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Self-harm and suicide attempts in Schizophrenia

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Abstract

Background—The risk of suicide among persons with schizophrenia (SZ) is higher than in general population, with multiple contributory factors. We assessed the prevalence of risk of deliberate self-harm and suicide attempts, along with associated socio-demographic and clinical factors in a group of SZ outpatients (n=61) as part of a larger study on overall schizophrenia-associated risks.

Aims—To investigate factors associated with risk of deliberate self-harm and suicide among persons with schizophrenia.

Method—Out of 270 SZ participants evaluated for various risks using Ram Manohar Lohia Risk Assessment Interview (RML-RAI), 61 reported risk of self-harm including suicide attempt/s. The factors associated with this risk were further evaluated on clinical details and Diagnostic Interview for Genetic Studies.

Results—Risk of reported self-harm was 22.59%. Among them, 10% had attempted suicide at least once. Current age and past month Global Assessment of Functioning score from DIGS (GAF) were significantly correlated with suicide attempt. Attempters had significantly lower current GAF score, indicating poorer functioning. Among 27 attempters, 9 attempted at the onset of illness while 6 others attempted suicide within one year. Most common method of attempt was ingestion of insecticides or overdose of medication, followed by hanging or jumping from height.

Conclusion—In our hospital-based sample of suicide attempters, 10% had attempted suicide, among them over 55% within first year of illness. Attempters were significantly older than non-attempters and suffered from significantly more severe illness than non-attempters. Positive symptoms were significantly associated with attempt, irrespective of time at which suicide was attempted.

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Conflict of Interest

There is no conflict of interest to be declared by any of the authors

Keywords

Schizophrenia; risk; self-harm; suicide; GAF

1. INTRODUCTION

Mortality is an important adverse outcome of severe mental illness including schizophrenia, irrespective of setting (Brown, 1997). Bleuler referred to the suicidal drive as the “most serious of the schizophrenic symptoms” (Moskowitz and Heim, 2011). Schizophrenia reduces the overall life span by around ten years (White et al., 2009). A systematic review by Saha et al 2007 reported the median all-cause standardized mortality ratio (SMR) of Schizophrenia to be 2.58, with more than 2½-fold excess mortality among schizophrenia patients across the globe (Saha et al., 2007). In a longitudinal study in India, Dube et al reported SMR between 2.3 and 4.5 in males and females respectively in a cohort of schizophrenia patients followed up for 13–14 years (Dube et al., 1984). Harrison et al. reported equally high rates, ranging from 1.86 to 3.02 in various Indian centres like Madras, Agra, Chandigarh urban and rural settings (Harrison et al., 2001). A recent study from South India also reported high suicide rate (33.3%) in their schizophrenia sample (Bagewadi et al., 2016).

The leading cause of death among persons affected with schizophrenia spectrum disorder is said to be suicide. The rate of attempted suicide in psychotic patients ranged from 10 to 50% (Melle et al., 2006, Power and McGowan, 2011). Up to 40–79% of individuals affected with Schizophrenia report suicidal ideation at least once during the course of illness (Fenton et al., 1997, Skodlar et al., 2008), where the estimated suicide rate is 579/100,000 person years and the lifetime risk of suicidal death is 5.6% (Hor and Taylor, 2010, Nordentoft et al., 2015).

The risk of suicide is a continuum stretching from suicidal ideation (ideations, intent and plans) to attempted suicide to completed suicide (Ventriglio et al., 2016). Suicidal ideation is a strong predictor of suicide and the basis of suicide prevention in schizophrenia (Chung et al., 2014). Additionally, self-harm increases the likelihood of eventual death by suicide (50–100 times more than general population over 12-months (Kjelby et al., 2015).

As self-harm and suicide are predominant causes of decreased survival in patients suffering from schizophrenia, there is a growing need for comprehensive assessment of both, in different settings. The current study aimed to assess suicide risk among persons with schizophrenia with self or caregiver reported history of self-harm or previous suicide attempt.

