## ORIGINAL RESEARCH

# A study of suicidal ideas and behaviour among patients with schizophrenia

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**ABSTRACT**
**Background-** Suicide is the single biggest cause of death for schizophrenic patients. Suicide is a preventable act and can be reduced by assessing suicidal ideas and behaviours and by starting early interventions. This study was done to find out prevalence of suicidal ideas and behaviour among patients with schizophrenia and to assess demographic characteristics and disease related characteristics associated with suicidal ideations and suicidal behaviours among them.**Methodology-**This study was conducted as cross-sectional study on 75 diagnosed cases of schizophrenia, attending tertiary care centre, Bhopal. All of the participants' socio-demographic information and disease related characteristics was documented in a semi-structured proforma. The clinical manifestations and symptoms of all patients were assessed using PANSS. Suicidal ideation and prompts were assessed by applying Columbia suicide severity rating scale (CSSRS). **Results-** This study was conducted on a total of 75 diagnosed cases of schizophrenia and risk of suicidality was present in 33 (44%) cases with schizophrenia. Lower age was significantly associated with risk as well as severity of suicidality (p<0.05). Risk of suicidality was significantly higher during early phase of illness as observed from lower mean duration of illness in patients with risk of suicidality (p<0.05). Short duration of illness, not taking treatment and higher total and positive PANSS score were significantly associated with severity of suicidal risk (p<0.05).**Conclusion-**Schizophrenia as a disease, carries a higher risk of suicide. More research into the links between schizophrenia and suicide is needed. Suicidal ideas are precursor to either attempted suicide or completed suicide. Finding out prevalence and associated risk factors in Indian setting can help understanding magnitude of the problem and potential indicators or red flags of suicide. This may finally help in preventing suicides.
**Keywords-** Schizophrenia, suicide, PANSS, CSSRS

## INTRODUCTION

Schizophrenia is perhaps one of the most perplexing yet damaging of all brain disorders, it has a prior onset and a long-term course, associated with severe and persistent psychotic manifestations (Delusion, hallucination, disorganized speech) coupled by varying cognitive dysfunction and considerable psychosocial impairment.[1-3] The disorder also has disabling negative symptoms evidenced by a loss or reduction of cognitive symptoms such as attention, working memory or executive function impairment, but these symptoms are still undervalued and under recognized as a source of disability. It is possible to argue that the severity of negative symptoms predicts short- and long-term incapacity more accurately than the severity of psychosis or disorganised symptoms.[4]

As per a World Health Organization report from 2021, over 24 million people around the world suffer from schizophrenia.[5] According to the National Mental Health Survey of India 2015-16, India's lifetime prevalence of schizophrenia was 1.41 percent, with a current prevalence of 0.5 percent.[6] Schizophrenia is also the eighth most common cause of disability adjusted life years (DALY) in people aged 15 to 44 years. According to WHO data from 2004, India's DALY rate was 268.903 per 100,000 people.[7]
In 1911 E. Bleuler described "the suicidal drive" as the "most serious of all schizophrenic symptoms" after few years later in 1919 Kraepelin postulated that suicide occurred in both acute and chronic phases of schizophrenia.[8,9] Suicide is the single biggest cause of death for schizophrenic patients. Multiple studies

have found that schizophrenia is associated with a significant reduction in life expectancy, and had a greater risk for premature death approximately twice that of the general population and people suffering from schizophrenia pass away 15 to 30 years prior than the general population, as suicidal behavior and medical needs continue to be quite high over the world.[3,10]

Suicide is a preventable act and can be reduced by assessing suicidal ideas and behaviors and by starting early interventions. Recognizing suicide risk factors in schizophrenia patients is critical for improving patient care and developing new strategies to lowering suicide rates, but these factors are difficult to pinpoint. A suicide in a teenager with psychotic symptoms is followed more frequently by a suicide in the next 5 years than by a nonpsychotic teenager.[11] Also prevention of suicide is now a top priority in mental health policies of the WHO. When we went through the earlier studies, we found that suicidality in schizophrenia patients is commonly associated with sociodemographic characteristics and rate of suicide also varies from region to region and in our knowledge, there were no such studies conducted until now in capital region of Madhya Pradesh. So our aim in this research was to find out prevalence of suicidal ideas and behaviour among patients with schizophrenia and to assess demographic characteristics and disease related characteristics associated with suicidal ideations and suicidal behaviours among them.This study could be helpful in early detection of suicidality and formation of suicide prevention strategies and in this way we could save some valuable lives.

