

# Suicidal ideation among a group of Kurdish schizophrenic patients

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## Background

Schizophrenic patients face an increasing risk of suicide. We aimed to study the demographic as well as clinical risk factors for suicidal thoughts among schizophrenic patients.

## Methods

100 schizophrenic patients with mean age of 32.96 year who did visit the psychiatric unit of Hawler Teaching Hospital from August 2009 to February 2010 were assessed for the risk of suicidal ideation by adopting standardized diagnostic and symptoms rating scales.

## Results

23% of the sample shows moderate-high suicidal ideation. No particular demographic variable was a significant predictor for current suicidal ideation. However, past history of suicide attempt (OR = 0.095;  $P$  value = 0.001), concurrent depression (OR = 0.079;  $P$  value = 0.001), and positive psychotic symptoms (OR = 1.102;  $P$  value = 0.068) were more predictive for current suicidal ideation.

## Conclusions

Suicide is an essential element when assessing patients with schizophrenia. Psychiatrists have to pay great attention to previous history of suicidal attempts, concurrent depressive disorders, and positive symptoms particularly hallucinatory behaviours. In addition, clinicians are required to distinguish between depressive and negative symptoms of schizophrenic patients.

## Keywords:

risk factor, schizophrenia, suicidal ideation

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## Introduction

Suicide is one of the leading causes of premature death among schizophrenic patients [1]. The lifetime prevalence of completed suicide among this group of patients has been estimated to be around 10% [2]. However, pre-community care studies have estimated a lifetime suicide risk of 0.03–18%, with larger study samples showing risks reaching up to 1–2% [3]. Furthermore, incomplete suicide attempts among schizophrenic patients have been rated much higher at around 18–55% [2].

Several risk factors for suicidal tendencies among schizophrenic patients have been studied including male sex, younger age group, never-married marital status, poor adherence to treatment, recently discharged patients, deinstitutionalization, comorbid substance misuse, a history of previous suicidal attempts, comorbid depression, regaining insight, and personal experience of stigmatization and disintegration in society [4–6].

Depression appears to be an important risk factor for suicide. Hawton *et al.* [7], in their systematic review of 29 studies, concluded that depression and previous suicidal attempts are among the most common risk factors for suicide among schizophrenic patients. Jones *et al.* [8] reported that patients with schizophrenia who also

experienced depression had a significantly greater likelihood of attempting suicide. In their study, patients' scores on the Hamilton Rating Scale for Depression correlated with suicidal attempts, whereas the sum of positive and negative symptom items from the Brief Psychiatric Rating Scale did not. Low concentrations of 5-hydroxyindoleacetic acid in the cerebrospinal fluid have been reported among patients with schizophrenia who attempted suicide [9].

The present study aims to examine both the rate and the risk factors of suicidal ideation and also to investigate the potential of depressive symptoms in influencing the risk of suicide among a group of Iraqi schizophrenic patients. Our main question was to determine whether suicidality in schizophrenic patients correlates positively with concurrent depression and/or with core symptoms of schizophrenia, particularly focusing on positive symptoms.

## Patient and methods

### Participants

A total of 138 schizophrenic patients were recruited following sample size estimation. The exclusion criteria were as follows: the presence of comorbid alcohol and substance misuse, except nicotine, as well as comorbid

neuromedical conditions. Among the patients approached, 38 were excluded from the study, of whom 16 were alcohol dependent and 11 were benzodiazepine dependent. Among the excluded 27 patients, three showed barbiturate and mixed substance dependency. Further, 11 patients were not included because of chronic disabling neuromedical conditions. We devised the above exclusion criterion to optimize the response to our second question on whether depression or schizophrenic symptoms are more accountable for suicidal ideation, as well as to avoid the confounding effects of substance misuse and chronic disability on suicidal ideation. On the basis of this, we recruited the 100 remaining schizophrenic patients who visited both the inpatient and the outpatient psychiatric units of Hawler Teaching Hospital (from the period of August 2009 to February 2010), which is the leading teaching hospital in the region.

Ethical approval was obtained from the 'Research Ethics Committee' of the College of Medicine, Hawler Medical University.