2. MATERIALS AND METHODS

The sample for the original study was 270 consenting patients diagnosed with schizophrenia registered at the Department of Psychiatry outpatients, PGIMER-Dr. RML Hospital, New Delhi from November 2011 to January 2013(details in Jakhar et al., 2015). Instruments used were the Diagnostic Interview for Genetic Studies- Hindi Version (DIGS) (Deshpande et al.,

1998) and Ram Manohar Lohia Risk Assessment Interview (RML-RAI) (Jakhar et al., 2014). Participants' functioning was assessed using the Global Assessment of Functioning (GAF) from the DIGS.

2.1 Global Assessment of Functioning (GAF-DIGS)

The GAF scale provides a clinical judgment of functioning of individuals suffering from mental illness in numeric fashion. It includes psychological, social and occupational functioning and does not take impairment due to physical and environment limitations into account. The scale ranges from zero (inadequate information) to 100 (superior functioning). Assessment is based on symptom severity or the level of functioning whichever is the worse of the two.

2.2 Ram Manohar Lohia Risk Assessment Interview(RML-RAI)

(Jakhar et al., 2014): is useful for obtaining details and history of risks, assessing whether the person's environment contributes to risk, seriousness of intent, planning and summary risk. The RML-RAI can be completed in one sitting and takes about 30 minutes. Questions can be supplemented with a description of areas of special interest. It is available for free use with the authors.

2.3 Assessment Procedure

After ethical approval by the Institutional Ethics Committee of PGIMER-RMLH and following ethical procedures, schizophrenia outpatients along with their caregivers/informants were recruited into the study (Jakhar et al.,2015).

Participants along with their caregiver were extensively interviewed using Hindi version of DIGS and available clinical records. Consensus diagnosis based on DSM-IV was reached after extensive clinical discussion with a senior Board certified Psychiatrist. Risks were assessed using RML-RAI. RML-RAI addresses quantitative as well as qualitative issues including psychopathology in terms of delusions, hallucinations or any made phenomena. Information regarding the attempted suicide was collected including number of attempts, age of first suicide attempt; methods resorted to, time interval between onset of illness and suicide attempt, intentionality and lethality of the attempt and management after the attempt. Data for only those who had attempted suicide was analyzed for this study.

2.4 Statistical analysis

SPSS (version 2.0) was used for statistical analysis. The level of significance was fixed at 0.05. Frequency distribution was carried out for socio demographic and clinical variables of participants who attempted suicide, including time of attempts since onset of illness, and various methods for attempting suicide. Binary logistic regression (Backward Wald) was applied to look for the association between suicide attempts and various parameters. Demographic and clinical parameters (age in years), gender, education, occupation, marital status, worst point GAF, past month GAF, duration of illness (in weeks), pattern of symptoms, longitudinal course of illness and pattern of severity of illness were taken as independent variables and suicide attempt was taken as dependent variable.

3. RESULTS

Out of 270, 61 participants reported risk of self-harm (22.59%), out of which 27 had ever attempted suicide i.e. 10% of the total sample.

There was no significant difference between attempters and non-attempters on sociodemographic parameters, except that attempters were much older at the time of assessment. Attempter group had lower current GAF score as compared to non-attempter group signifying lower functioning during past month. However, GAF at the worst point of illness, as well as age of onset of illness (recalled) were not significantly different.

Of those who had ever attempted suicide, mean age at first serious attempt was around 30 years, 60% of males attempted suicide while 40% female did so. Majority (~81%) of them were married currently or in the past, and were in (~78%) unskilled jobs.

Intentionality of suicide attempt, as rated by the interviewer and confirmed for reliability, was approximately similar in all the three groups i.e. no or minimal intent (33%), definite intent (29%) and serious intent to die (37%). In majority of the participants (~45%) there was no danger i.e. lethality was low. Most (~60%) attempted suicide only once. However, this was a survivor group who lived to 'tell the tale'.

