 03.09.2026

Abstract: Background: Non-suicidal self-injury (NSSI) is clinically distinct from suicidal behavior but may coexist with substantial psychiatric morbidity. Data on NSSI in first-episode psychosis (FEP) remain limited. **Objective:** To describe the prevalence of NSSI in FEP and examine its association with depressive symptoms and substance use. **Methods:** This cross-sectional study included 144 adults with FEP attending psychiatry outpatient or inpatient services at S.S.G. Hospital, Vadodara. NSSI was assessed using the Columbia-Suicide Severity Rating Scale, depression using the Calgary Depression Scale for Schizophrenia (CDSS), psychotic symptoms using the Positive and Negative Syndrome Scale, and insight using the Birchwood Insight Scale. Categorical associations were examined using chi-square tests; forward-likelihood-ratio regression was also reported. **Results:** NSSI was present in 40/144 patients (27.8%), marginally exceeding actual suicide attempts (27.1%). CDSS ≥ 6 was observed in 38/40 patients with NSSI (95.0%) and 66/104 without NSSI (63.5%; $\chi^2=14.23$, $p<0.001$). Continuous CDSS score remained significant in regression ($B=0.181$, $\text{Exp}(B)=1.198$, 95% CI 1.101–1.304, $p<0.001$). The unadjusted substance-use comparison was not significant ($\chi^2=10.71$, $p=0.22$), although the regression table reported a significant overall substance-use term (Wald=9.614, $p=0.047$). **Conclusion:** NSSI affected more than one-quarter of patients with FEP and was strongly associated with depressive symptom burden. Substance-use findings require cautious interpretation because unadjusted and regression results differed.

Keywords: Non-suicidal self-injury; first-episode psychosis; depression; substance use; self-harm.

Citation: Shivangi Aggarwal *et al.* Beyond Suicide Attempts: Non-Suicidal Self-Injury and its Association with Depression and Substance use in First-Episode Psychosis. Grn Int J Apl Med Sci, 2026 Sep-Oct 4(5): 402-406.

INTRODUCTION

Non-suicidal self-injury (NSSI) refers to intentional self-inflicted bodily injury undertaken without suicidal intent. It is conceptually distinct from a suicide attempt, although the two behaviors may occur in the same clinical population and a history of NSSI may identify patients with a greater burden of self-harm-related risk [1,2].

The early phase of psychosis is a clinically vulnerable period. Previous work in first-episode psychosis has documented self-harm rates ranging from approximately 11% to nearly one-half, depending on the population, timing, and terminology used [3–5]. Depression has repeatedly emerged as an important correlate of self-harm in psychosis, with hopelessness, negative mood, and depressive syndromes contributing to vulnerability [2,6].

Substance use is also clinically relevant in psychotic disorders because it may increase impulsivity, reduce self-control, worsen treatment adherence, contribute to violence and socioeconomic difficulties, and exacerbate psychotic symptoms [7,8]. However, much of the available literature relates substance use to suicidality rather than specifically to NSSI.

The present analysis focused specifically on NSSI among patients with first-episode psychosis. The objectives were to determine the prevalence of NSSI and examine its association with depressive symptoms and substance use, while also evaluating relevant psychotic symptoms, insight, clinical characteristics, and sociodemographic factors.

MATERIAL AND METHODS

Study Design and Setting

This was a cross-sectional study conducted in Psychiatry OPD and Ward at S.S.G. Hospital, Vadodara. Adults diagnosed with first-episode psychosis who attended outpatient or inpatient psychiatric services were included. A total of 144 patients were studied. First-episode psychosis was operationally defined as duration of psychosis less than or equal to five years, as this definition possesses the most construct validity and limits inappropriate inclusion of chronic patients [9].

Eligibility and Clinical Assessment

Inclusion Criteria

1. Age 18 years or above
2. First hospitalisation, first contact with mental health services with positive symptoms, onset of antipsychotic treatment, or first appearance of psychotic symptoms confirmed by an informant within 5 years prior to enrolment¹⁹
3. Written informed consent provided by patient and caregiver

Exclusion Criteria

1. Refusal to provide consent
2. Age below 18 years
3. DSM-5 diagnosis other than psychotic disorder (nicotine-related disorders permitted)
4. Clinical Global Impression score higher than 5 ("markedly ill")
5. Intellectual disability with impaired global functioning prior to disorder onset
6. Serious chronic medical illness requiring long-term medication

Outcome and Measurement Instruments

NSSI and suicidal behaviors were assessed using the Columbia-Suicide Severity Rating Scale (C-SSRS), whose behavioral component distinguishes suicidal acts from non-suicidal self-injurious behavior on the basis of suicidal intent [10]. Depression was assessed using the nine-item Calgary Depression Scale for Schizophrenia (CDSS) [11]. Psychotic symptom severity was assessed with the Positive and Negative Syndrome Scale (PANSS), [12] and insight with the Birchwood Insight Scale (BIS) [13].