## METHODOLOGY

This study was conducted as a cross-sectional study on 75 diagnosed cases of schizophrenia, consists of 42 male and 33 female patients who were come to department of psychiatry, Peoples College of Medical Sciences and Research centre, Bhopal (M.P.) during study period (November 2019-April 2021). All the patients between age 18 to 65 years, diagnosed schizophrenia patients as per DSM 5 criteria were included whereas patients with significant substance use disorder and other comorbidities were excluded from the study. The institutional Ethical Committee approved the project and written consent was obtained from the guardian of the patients.

All of the participants' socio-demographic information and disease related characteristics was documented in a semi-structured proforma. Socioeconomic status (SES) were measured by using Modified Kuppuswamy scale, 2019.[12]The clinical manifestations and symptoms of all patients were assessed using the positive and negative syndrome scale (PANSS).[13] Suicidal ideation and prompts were assessed by applying Columbia suicide severity rating scale (CSSRS).[14]

PANSS Scale- This is a scale of 30 items, each item has 7 point rating. It was developed as a carefully defined and operationalized tool that measures positive, negative and other aspects of symptoms based on a standardized semi-structured medical interview and other informal sources. In the 30 items, seven are grouped into positive evaluation characteristics that are super-added to a normal mental state, seven items are grouped into negative evaluation characteristics that are missing from a normal mental state, the remaining 16 items reflect a general psychopathology spectrum assessing the overall extent of the schizophrenic condition by compilation of 16 things. It has internal consistency between 0.73 and 0.83.[13]

Columbia Suicide Severity Rating Scale- The Screener comprises 6 questions which could be answered in "yes" or "no". In it respondents are asked if they have experienced numerous suicide-related thoughts or feelings over the span of a month and behaviours over their entire life and 3 months. Every question discusses a different element of the suicidal ideation frequency and actions of the respondent.

- Question 1: want to die
- Question 2: Un-specific thoughts of suicide
- Questions 3-5: More particular thoughts and intentions of suicide
- Question 6: Suicidal actions during the lifespan of the respondent and the last 3 months
- If the participant answers Question 2 "yes", he/she will be asked to answer Questions 3-5. If answering "no" to Question 2, the participant can go to Question 6.
- A "yes" answer to any of the 6 questions may signify a need for consultation to a qualified mental health individual and a "yes" answer to questions 4, 5 or 6 may signify a greater risk response.[14]

## STATISTICAL ANALYSIS

Data was compiled using MsExcel and analysed using IBM SPSS software version 20. Categorical variables were expressed as frequency and percentage whereas continuous variables were expressed as mean and Standard deviation. Categorical variables were compared using chi square test whereas continuous variables were compared using independent t test (risk of suicidality present or absent) and ANOVA (severity of risk). P value less than 0.05 was considered statistically significant.

## RESULTS

This study was conducted on a total of 75 diagnosed cases of schizophrenia and among them , the risk of suicidality was present in 33 (44%) cases with schizophrenia. And among them, the severity of suicidality was moderate in 25 (33.3%) cases whereas risk was high and low in 7 (9.3%) and 1 (1.3%) cases respectively (Figure 1).
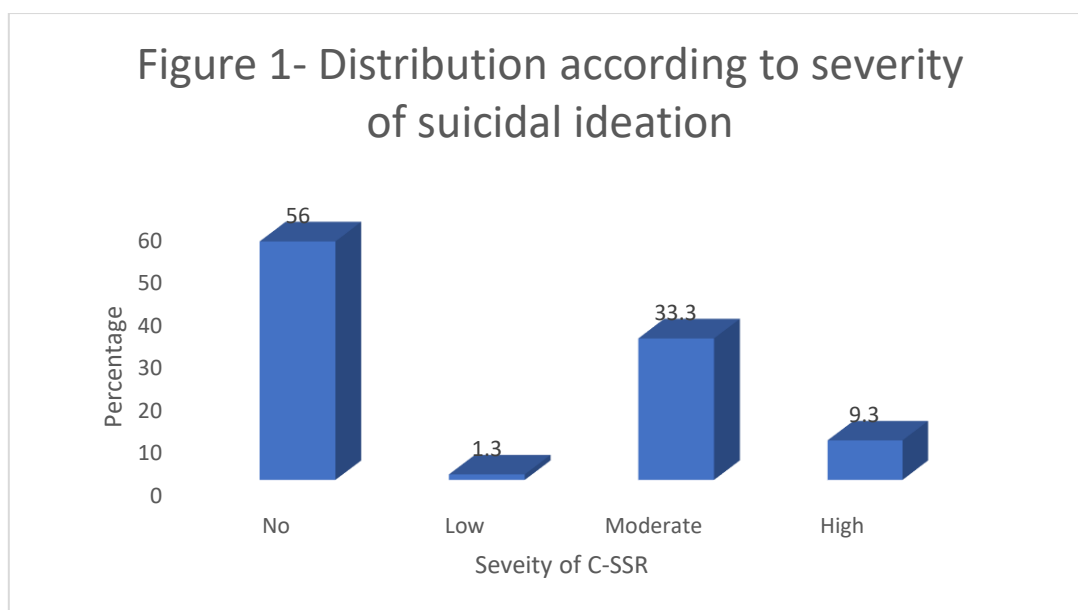
Figure 1- Distribution according to severity of suicidal ideation