### Assessment

Informed consent, stressing on the anonymity of individuals as well as a detailed description of the purposes of the study, was obtained from each participant. For the purpose of diagnosis, the researchers relied on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed., Text Revised criteria for the diagnosis of schizophrenia [10]. The diagnosis was reconfirmed by adopting the Mini International Neuropsychiatric Interview, version 6 (MINI 6.0.0), chapter K, psychotic disorders and mood disorder with psychotic features [11–14]. The symptoms of schizophrenia were further assessed by adopting the Positive and Negative Syndrome Scale (PANSS) [15].

For the assessment of the depressive symptoms, the Calgray Depression Scale for Schizophrenia (CDSS) was used [16]. The CDSS was developed specifically to assess depression in schizophrenia, which consists of nine-item structured interview scales, in which each item has a four-point anchored measure (0 = absent, 1 = mild, 2 = moderate, 3 = severe). The CDSS is a reliable and valid tool for the assessment of depression among patients with schizophrenia [16,17]. It has a reasonable ability to distinguish among depression, negative symptoms, and extrapyramidal side effects [18].

Lastly, suicidality among each schizophrenic patients was assessed using MINI 6.0, chapter B, suicidality [11–14]. MINI suicidality consists of 11 structured interview questions assessing suicidal ideas and behaviors over the last 30 days. Each question has its own allocated point, with the total points being 52. Patients scoring 1–8 points were considered to have low current suicidality, those scoring 9–16 points were considered to have moderate current suicidality, and those scoring 17 and more were classified as having high current suicidality [11–14]. For the current study, schizophrenic patients were classified as either having low current suicidality or moderate to high current suicidality.

All scales were rated by one specialized general adult psychiatrist with more than 8 years of experience in the clinical and research fields.

### Statistical analyses

Data recording and analyses were carried out using the statistical package for social sciences, version 15 (SPSS Inc., Chicago, Illinois, USA).

Differences in proportion between schizophrenic patients with current moderate to high suicidal ideation and those with current low suicidal ideation were measured using the  $\chi^2$ -test for the dichotomous variables and the Student *t*-test for continuous data.

For the assessment of the predictive factors for suicidality, odds ratios (OR) were determined along with the 95% confidence interval (CI) using the binary logistic regression analysis. The tests were two-tailed. A *P*-value of 0.05% was considered significant.

## Results

We recruited 100 schizophrenic patients, mean age 32.96 years. Table 1 shows the detailed demographic description of the study sample.

A total of 23% of patients were categorized as having moderate to high suicidal ideation; no particular demographic variables discriminated them from the low-suicidal ideation group. A past history of suicidal attempts, concurrent depression, and a positive subscale of PANSS were significant predictors for current moderate to high suicidal ideation (Tables 2 and 3).

In assessing individual depressive symptoms, no particular depressive symptom was a significant predictor for the current suicidality (Table 4).

Among the positive symptoms of schizophrenia, only hallucinatory behavior was found to be a significant predictor for current moderate to high suicidal ideation (Table 5).

**Table 1 Description of the study sample (N=100)**

Age (mean $\pm$ SD) (years)	32.96 $\pm$ 1.03
Sex [N (%)]	
Male	77 (77)
Female	23 (23)
Marital status [N (%)]	
Unmarried	81 (81)
Married	19 (19)
Employment [N (%)]	
Unemployed	62 (62)
Employed	38 (38)
Past history of suicide attempt [N (%)]	
Yes	34 (34)
No	66 (66)
Current depression (CDSS $\geq$ 7) [N (%)]	
Yes	34 (34)
No	66 (66)
PANSS [mean (SD)]	
Positive subscale	20.74 (8.89)
Negative subscale	16.86 (11.36)
General subscale	31.68 (14.35)
Total PANSS	69.28 (29.21)

CDSS, Calgray Depression Scale for Schizophrenia; PANSS, Positive and Negative Syndrome Scale.

**Table 2 Comparison of psychosocial variables between schizophrenic patients with current moderate to high suicidality and current low suicidality**