The methods used by the participants were several. Two participants attempted suicide more than once and resorted to multiple methods. The most common method was ingestion of insecticide or medication overdose. Over half (55%) attempted suicide either at onset (n=9) or within one year of onset (n= 6), while the rest (n=12) attempted after one year of onset.

We also tried to look for the differences in terms of psychopathology among the participants who attempted suicide within one year of onset of illness and later. All participants who attempted at onset and within one year reported delusions (most commonly delusion of persecution followed by delusions of reference and infidelity) while 11/12 participants who attempted after one year of onset also reported delusions. Of those who attempted suicide, 7/9 of those who attempted suicide at onset, 5/6 (who attempted suicide within one year of onset) and 9/12 (who attempted suicide at some point after one year of onset) had reported auditory hallucinations at onset, within one year and after one year of onset of illness respectively. Among the attempters; 1/9, 2/6 and 4/12 reported visual hallucinations at onset, within one year and after one year of onset respectively.

4. DISCUSSION

The prevalence of suicide attempts in our sample of persons with schizophrenia was 10%. An earlier study from the same centre had reported 23.3% of attempted suicides among schizophrenia participants (Bhatia et al., 2006), they had included both schizophrenia and schizoaffective disorder while ours was a sample of schizophrenia participants only. Additionally, we included only those who reported clear intentionality and lethality. All other self-harming gestures were included in broader risk of self-harm.

Hence our current findings are more in consonance with findings of Gazdag et al. (Gazdag et al., 2015) where approximately 11% of Schizophrenia patients attempted suicide immediately following a violent crime (our sample reported no crimes). But contrasting results were seen by Hawton et al. (Hawton et al., 2005) where about 5%–10% patients suffering from schizophrenia usually completed suicide while about 25%–35% attempted suicide at some point in their lifetime, irrespective of their clinical recovery and condition.

In the Indian context, 34% of patients with schizophrenia reported at least one suicide attempt in a hospital based cross sectional study from Ahmadabad with 50 outpatients each of schizophrenia and major depressive disorder (Banwari et al., 2013). A study from Mumbai reported that out of 200, 38% (n =76) reported at least one severe suicide attempt, and 9.5% (n = 19) had attempted suicide more than three times (Shrivastava et al., 2016). But there could be wide variation in suicide rates within the country. The southern states of Kerala, Karnataka, Andhra Pradesh and Tamil Nadu report a suicide rate of > 15 while in the Northern States of Punjab, Uttar Pradesh, Bihar and Jammu and Kashmir, the suicide rate is <3 (Vijayakumar, 2008). A recent study in South India also reported high suicide rate (33.3%) in their schizophrenia sample (Bagewadi et al., 2016).

In our study, suicide attempts were significantly associated with being currently middle aged (44 years old on an average) and lower past month GAF. Gender, education, current marital status, age of onset, duration of illness in weeks, worst point GAF were not associated with risk of attempt. These findings are in consonance with findings of Koeda et al. where middle aged participants with Schizophrenia who attempted suicide had higher BPRS (Brief Psychiatric Rating Scale) scores and lower GAS (Global Assessment Scale) scores (Koeda et al., 2012).

Of those who had ever attempted suicide, mean age at first serious attempt was around 30 years with over 60% being males. Majority (~82%) of them were ever married and in (~78%) unskilled jobs. Western literature suggests that suicidality is associated with single status (Nyer et al., 2010) but our sample had ever married participants including married, separated, divorced or widowed. An early marriage system in India could have resulted in marriage before the onset of illness. More males attempted suicide than females.

Intentionality as rated by the interviewer was approximately similar in all the three groups. Suicide is a crime in India, and the cognitive declines among participants could have distorted their reports.

In majority (~45%) there was little or no danger i.e. lethality was low. Schizophrenia affects cognition including poor social functioning and issues in daily life (Kurebayashi and Otaki et al, 2017), so planning for suicide attempt might have been impaired resorting to methods of easy availability but low lethality. However, this was a survivor group who lived to 'tell the tale'. Majority (~60%) attempted suicide only once.