A CDSS score ≥ 6 was considered indicative of major depressive disorder (MDD) for the present study and was used for categorization in the statistical analysis.

Statistical Analysis

Data were analyzed using Epi Info version 7 (CDC). Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were summarized as frequencies and percentages. Independent-samples t-tests were used for comparisons of continuous variables, and chi-square tests were used to assess associations between categorical variables. A

p value < 0.05 was considered statistically significant. A forward likelihood-ratio regression analysis was also performed to identify factors independently associated with NSSI.

Ethical Considerations

The study was approved by the Institutional Ethics Committee for Human Research – PG Research (IECBHR/44-2020). Written informed consent was obtained from all participants.

RESULTS

Prevalence of NSSI

Among 144 patients with first-episode psychosis, 40 had NSSI, corresponding to a prevalence of 27.8%. NSSI was marginally more frequent than actual suicide attempts, which occurred in 39 patients (27.1%). Other C-SSRS behavioral outcomes are summarized in Table 1.

Association Between Depression and NSSI

Depressive symptom burden showed the strongest and most internally consistent association with NSSI. CDSS ≥ 6 was present in 38 of 40 patients with NSSI (95.0%) compared with 66 of 104 patients without NSSI (63.5%). This association was statistically significant ($\chi^2=14.23$, $p<0.001$; Table 2).

In the forward-likelihood-ratio regression model, continuous CDSS score remained significant ($B=0.181$, $SE=0.043$, $Wald=17.524$, $p<0.001$, $Exp(B)=1.198$, 95% CI 1.101–1.304). The model was reported with Cox and Snell $R^2=0.26$ and Nagelkerke $R^2=0.38$.

Association Between Substance Use and NSSI

In the overall cohort, 69 patients (47.9%) reported no substance use, 54 (37.5%) tobacco use, 6 (4.2%) alcohol use, 10 (6.9%) tobacco plus alcohol use, and 5 (3.5%) tobacco plus alcohol plus cannabis use. NSSI proportions within these categories were 17.4%, 37.0%, 66.7%, 30.0%, and 20.0%, respectively (Table 3). The unadjusted overall categorical association was not statistically significant ($\chi^2=10.71$, $p=0.22$).

The regression table subsequently reported an overall substance-use factor labelled "Tobacco + alcohol + cannabis" with $Wald=9.614$ and $p=0.047$. Combined use of tobacco, alcohol, and cannabis was significantly associated with NSSI. The discrepancy between the non-significant unadjusted analysis and significant regression factor is retained explicitly (Table 4).

Other Clinical and Sociodemographic Findings

PANSS-derived positive, negative, general psychopathology, and total scores did not differ significantly between patients with and without NSSI (all $p > 0.05$). Overall BIS classification was not significantly associated with NSSI ($\chi^2 = 2.51$, $p = 0.11$), whereas the "need for treatment" insight domain showed a significant association ($\chi^2 = 16.37$, $p = 0.04$).



Occupation was significantly associated with NSSI ($\chi^2 = 16.58$, $p = 0.005$). Religion demonstrated a borderline association with NSSI ($p = 0.05$). No significant associations were observed for age, sex, area of

residence, education, socioeconomic status, marital status, family type, past psychiatric illness, past medical illness, or family history of suicide (all $p > 0.05$).

Table 1. Prevalence of suicidal and non-suicidal self-injurious behaviors in first-episode psychosis (n=144).

Outcome/behavior	Yes, n	Yes, %	No, n	No, %
Actual suicide attempt	39	27.1	105	72.9
NSSI	40	27.8	104	72.2
Suicidal ideation	30	20.8	114	79.2
Interrupted attempt	40	27.8	104	72.2
Aborted attempt	37	25.7	107	74.3
Preparatory behavior	7	4.9	137	95.1

Table 2. Association between Calgary Depression Scale for Schizophrenia category and NSSI.

NSSI	CDSS <6	CDSS ≥6 ("MDD Present")	Total
No	38 (36.5%)	66 (63.5%)	104
Yes	2 (5.0%)	38 (95.0%)	40

$\chi^2=14.23$; $p<0.001$.

Table 3. Substance-use category and NSSI.

Substance-use category	NSSI No	NSSI Yes	Total	NSSI %
No use	57	12	69	17.4
Tobacco	34	20	54	37.0
Alcohol	2	4	6	66.7
Tobacco + alcohol	7	3	10	30.0
Tobacco + alcohol + cannabis	4	1	5	20.0

Overall $\chi^2=10.71$; $p=0.22$.

Table 4. Selected terms from the forward likelihood-ratio regression model for NSSI.