**Table 1- Association of risk of suicidality with sociodemographic factors**

| Sociodemographic variables | | Risk absent (n=42) | Risk present (n=33) | P value |
|---|---|---|---|---|
| Age | Mean±SD | 36.64±11.45 | 28.30±8.06 | **0.026** |
| Gender | Male | 23 (54.8) | 19 (57.6) | 0.81 |
| | Female | 19 (45.2) | 14 (42.4) | |
| Education | Illiterate | 4 (9.5) | 0 (0) | 0.23 |
| | Literate | 38 (90.5) | 33 (100) | |
| Occupation | Employed | 6 (14.3) | 3 (9.1) | 0.49 |
| | Unemployed | 36 (85.7) | 30 (90.9) | |
| Marital status | Unmarried | 18 (42.9) | 20 (60.6) | 0.07 |
| | Married | 21 (50) | 8 (24.2) | |
| | Separated | 3 (7.1) | 5 (15.2) | |
| Type of family | Nuclear | 24 (57.1) | 17 (51.5) | 0.63 |
| | Joint | 18 (42.9) | 16 (48.5) | |
| Locality | Rural | 13 (31) | 6 (18.2) | 0.21 |
| | Urban | 29 (69) | 27 (81.8) | |
| Socioeconomic status | Upper middle | 14 (33.3) | 7 (21.2) | 0.40 |
| | Lower middle | 15 (35.7) | 11 (33.3) | |
| | Upper lower | 13 (31) | 14 (42.4) | |
| | Lower | 0 (0) | 1 (3) | |

Amongst various sociodemographic factors, lower age was significantly associated with risk of suicidality (p<0.05) (Table 1). However, we found no significant association of risk of suicidality with other sociodemographic variables (p>0.05).

**Table 2- Association of severity of suicidality with sociodemographic factors**

| Sociodemographic variables | | C-SSRS risk status | | | | P value |
|---|---|---|---|---|---|---|
| | | No (n=42) | Low(n=1) | Moderate (n=25) | High (n=7) | |
| Age | Mean | 36.64±11.45 | 24.00±0 | 30.16±7.85 | 22.29±6.37 | **0.03** |
| Gender | Male | 23 (54.8) | 0 (0) | 15 (60) | 4 (57.1) | 0.69 |
| | Female | 19 (45.2) | 1 (100) | 10 (40) | 3 (42.9) | |
| Education | Illiterate | 4 (9.5) | 0 (0) | 0 (0) | 0 (0) | 0.55 |
| | Literate | 38 (90.5) | 1 (100) | 25 (100) | 7 (100) | |
| Occupation | Employed | 6 (14.3) | 0 (0) | 3 (12) | 0 (0) | 0.73 |
| | Unemployed | 36 (85.7) | 1 (100) | 22 (88) | 7 (100) | |
| Marital status | Unmarried | 18 (42.9) | 1 (100) | 13 (52) | 6 (85.7) | 0.14 |
| | Married | 21 (50) | 0 (0) | 7 (28) | 1 (14.3) | |
| | Separated | 3 (7.1) | 0 (0) | 5 (20) | 0 (0) | |
| Type of family | Nuclear | 24 (57.1) | 1 (100) | 10 (40) | 6 (85.7) | 0.12 |

| | Joint | 18 (42.9) | 0 (0) | 15 (60) | 1 (14.3) | |
| Locality | Rural | 13 (31) | 0 (0) | 6 (24) | 0 (0) | 0.33 |
| | Urban | 29 (69) | 1 (100) | 19 (76) | 7 (100) | |
| Socio-economic status | Upper middle | 14 (33.3) | 0 (0) | 5 (20) | 2 (28.6) | 0.81 |
| | Lowermiddle | 15 (35.7) | 0 (0) | 9 (36) | 2 (28.6) | |
| | Upper lower | 13 (31) | 1 (100) | 10 (40) | 3 (42.9) | |
| | Lower | 0 (0) | 0 (0) | 1 (4) | 0 (0) | |