The methods used by our participants were several but only two participants attempted suicide more than once and resorted to multiple methods. Easily accessible methods were used-insecticide or medication overdose, followed by hanging and jumping. Substances ingested included mosquito sprays, toilet cleaners or overdosing with their prescribed

psychotropic medications, or over the counter medications at home. They tried to hang themselves with dupatta (piece of cloth) or ropes, or jumped in front of busy roads while travelling in moving bus. Similar methods were reported by Fleischhacker (Fleischhacker et al., 2014) where poison, drugs, hanging and trauma were most common. The most common method in Wierzbinski et al. (Wierzbinski et al., 2015) was by intoxication with drugs. Contrarily Ishii reported different methods such as jumping from heights or before trains (Ishii et al., 2014). In general, schizophrenia group tend to use serious methods such as jumping from high places, throwing oneself in front of an oncoming train and burning oneself in their suicide attempts (Koeda et al., 2012). Three participants attempted to set themselves afire. In Tunisia, the most common illness among those attempting suicide by self-immolation was schizophrenia (Ben Khelilet al., 2016).

In our sample, more than half (55%) attempted suicide either at onset (n=9) or within one year of onset (n= 6), similar to previous observations (Madsen et al., 2016), (Palmer et al., 2005), (Osby et al., 2000). The greatest suicide risk was found during the month before and 2 months after first contact with psychiatric services (i.e., 'early' attempts) (Ayesa-Arriola et al., 2015). Nearly half of Foley's sample reported suicide ideation in the month prior to first presentation and 10 subjects (9%) made a suicide attempt in first episode of psychosis (Foley et al., 2008). Bertelsen found strong association of suicidal ideation and plan after 1 and 2 year follow up in first episode psychosis (Bertelsen et al., 2007).

We also tried to look for the differences in terms of psychopathology among the participants who attempted suicide within one year of onset of illness and later. With respect to delusions and hallucinations, nearly all participants who attempted at any time reported delusions and hallucinations at the time of interview.

Symptoms of depression, positive symptoms of psychosis and hopelessness independently predict suicide behavior. Specifically, hallucinations and delusions play an important role in suicidal ideation (Bornheimer and Jaccard, 2016). Although there have been mixed findings with respect to positive symptoms affecting suicidal behavior, several authors opined that hallucinations predicted suicidal plans and ideation (Kjelbyet al., 2015), (Bertelsen et al., 2007). Hallucinations-delusions accounted for increased percentage of suicide attempts (Koeda et al., 2012), (Ishii et al., 2014). In a systematic review, Hawton et al. concluded that reduced risk was associated with hallucinations (Hawton et al., 2005).

4.1 STRENGTHS AND LIMITATIONS

The sample was adequately powered and randomly recruited. We attempted to assess all the socio-demographic and clinical factors associated with suicide attempt. We also tried to estimate the intentionality and lethality of every suicide attempt. We excluded substance dependence and affective disorder which are significant contributory factors in the literature.

However, our study suffered from some limitations- being retrospective, participants or their caregiver may have recalled only the most serious or the first episode. There might be underreporting of mild suicidal gestures. We could not assess whether psychopathology- delusions, hallucinations - were present at the time of attempt or not. We could only assess

whether psychopathology was present or not at the time of interview. No control group could be included.

Results of the study may not be generalizable as our participants were from a hospital based, treatment seeking survivor group. It is difficult to study deceased cases with completed suicide as there are no community records or registry. But this is an initiative to define risk factors among survivors which can help towards prevention of suicide in schizophrenia.

4.2 CONCLUSION

In this survivor study, suicide was attempted by 10% of the total sample and over half (55%) the participants attempted suicide either at onset or within one year of onset, while the rest attempted at some other point during the illness. Presence of delusions and hallucinations was significantly associated with the suicide attempt irrespective of time at which it took place.