Variable/term	B	SE	Wald	p	Exp(B)	95% CI
CDSS score	0.181	0.043	17.524	<0.001	1.198	1.101–1.304
Substance-use factor as printed: "Tobacco + alcohol + cannabis"	—	—	9.614	0.047	—	—

The overall substance-use factor was statistically significant; however, B, Exp(B), and 95% CI were not reported for this factor.

DISCUSSION

The principal finding of this study is that NSSI was common in first-episode psychosis, affecting 27.8% of the sample. This prevalence was marginally higher than the prevalence of actual suicide attempts in the same cohort. The finding supports the clinical importance of assessing NSSI independently rather than limiting self-harm assessment to suicidal behavior.

NSSI in the Context of Previous Studies

The prevalence observed here was higher than the 11.3% self-harm rate reported by Harvey *et al.* in 496 patients with first-episode psychosis and higher than the approximately 18.4% prevalence of deliberate self-harm summarized by Perez, but lower than the 48% self-harm prevalence reported by Nyman and Jonsson [3–5]. Direct comparison should remain cautious because previous studies used terms such as self-harm or deliberate self-harm, which are not necessarily equivalent to explicitly defined NSSI.

Depression and NSSI

Depression was the most robust correlate of NSSI in the present dataset. Ninety-five percent of patients with NSSI had CDSS ≥6, and continuous CDSS score remained significant in regression. This pattern is consistent with previous observations linking depression to self-harm in psychosis. Harvey *et al.* identified depression as an independent correlate of self-harm in first-episode psychosis [3], while Pluck *et al.* associated hopelessness, negative mood, and comorbid depression with non-fatal self-harm in schizophrenia [6].

Haug *et al.* reported that the association between anomalous self-experience and suicidality in first-episode schizophrenia appeared to be mediated by depression [14]. These mechanisms are clinically plausible but cannot be established by the cross-sectional design of the present study.

Substance Use and NSSI

The relationship between substance use and NSSI was less straightforward. Although the highest crude NSSI proportion occurred in the small alcohol-only subgroup,



the overall categorical comparison was not significant. The overall substance-use factor was significantly associated with NSSI, with combined tobacco, alcohol, and cannabis use identified as an associated category. However, because the corresponding factor-level regression analysis did not provide an effect estimate or confidence interval, the combined-use category was not interpreted as having a quantified independent association with NSSI.

The broader psychosis literature supports an association between substance use and suicidality, including alcohol and drug misuse [15,16], with potential mechanisms involving impulsivity, impaired self-control, treatment non-adherence, violence, and exacerbation of psychotic symptoms [7,8]. However, the present findings do not demonstrate a clear unadjusted association between substance use and NSSI.

Clinical Implications

These findings support active inquiry about NSSI during the assessment of first-episode psychosis. Self-injurious behavior may not be spontaneously disclosed and may be overlooked when clinical attention is restricted to overt suicide attempts. The strong association with depressive symptom burden suggests that systematic assessment of depression should accompany evaluation of self-harm. Substance-use history remains clinically important, but the current statistical results warrant cautious interpretation rather than a definitive causal conclusion.

Limitations

The study was cross-sectional, and each participant was assessed in a single session. Consequently, temporal relationships between depression, substance use, psychosis, and NSSI cannot be determined. Recall bias is possible because some self-harm events may have occurred months or years before assessment. The single tertiary-care government-hospital setting limits generalizability. Completed suicides and patients younger than 18 years were not represented.

CONCLUSION

NSSI was present in more than one-quarter of patients with first-episode psychosis and was marginally more frequent than suicide attempts. Depressive symptom burden demonstrated a strong and consistent association with NSSI across both categorical and regression analyses. Although substance use may be clinically relevant, the findings were inconsistent across unadjusted and regression analyses, and a precise adjusted effect estimate could not be established for combined tobacco, alcohol, and cannabis use. Routine assessment of NSSI and depressive symptoms should therefore be incorporated into the clinical evaluation of patients with first-episode psychosis. Prospective studies are warranted to clarify the temporal and causal

relationships among depressive symptoms, substance use, psychosis, and NSSI.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

FUNDING

The authors received no financial support for the research, authorship and/or publication of this article.

Ethical Statement: Institutional Ethics Committee for Human Research – PG Research (IECBHR/44-2020)

AUTHOR CONTRIBUTIONS

SA: Conceptualisation of research, designing the research, data acquisition, data analysis, data interpretation, writing the original draft, final approval of manuscript for publication, agree to be accountable for all aspects of work; CB: Conceptualisation of research, designing the research, writing the original draft, critical revision of the manuscript, final approval of manuscript for publication, agree to be accountable for all aspects of work; VO: Conceptualisation of research, designing the research, data acquisition, data analysis, data interpretation, writing the original draft, final approval of manuscript for publication, agree to be accountable for all aspects of work; CS: Conceptualisation of research, designing the research, data acquisition, data analysis, data interpretation, writing the original draft, final approval of manuscript for publication, agree to be accountable for all aspects of work.