	S positive <sup>a</sup> (N=23)	S negative <sup>a</sup> (N=77)	Test	P-value
Age (mean ± SD) (years)	30 ± 10.74	33.84 ± 10.18	$t = 1.56$	0.12
Sex [N (%)]			$\chi^2 = 0.16, d.f. = 1$	0.68
Male	17 (22.08)	60 (77.92)		
Female	6 (26.09)	17 (73.91)		
Marital status			$\chi^2 = 0.01, d.f. = 1$	0.93
Unmarried	19 (23.45)	62 (76.55)		
Married	4 (21.05)	15 (78.95)		
Employment [N (%)]			$\chi^2 = 0.01, d.f. = 1$	0.9
Unemployed	15 (24.2)	47 (75.8)		
Employed	8 (21.05)	30 (78.95)		
Past history of suicide attempt [N (%)]			$\chi^2 = 23.58, d.f. = 1$	0.0000012*
Yes	18 (52.94)	16 (47.06)		
No	5 (7.57)	61 (92.43)		
Current depression by CDSS [N (%)]			$\chi^2 = 23.58, d.f. = 1$	0.0000012*
Yes	18 (52.94)	16 (47)		
No	5 (7.57)	61 (92.43)		
PANSS (mean ± SD)				
PSS	26.08 ± 6.65	19.14 ± 8.89	$t = -3.46$	0.00079*
NSS	16.65 ± 10.88	16.92 ± 11.57	$t = 0.099$	0.92

CDSS, Calgray Depression Scale for Schizophrenia; PANSS, Positive and Negative Syndrome Scale.

<sup>a</sup>S positive, moderate to high suicidality; S negative, low suicidality.

\*Significant.

**Table 3 Psychosocial variables as predictors for current moderate to high suicidality among schizophrenic patients**

Sociodemographic variables	P-value	OR	95% CI for OR
Sex	0.363	1.994	0.451–8.824
Age	0.553	1.024	0.947–1.107
Employment	0.709	0.761	0.181–3.195
Marital status	0.456	0.453	0.056–3.632
Past history of suicide attempt	0.001*	0.095	0.023–0.395
Concurrent depression	0.001*	0.079	0.019–0.338
Positive subtotal of PANSS	0.068	1.102	0.993–1.222
Negative subtotal of PANSS	0.227	0.958	0.894–1.027

CI, confidence interval; OR, odds ratio; PANSS, Positive and Negative Syndrome Scale.

\*Significant.

**Table 4 Depressive symptoms of Calgray Depression Scale for Schizophrenia as predictors for current moderate to high suicidality among schizophrenic patients**

Depressive symptoms	P-value	OR	95% CI for OR
CDSS-1-depression	0.119	3.315	0.735–14.947
CDSS-2-hopelessness	0.215	0.432	0.115–1.626
CDSS-3-self-depreciation	0.176	2.484	0.665–9.281
CDSS-4-guilty ideas of reference	0.897	0.909	0.212–3.890
CDSS-5-pathological guilt	0.535	0.544	0.079–3.728
CDSS-6-morning depression	0.578	0.654	0.147–2.919
CDSS-7-early awakening	0.909	0.948	0.381–2.357
CDSS-8-suicide	0.000*	11.945	3.085–46.253
CDSS-9-observed depression	0.267	2.472	0.501–12.202

CDSS, Calgray Depression Scale for Schizophrenia; CI, confidence interval; OR, odds ratio.

\*Significant.

For the negative symptoms of schizophrenia, only stereotypic thinking was markedly associated with current moderate to high suicidal ideations (Table 6).

## Discussion

Although numerous studies have been carried out on the risks and prevalence of suicide, the present study, to the

**Table 5 Positive symptoms subscale of Positive and Negative Syndrome Scale as predictors for current moderate to high suicidality among schizophrenic patients**

Positive symptoms	P-value	OR	95% CI for OR
P1-delusions	0.110	1.618	0.897–2.918
P2-conceptual disorganization	0.133	0.796	0.591–1.072
P3-hallucinatory behavior	0.002*	1.724	1.211–2.454
P4-excitement	0.627	0.908	0.614–1.341
P5-grandiosity	0.885	1.027	0.719–1.466
P6-suspiciousness/persecution	0.886	0.967	0.607–1.539
P7-hostility	0.095	1.533	0.928–2.533

CI, confidence interval; OR, odds ratio.

\*Significant.

**Table 6 Negative symptoms subscale of Positive and Negative Syndrome Scale as predictors for current moderate to high suicidality among schizophrenic patients**

Negative symptoms	P-value	OR	95% CI for OR
N1-blunted effect	0.146	0.680	0.405–1.143
N2-emotional withdrawal	0.891	1.039	0.602–1.791
N3-poor rapport	0.531	0.878	0.585–1.319
N4-passive/apathetic social withdrawal	0.072	1.505	0.965–2.347
N5-difficulty in abstract thinking	0.259	0.859	0.659–1.119
N6-lack of spontaneity and flow of conversation	0.630	0.926	0.679–1.264
N7-stereotyped thinking	0.030*	1.554	1.043–2.316

CI, confidence interval; OR, odds ratio.