As observed from above table (table 2), mean age of patients with high risk of suicidality was significantly lower as compared to patients with low and moderate severity (p<0.05). We observed no significant association of severity of suicidality with other sociodemographic variables (p>0.05).

**Table 3- Association between suicidal risk and disease characteristics**

| Disease related variables | | Risk absent (n=42) | Risk present (n=33) | P value |
|---|---|---|---|---|
| Age at onset | Mean±SD | 27.48±9.87 | 21.76±5.53 | 0.113 |
| Age at hospitalization | Mean±SD | 27.78±8.98 | 23.52±6.58 | 0.81 |
| No. of hospitalization | Mean±SD | 2.14±2.63 | 1.67±1.65 | 0.86 |
| Duration of illness | Mean±SD | 110.07±81.30 | 79.79±69.66 | **0.035** |
| Treatment status | Off | 18 (42.9) | 15 (45.5) | 0.82 |
| | On | 24 (57.1) | 18 (54.5) | |
| PANSS score (Mean±SD) | Total score | 67.90±21.98 | 76.55±22.95 | 0.954 |
| | Positive score | 14.93±7.47 | 18.88±8.83 | 0.087 |
| | Negative score | 19.74±9.34 | 23.18±9.01 | 0.266 |
| | General psychopath score | 33.24±8.92 | 38.42±13.52 | 0.357 |

As observed from table 3, risk of suicidality was significantly higher during early phase of illness as observed from lower mean duration of illness in patients with risk of suicidality (p<0.05). We reported no significant association of risk of suicidality with other disease related variables (p>0.05).

**Table 4- Association between severity of suicidal riskand disease characteristics**

| Disease related variables | | C-SSRS risk status | | | | P value |
|---|---|---|---|---|---|---|
| | | No (n=42) | Low(n=1) | Moderate (n=25) | High (n=7) | |
| Age at onset | Mean±SD | 27.48 ± 9.87 | 20.00 ±0 | 22.48±6.07 | 19.43±2.64 | 0.31 |
| Age at hospitalization | Mean±SD | 1.60 ± 1.06 | - | 1.48 ± 1.05 | 1.14 ± 0.69 | 0.22 |
| No. of hospitalization | Mean±SD | 2.14 ± 2.64 | 0 | 1.64 ± 1.68 | 2.00 ± 1.63 | 0.84 |
| Duration of illness | Mean±SD | 110.07±81.30 | 48.00 ± 0 | 93.12±70.43 | 36.71±54.44 | **0.01** |
| Treatment status | Off | 18 (42.9) | 1 (100) | 8 (32) | 6 (85.7) | **0.048** |
| | On | 24 (57.1) | 0 (0) | 17 (68) | 1 (14.3) | |
| PANSS score (Mean±SD) | Total score | 67.90±21.98 | 103.0±0 | 70.36±22.1 | 94.86±13.6 | **0.01** |
| | Positive | 14.93±7.47 | 28.0±0 | 15.92±7.59 | 28.14±5.9 | **0.01** |
| | Negative | 19.74±9.34 | 26.0±0 | 23.08±10.2 | 23.14±3,9 | 0.46 |
| | General psychopath | 33.24±8.92 | 49.0±0 | 36.56±14.49 | 43.57±8.48 | 0.07 |

Short duration of illness, not taking treatment and higher total and positive PANSS score were significantly associated with severity of suicidal risk (p<0.05) (table 4).

## DISCUSSIONS

People with schizophrenia are known to die more sooner than expected and lifetime suicide risk for adults with schizophrenia is 4.9%.[15] Clinically, detecting those at risk is critical, yet risk prediction is extremely difficult.[16] In our study, risk of suicidality was assessed using C-SSR risk scale and suicidal ideation and behaviour were present in 44% cases with schizophrenia. However, Philips et al reported suicidality rate of 10.1%[17] whereas the rate was 22.3% in a study of Osborn et al.[18] In our study rate of suicidality was surprisingly high when compared with the above-mentioned studies but when we further

calculate the rate of suicidality in low, moderate and high risk group we found 1.3%, 33.3% and 9.3% respectively. It might be due to treatment status of the patient. Furthermore, the 'actual' suicide rate fluctuate over time, based on a variety of complex circumstances, including the time period studied.

