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DEPARTMENT OF PSYCHIATRY

Prevalence and Associated Factors with Suicidal Ideation and Attempt among Schizophrenia Patients at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia: A Secondary Cross-Sectional Facility-Based Study

Prevalence and Associated Factors with Suicidal Ideation and Attempt among Schizophrenia Patients at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia: A Secondary Cross-Sectional Facility-Based Study

A Thesis Submitted to the Department of Psychiatry, School of Medicine, Addis Ababa University, in partial fulfilment of the requirements for the specialty certificate in Psychiatry

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Contents

Abstract

Introduction: Despite an increasing number of studies on suicide in schizophrenia patients, limited data is available in low and middle income countries (LMICs). Various studies show different rates of suicide in schizophrenia using different methodologies and population.

Objective: objective of this study is to determine the prevalence of suicidal ideation and attempt among schizophrenia patients and associated factors among patients with schizophrenia at Amanuel Mental Specialized Hospital (AMSH) in Addis Ababa, Ethiopia.

Methods: Data was obtained from the clinical trial study was conducted among a sample of 391 schizophrenia patients who were initially screened for possible enrolment in the clinical trial with the title 'A placebo controlled trial of folate with B12 in patients with schizophrenia with residual symptoms' at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia. The Columbia Suicide Severity Rating scale (CSSRS) was used to screen for suicidal ideation and attempt. Sociodemographic and Clinical characteristics of participants were obtained from the primary data. SPSS version 25 statistical package was used for data analysis. Descriptive statistics and multiple regressions were done to determine associated factors.

Result: A total of 390 participants were screened. Of these 11.8% endorse suicidal ideation with different severity (40/339) and 5.6% had different levels of suicidal attempt.

Conclusion: In accordance with the study it is recommend a thorough clinical evaluation for assessment of suicidal ideation and attempt in schizophrenia patients. Further studies are needed to delineate factors affecting suicidal behaviour in schizophrenia in this setting.

Key words: schizophrenia, suicidal ideation, suicidal attempt, CSSRS.

1. Introduction

1.1. Statement of the problem

Suicide, taking one's own life intentionally, is an intriguing clinical phenomena and a growing major public health problem instigated by biological and psychosocial conditions (WHO, 2014; Hetigge et al, 2017; Viktor et al, 2010; Dong et al, 2017). According to a 2014 WHO report suicide is committed every 40 seconds at someplace in the world. It is noteworthy that suicide is the second cause of mortality in age groups of 15-29 (WHO, 2014)).

Even though every nation is affected by suicide LMICs contribute the lions share with estimated 75%-85% of all suicides (WHO, 2014; Shibre et al, 2014). Unfortunately, most research has been done in high income countries (HICs). Moreover, cultural prejudice and poor infrastructure makes reporting and collecting data on suicide problematic (Shibre et al, 2014).

In Ethiopian study, the lifetime prevalence of attempted suicide was reported to be 3.2% (Alem et al,1999), 0.9%(Kebede& Alem, 1999), 14.3% (Kebede & Ketsela, 1993) and 19.2% (Mekonen& Kebede, 2011)for a rural adult population in Butajira, an urban community in Addis Ababa, high school student population and a psychiatric out-patient clinic attendants in Gondor respectively.

More than 90% of all suicides are attributed to mental illness (Shibre et al, 2014; Nakagawa et al, 2011). Schizophrenia (19–46%) and mood disorders (28–62.4%) are responsible for a huge proportion of suicides (Reutfors et al, 2010). In fact, suicide is one of the commonest reasons for premature death in patients with schizophrenia (Fekadu et al, 2015; shibre et al, 2014; Lui, 2009; Zhang et al, 2013).

Occurring in up to 50% of patients during their lifetime (Viktor, 2010; Zhang et al, 2013), Schizophrenia is also highly linked with suicidal behavior and is an important cause of death in young patients with 4.9% to 10% of life time risk (Dong et al, 2017; Hetigge, 2017; Lui, 2009; Reutfors et al, 2010; Reutfors et al, 2013).