\*Significant.

authors' knowledge, is the first attempt to assess suicidal ideation among a group of Iraqi schizophrenic patients.

The main aims of our study were to evaluate the effects of sociodemographic factors as well as the symptomatology of schizophrenic patients on thoughts of suicide.

Among the 100 schizophrenic patients, 23% showed moderate to high suicidal thoughts.

### Demographic variables

The mean age of the higher suicidality group was less than the second group by more than 3 years. However, the difference between both groups did not reach significance (Tables 2 and 3).

The younger age group is certainly overrepresented in most studies [2,5]. Moreover, young schizophrenic patients have been found to be at a greater risk of suicide compared with young patients with mood disorders [19]. However, in a large population-based study, Rossau and Mortensen reported [20] the effect of age disappearing when other variables considered as well.

In terms of other sociodemographic variables such as sex, employment, and marital status, we did not find a clear association with any particular demographic variable (Tables 2 and 3).

Some evidence support being unmarried, socially isolated, and unemployed as risk factors for suicide among patients with schizophrenia. However, these features are common among most schizophrenic patients [21]. The results of our study are in agreement with this as 81% of patients were unmarried and 62% were unemployed (Table 1). Furthermore, Hawton *et al.* [7] concluded in their meta-analysis that sociodemographic factors are not significant and reliable predictors for suicide among schizophrenic patients.

The female sex was slightly nonsignificantly overrepresented among the moderate to high-suicidality group in our study. Studies carried out elsewhere have reported different male–female ratios among schizophrenic patients. Hu *et al.* [22] reported a male–female ratio of 3:2 among Taiwanese schizophrenic patients; and Goldstein *et al.* [23] reported a similar ratio. A possible explanation for our finding might be the limited number of female schizophrenic patients (23% of the sample). Nevertheless, unlike the general population, sex-based differences for the risk of suicide seem to be narrower among schizophrenic patients [5,24].

### History of previous suicide attempts

A total of 34% of our schizophrenic patients reported a past history of suicidal attempt(s), for which more than half of them (52.94%) showed current moderate to high suicidal ideation. This finding was highly significant with a *P*-value of less than 0.00 and an OR of 0.073 at a 95% CI of 0.022–0.242. This finding was in agreement with almost all other relevant studies elsewhere [4–7,19–22,25].

### Concurrent depression

In agreement with a past history of suicide attempts, concurrent depression was associated significantly with current moderate to high suicidality. A total of 34% of the total schizophrenic patients complained of depression at the same time (Table 2). Among them, 18 (52.94%, *P* < 0.00) scored moderate to high suicidal ideation. This result was replicated in almost all other studies in which researchers worldwide agreed on the fact that depression is one of the main contributing factors for suicidal

ideation and attempts among schizophrenic patients [4–7,19–22,25].

However, on assessing the CDSS symptoms, apart from question 8 (Have you felt that life was not worth living? Did you ever feel like ending it all? What did you think you might do? Did you actually try?), no other CDSS symptoms showed a significant association with current moderate to high suicidal ideation (Table 4). Keeping in mind that this question is tailored to assess suicidal ideations over the last couple of weeks, and that the same concern has been assessed through MINI, the authors excluded question 8 and recalculated the remaining CDSS symptoms, after which, question 7 (early awakening) showed a significant correlation with current moderate to high suicidal ideation (OR = 1.753, *P* = 0.044, 95% CI = 1.015–3.025). However, ‘early awakening’ is not a depression-specific symptom and might be a symptom of other psychiatric disorders, including schizophrenia.

Among the adult psychiatric populations, hopelessness has been shown to have a more clear correlation with suicidal intent [26–28] and subsequent suicide [29,30] compared with the severity of the depressive disorder.

Drake and Cotton [26] reported that feelings of hopelessness could be used to predict subsequent completed suicide in chronic schizophrenic patients. Moreover, Hawton *et al.* [7], in their meta-analyses, reported that feelings of restlessness, hopelessness, and worthlessness were associated with suicide among schizophrenic patients. Nevertheless, this contradiction with other studies might be because of the fact that we studied current suicidal ideations rather than completed or uncompleted suicidal acts; this is besides the difference in sample size, duration of illnesses, and means of assessment.