In present study, risk of suicidality as well as severity of suicidality was significantly higher in cases belonging to younger age (P=0.026). The findings of our study were supported by findings of Hor et al.[19] and Banwari et al.[20] in which they found that patients with schizophrenia who had suicide attempts were younger.

In our study, short duration of illness i.e., acute illness (less than a year) was significantly associated with risk of suicidality (21.2% with risk as compared to 4.8% without risk) (p=0.035). Mean duration of illness in cases with no, low, moderate and high suicidal risk was 110.07±81.30, 48.00±0, 93.12±70.43 and 36.71±54.44 months. Patients with high risk of suicidal ideation and behaviour had significantly short duration of illness as compared to those with moderate risk or no risk of suicidality (p=0.01). Similar results were found in a study by Siris et al, in which Patients with schizophrenia have a significantly increased risk of suicide throughout the first decade of their illness, and this risk persists throughout their lives, with periods of worsening or improvement.[21] This is further supported by other studies conducted by Hor et al,[19] Balhara et al,[22] and Carlborg et al.[23] Poor treatment adherence, according to Hawton et al.[24] is linked to an increased risk of suicide (OR=3.75). Some of the studies performed previously found that people who received treatment had a lower risk of suicide.[25,26], however, Ran et al.[27] found no significant difference in suicide rates between the treated and non-treated groups, despite the fact that the non-treated group had more severe symptoms which is in agreement to our study findings where treatment status of patients with schizophrenia did not significantly differ in patients with or without the suicidal ideation (p=0.82). However, in our study, off treatment status was significantly associated with high risk of suicidality (85.7%) and whereas majority of cases with no risk of suicidality were on treatment (p=0.048). It might be because severity of symptoms and psychopathology of illness is greater in the patients who were not on treatment.

In our study, PANSS score in cases with and without risk of suicidality was higher in cases with risk as compared to cases with no risk of suicidality but the observed difference in PANSS score between cases with and without suicidal risk was statistically insignificant (p>0.05). Mean of total PANSS score as well as mean positive score was observed to be significantly higher in cases with low risk (103.00, 28.00) followed by high (94.86, 28.14) and moderate risk (70.36, 15.92) of suicidality as compared to no risk (67.90, 14.93) (P=0.01). According to several research positive symptoms of schizophrenia have been linked to an increased risk of suicide and 80 percent of individuals with schizophrenia have delusions during suicide attempts.[24,28] This suggests that schizophrenia the disease itself possess an increased risk for suicide and it is an independent risk factor for suicide. Further studies can help us disentangle the links between schizophrenia and suicide.

Our study had certain limitations, first, small sample size of this study may consider as limitation. Second, some patient's illness duration was more than 10 years so sometimes it was hard for the patients to recall the suicidality they faced in their initial phase of illness.

Third, Family history of suicidality was not assessed whereas it is a strong indicator of future suicidality.

## CONCLUSION

Schizophrenia as a disease, carries a higher risk of suicide. More research into the links between schizophrenia and suicide is needed. Suicidal ideas are precursor to either attempted suicide or completed suicide. Finding out prevalence and associated risk factors in Indian setting can help understanding magnitude of the problem and potential indicators or red flags of suicide. This may finally help in preventing suicides.