ACKNOWLEDGEMENTS

We are grateful to Dr G K Vankar for his unlimited guidance and support.

REFERENCES

1. Cipriano A, Cella S, Cotrufo P. Nonsuicidal self-injury: A systematic review. *Front Psychol*. 2017;8(NOV):282818. doi:10.3389/FPSYG.2017.01946/TEXT
2. Andover MS, Gibb BE. Non-suicidal self-injury, attempted suicide, and suicidal intent among psychiatric inpatients. *Psychiatry Res*. 2010;178(1):101–5. doi:10.1016/J.PSYCHRES.2010.03.019 PubMed PMID: 20444506.
3. Harvey SB, Dean K, Morgan C, Walsh E, Demjaha A, Dazzan P, *et al.* Self-harm in first-episode psychosis. *Br J Psychiatry*. 2008;192(3):178–84. doi:10.1192/BJP.BP.107.037192 PubMed PMID: 18310576.
4. Nyman AK, Jonsson H. Patterns of self-destructive behaviour in schizophrenia. *Acta Psychiatr Scand*. 1986;73(3):252–62. doi:10.1111/J.1600-0447.1986.TB02682.X PubMed PMID: 3716842.



5. Perez J. Review: about one in five people with first-episode psychosis have a history of deliberate self-harm. *Evidence Based Mental Health*. 2013;16(4):113. doi:10.1136/EB-2013-101465 PubMed PMID: 10.1136/eb-2013-101465.
6. Pluck G, Lekka NP, Sarkar S, Lee KH, Bath PA, Sharif O, *et al.* Clinical and neuropsychological aspects of non-fatal self-harm in schizophrenia. *Eur Psychiatry*. 2013;28(6):344–8. doi:10.1016/J.EURPSY.2012.08.003 PubMed PMID: 23062836.
7. Volkow ND, Blanco C. Substance use disorders: a comprehensive update of classification, epidemiology, neurobiology, clinical aspects, treatment and prevention. *World Psychiatry*. 2023;22(2):203. doi:10.1002/WPS.21073 PubMed PMID: 37159360.
8. Lamsma J, Cahn W, Fazel S. Use of illicit substances and violent behaviour in psychotic disorders: two nationwide case-control studies and meta-analyses. *Psychol Med*. 2019;50(12):2028. doi:10.1017/S0033291719002125 PubMed PMID: 31462346.
9. Breitborde NJK, Srihari VH, Woods SW. Review of the operational definition for first-episode psychosis. *Early Interv Psychiatry*. 2009;3(4):259–65. doi:10.1111/J.1751-7893.2009.00148.X PubMed PMID: 22642728.
10. Posner K, Brown GK, Stanley B, Brent DA, Yershova K V., Oquendo MA, *et al.* The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. *Am J Psychiatry*. 2011;168(12):1266–77. doi:10.1176/APPI.AJP.2011.10111704 PubMed PMID: 22193671.
11. Addington J, Shah H, Liu L, Addington D. Reliability and Validity of the Calgary Depression Scale for Schizophrenia (CDSS) in Youth at Clinical High Risk for Psychosis. *Schizophr Res*. 2014;153(0):64. doi:10.1016/J.SCHRES.2013.12.014 PubMed PMID: 24439270.
12. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull*. 1987;13(2):261–76. doi:10.1093/SCHBUL/13.2.261 PubMed PMID: 3616518.
13. Birchwood M, Smith J, Drury V, Healy J, Macmillan F, Slade M. A self-report Insight Scale for psychosis: reliability, validity and sensitivity to change. *Acta Psychiatr Scand*. 1994;89(1):62–7. doi:10.1111/J.1600-0447.1994.TB01487.X PubMed PMID: 7908156.
14. Haug E, Melle I, Andreassen OA, Raballo A, Bratlien U, Øie M, *et al.* The association between anomalous self-experience and suicidality in first-episode schizophrenia seems mediated by depression. *Compr Psychiatry*. 2012;53(5):456–60. doi:10.1016/j.comppsy.2011.07.005 PubMed PMID: 21871617.
15. Hor K, Taylor M. Suicide and schizophrenia: a systematic review of rates and risk factors. *J Psychopharmacol*. 2010;24(4 Suppl):81–90. doi:10.1177/1359786810385490 PubMed PMID: 20923923.
16. Harris EC, Barraclough B. Suicide as an outcome for mental disorders. A meta-analysis. *Br J Psychiatry*. 1997;170(MAR.):205–28. doi:10.1192/BJP.170.3.205 PubMed PMID: 9229027.