### Schizophrenia symptoms

The mean score of the positive subscale of PANSS in our study was significantly higher among the higher suicidality group (26.08) than the lower suicidality group [19,14], with a *P*-value of less than 0.000. The total PANSS mean score was significantly higher among the higher suicidality group, with a *P*-value of 0.002. However, the study found no significant differences in the mean scores of negative and general symptoms of PANSS (Table 2).

Hawton *et al.* [7], in their meta-analyses, reported conflicting findings, in which a few studies showed a significant association and two others showed a significant negative association between positive symptoms and suicidality. In terms of negative symptoms, the same meta-analysis showed no significant correlation with suicidality [7]. Furthermore, Grunebaum *et al.* [31] concluded that there are no significant associations between delusion and suicidality among schizophrenic patients.

In an attempt to assess the extent to which positive and negative symptoms may be associated with suicidal ideation among the patients, a logistic regression analysis was carried out with a 95% CI. Only P3-hallucinatory behavior among the positive symptoms and N7-stereotyped

thinking among the negative symptoms correlated significantly with current suicidal ideation, with an OR of 1.724 and 1.554 and *P*-values of 0.002 and 0.03, respectively (Tables 5 and 6).

Although suicidal command hallucinations have been found to be rare in both attempted and committed suicides [2], persistent auditory hallucinations have been linked to suicidal behavior in a number of retrospective studies [4,32].

In terms of negative symptoms, our finding was relevant to other findings in the context of no significant correlation with suicidal ideation [7]. However, in contrast to other studies, N7-stereotyped thinking correlated significantly with suicidal ideation (OR = 1.554; *P* = 0.03) (Table 6).

## Conclusion

Our results suggest that prediction of suicide in schizophrenic patients requires considerable efforts because of its complexity. No particular demographic variable predicts suicide. However, a past history of suicide attempts, concurrent depression, and positive symptoms may provide clinicians a better forecast for this fatal outcome. In assessing depression among schizophrenic patients, it is essential not to confound the depressive symptoms with the negative symptoms of schizophrenia.

Finally, we would like to acknowledge the limitations of our study, which include our failure to address the subtypes of schizophrenia and the fact that we could not assess reliably the duration of illness in each patient because of the poor recording system in our health service. Another shortcoming of our study was the difficulty in assessing the 'timing' of 'past suicide attempts' as almost all patients found their approximate dates of 'past suicide attempts' 'hard to recall'.

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## Conflicts of interest

There are no conflicts of interest.

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## الملخص العربي

### الأفكار الانتحارية لدى مجموعة من مرضى الفصام الكرد

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تم البحث و الدراسة على عينة من مرضى الفصام الذين راجعوا قسم الطب النفسي في مستشفى هولير التعليمي من شهر اب 2009 الى شباط 2010. تم الاعتماد على مقياس ميني-6 لتشخيص الفصام، و قد قيمت اعراض و علامات الفصام اعتمادا على مقياس الأعراض الايجابية و السلبية لمرض الفصام، و جرى تقييم الأكتاب لدى المصابين بالفصام بواسطة مقياس كالكري للكأبة لدى المصابون بالفصام، و أخيرا تم تقييم الأفكار الانتحارية اعتمادا على مقياس ميني -6 للانتحار. تظهر نتائج الدراسة ان معدل انتشار الأفكار الانتحارية لدى مرضى الفصام 23%، كما ارتبطت الأفكار الانتحارية بوجود تأريخ محاولات سابقة للانتحار وكان الارتباط ذو دلالة احصائية. كما اظهرت النتائج ارتباط الأفكار الانتحارية مع وجود الأكتاب لدى مرضى الفصام وكان الارتباط ذو دلالة احصائية. كذلك بينت الدراسة وجود ارتباط احصائي دال بين الأفكار الانتحارية لدى مرضى الفصام و وجود الأعراض الايجابية لمرض الفصام. من جهة اخرى، بينت الدراسة ان الأفكار الانتحارية لا ترتبط ارتباط دال مع العوامل الديموغرافية والاجتماعية. خلصت الدراسة الى ان الأفكار الانتحارية منتشرة انتشار واسع لدى مرضى الفصام، وتعتمد هذه الأفكار على عوامل سريرية نفسية اكثر من اعماها على عوامل ديموغرافية. توصي الدراسة على الاهتمام الأكثر بتقييم الأفكار الانتحارية لدى المصابون بالفصام و استحداث مقاييس محلية لتقييم هذه الأفكار.