## REFERENCES

1. Tamminga CA. Developments in Somatic Treatment Introduction. The American journal of psychiatry. 1994 Jun 1;151(6):216-9.
2. Lavretsky H. History of schizophrenia as a psychiatric disorder. Clinical handbook of schizophrenia. 2008:3-13.
3. Ruiz P. Phenomenology of schizophrenia. Worldwide burden of schizophrenia, Comprehensive textbook of psychiatry. Sadock BJ, Sadock VA, editors. Wolters Kluwer Vol1. 2017 p1434-5.
4. Buchanan RW. Persistent negative symptoms in schizophrenia: an overview. Schizophrenia bulletin. 2007 Jul 1;33(4):1013-22.
5. Schizophrenia. World Health Organisation. Available from https://www.who.int/news-room/fact-sheets/detail/schizophrenia#:~:text=Schizophrenia%20 affects%20approximately%2024%20million,as%20ma ny%20other%20mental%20disorders. Last accessed on December 2021.
6. Murthy RS. National mental health survey of India 2015–2016. Indian journal of psychiatry. 2017 Jan;59(1):21.
7. Awad AG, Voruganti LN. The burden of schizophrenia on caregivers: a review. Pharmacoeconomics. 2008 Feb;26:149-62.
8. Bleuler E. Dementia praecox, oder Gruppe der Schizophrenien. Deuticke; 1911.
9. Kraepelin E. Psychiatrische Randbemerkungen zur Zeitgeschichte: (Psychiatric observations on contemporary issues). History of Psychiatry. 1992 Jun;3(10):256-69.
10. Saha S, Chant D, McGrath J. A systematic review of mortality in schizophrenia: is the differential mortality gap worsening over time?. Archives of general psychiatry. 2007 Oct 1;64(10):1123-31.
11. Sher L, Kahn RS. Suicide in schizophrenia: an educational overview. Medicina. 2019 Jul 10;55(7):361.
12. Saleem SM, Jan SS. Modified Kuppuswamy socioeconomic scale updated for the year 2019. Indian J Forensic Community Med. 2019 Jan;6(1):1-3.
13. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophrenia bulletin. 1987 Jan 1;13(2):261-76.
14. Posner K, Brown GK, Stanley B, Brent DA, Yershova KV, Oquendo MA, Currier GW, Melvin GA, Greenhill L, Shen S, Mann JJ. The Columbia–Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents

and adults. American journal of psychiatry. 2011 Dec;168(12):1266-77.

15. Bushe CJ, Taylor M, Haukka J. Mortality in schizophrenia: a measurable clinical endpoint. Journal of psychopharmacology. 2010 Nov;24(4_suppl):17-25.

16. Goldney RD. The privilege and responsibility of suicide prevention. Crisis: The Journal of Crisis Intervention and Suicide Prevention. 2000;21(1):8.

17. Phillips MR, Yang G, Li S, Li Y. Suicide and the unique prevalence pattern of schizophrenia in mainland China: a retrospective observational study. Lancet. 2004 Sep 18-24;364(9439):1062-8.

18. Osborn D, Levy G, Nazareth I, King M. Suicide and severe mental illnesses. Cohort study within the UK general practice research database. Schizophr Res. 2008 Feb;99(1-3):134-8

19. Hor K, Taylor M. Suicide and schizophrenia: a systematic review of rates and risk factors. Journal of psychopharmacology. 2010 Nov;24(4_suppl):81-90.

20. Banwari GH, Vankar GK, Parikh MN. Comparison of suicide attempts in schizophrenia and major depressive disorder: an exploratory study. Asia-Pacific Psychiatry. 2013 Dec;5(4):309-15.

21. Siris SG. Suicide and schizophrenia. Journal of psychopharmacology. 2001 Mar;15(2):127-35.

22. Balhara YP, Verma R. Schizophrenia and suicide. East asian archives of psychiatry. 2012 Jan;22(3):126-33.

23. Carlborg A, Winnerbäck K, Jönsson EG, Jokinen J, Nordström P. Suicide in schizophrenia. Expert review of neurotherapeutics. 2010 Jul 1;10(7):1153-64.

24. Hawton K, Sutton L, Haw C, Sinclair J, Deeks JJ. Schizophrenia and suicide: systematic review of risk factors. The British Journal of Psychiatry. 2005 Jul;187(1):9-20.

25. Barak Y, Baruch Y, Achiron A, Aizenberg D. Suicide attempts of schizophrenia patients: a case-controlled study in tertiary care. Journal of psychiatric research. 2008 Aug 1;42(10):822-6.

26. Preti A, Meneghelli A, Pisano A, Cocchi A. Risk of suicide and suicidal ideation in psychosis: results from an Italian multi-modal pilot program on early intervention in psychosis. Schizophrenia Research. 2009 Sep 1;113(2-3):145-50.

27. Ran MS, Chen EY, Conwell Y, Chan CL, Yip PS, Xiang MZ, Caine ED. Mortality in people with schizophrenia in rural China: 10-year cohort study. The British Journal of Psychiatry. 2007 Mar;190(3):237-42.

28. Fenton WS. Depression, suicide, and suicide prevention in schizophrenia. Suicide and Life-Threatening Behavior. 2000 Mar;30(1):34-49.