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HIGHLIGHTS

- One fourth of schizophrenia patients reported self-harm including suicide attempt.
- Prevalence of suicide attempts was 10% in the sample.
- Fifty percent of attempted suicide was within one year of onset of illness
- Current age and past month GAF were significantly correlated with suicide attempt.
- Insecticide or overdose of medication was most common method of suicide attempt.

Table 1

Socio-demographic and clinical variables

| Parameters | Suicide Attempt Present (n=27) | Suicide Attempt Absent (n=34) | Chi- square/ F value | P value |
|--|--------------------------------|-------------------------------|----------------------|--------------|
| Current Age | 43.77(±9.518) | 36.79 (±9.782) | 7.668 | 0.008 |
| Gender (M:F) | 16:11 | 20:14 | 0.008 | 0.930 |
| Education | 9.81(±3.611) | 9.62 (±3.985) | .036 | 0.850 |
| Occupation 1/2/3/4 | 0/3/3/21 | 1/2/3/28 | 1.005 | 0.800 |
| Marital status Ever/ Never | 22/5 | 19/15 | 7.880 | 0.096 |
| Age at onset | 26.96 (±10.204) | 24.03 (±8.604) | 1.456 | 0.232 |
| Duration of illness in weeks | 560.92 (±338.280) | 443.24 (±260.748) | 2.279 | 0.137 |
| Pattern of Symptoms 1/2/3/4/5 | 1/0/1/0/25 | 3/1/1/0/29 | 1.430 | 0.689 |
| Longitudinal course of illness 1/2/3/4/5 | 1/2/24/0/0 | 0/2/27/3/2 | 5.430 | 0.246 |
| Pattern of severity 1/2/3/4/5 | 0/1/14/12/0 | 2/5/15/11/1 | 4.873 | 0.301 |
| GAF Worst Point | 20.81 (±5.138) | 23.15 (±4.736) | 3.340 | 0.073 |
| GAF Past Month | 35.81 (±11.024) | 45.21 (±19.155) | 4.983 | 0.029 |

M= Males, F= Females. Occupation- 1= Professional, 2= Technical, 3= Service occupations, 4= unskilled jobs
 Pattern of symptoms (qs.100 of DIGS) - 1= continuously positive, 2= predominantly negative, 3= predominantly positive converting to predominantly negative, 4= negative converting to positive, **5= continuous mixture of positive and negative symptoms**
 Longitudinal course of illness (qs.101 of DIGS) 1= episodic with inter-episodic residual symptoms, 2= episodic with no inter-episodic residual symptoms, **3= continuous**, 4= single episode in partial remission, 5= single episode in partial remission
 Pattern of severity (qs.102 of the DIGS) - 1= episodic shift, 2= mild deterioration, **3= moderate deterioration**, 4= severe deterioration, 5= relatively stable.

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Table 2

Profile of those who attempted suicide (n=27)

| Parameters | Mean± SD/frequency | Percentages |
|------------------------------------|--------------------|------------------------------------|
| Age at the time of suicide attempt | 30.92 ±10.158 | - |
| Gender (M:F) | 16:11 | 59.25: 40.75 |
| Marital status (Ever: Never) | 22:5 | 81.48: 18.52 |
| Occupation 1/2/3/4 | 0/3/3/21 | 0/11.1/11.1/ 77.78 |
| Intentionality 1/2/3 | 9/8/10 | 33.33/29.62/ 37.03 |
| Lethality 1/2/3/4/5/6 | 12/4/5/6/0/0 | 44.44/14.81/18.51/22.22/0/0 |
| Number of attempts 1/2/3 | 16/9/2 | 59.25/33.33/7.40 |

Occupation- 1= Professional, 2= Technical, 3= Service occupations, 4= unskilled jobs

Intentionality: 1= no or minimal intent, 2= definite intent but ambivalent, 3= serious intent, expected to die.

Lethality: 1= no danger, 2= minimal, 3= mild, 4= moderate, 5=severe, 6= extreme.

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