Though different studies examine factors implicated for suicide in schizophrenia and clinical recognition of those predictors is crucial, risk prediction is yet ill defined (Reutfors et al, 2013; Hor and Taylor, 2010; Hetigge, 2017; Zhang et al, 2013). Main risk factors for suicidal behavior in schizophrenia include male, single, younger age, previous suicide attempts, higher premorbid functioning, depression, substance abuse, , long duration of untreated psychosis (DUP) and poor adherence to treatment (Reutfors et al, 2013; Brugnali et al, 2012; Zhang et al, 2013).

1.2. Literature Review

Schizophrenia is one of severe mental illness which is typified by a range of psychotic symptoms and cognitive deficiency, change in emotional expression and behavioral disturbance are accompanied symptoms. These symptoms are are associated with self-harming and suicidal behaviors too. It is diagnosed when these constellations result in occupational and social functioning. On top of causing immense suffering for the patient it creates substantial economic and psychosocial burden to families and societies in general (Dong et al, 2017; Hettige, 2017)

Suicidal behaviour can be defined as a spectrum from suicide ideation, intentional self-harm with minimal intent or non-suicidal self-injury and suicide attempt with greater deliberation medical sequel with the final point of the spectrum being suicidal completion (Hettige et al, 2017)

Various studies have been done on prevalence of suicide in schizophrenia, determining factors and mode of suicide attempt in schizophrenia patients.

Expectedly, these different studies report diverse rates of suicide in schizophrenia from different populations and different methodologies (Hor and Tylor, 2010).

In fact suicide is the main cause of premature death in schizophrenia and patients with schizophrenia tend to use more lethal means compared to others (Shbre et al, 2014).In recent decades the magnitude of suicide is increasing in people with schizophrenia (viktor et al, 2010). Despite majority of studies in traditional societies report on suicide in the general population and prevalence of suicidal behaviour in severe mental illness is lacking (Shibre, 2014).

According to one systematic review of 51 articles, the most commonly mentioned lifetime suicide rate in schizophrenia is 10%. However this has been deemed as an overestimation lately and around 5% has been taken as being more representative. This is considerably higher than the risk of suicide in the general population. This review found estimated suicide rate of 579/100,000 person-years (477-680/100,000) among schizophrenia patients from analysing current data with identified risk factors of younger age, male sex, being single and unemployed, higher level of education and rural residence (Hor and Tylor, 2010).

A 3 year prospective observational study of the health outcome of patients with schizophrenia (SOHO study) which was conducted in 10 European countries found 4.3% of patients either committed suicide during the 3 year period or attempted at least once before. Significant risk factors for suicide were reported like male sex (OR=1.614, 95% CI: 1.203-2.166), depression (OR=1.158, 95% CI: 1.058-1.268) and previous suicidal attempts. But age and medication adherence were not found to have significant association (Brugnali et al, 2012).

In a hospital based cross sectional study conducted in India it was found schizophrenia patients who attempted suicide tend to be younger and more likely

to be single than those with major depressive disorder (MDD). It was also reported that intent of suicide was stronger in schizophrenia patients than MDD as the latter group had more preoccupation with a wish to die and attempts were impelled by stressful life events (Banawari et al, 2012).

Another study from African Xhosa schizophrenia patients stated 19.8% reported one or more suicidal attempts with earlier age of onset and marital status of separation, divorce or not married ever increasing the risk (Niehause et al, 2014**)** In another study conducted in similar population showed the highest peak of age distribution at which patients had first attempt was during their 20s. In addition the majority of patients had their first attempt within 3 years of the onset of illness (Luckhoff et al, 2014).

In a 10 year follow-up of a population-based cohort study in Butajira, Ethiopia cumulative risk of suicide attempt for schizophrenia was 13.1%, ($P < 0.001$) following Major depressive disorder and Bipolar I disorder with 26.3%and 23.8% respectively (Shibre et al, 2014).

1.3. Significance of the Study

As the abundance of research on suicide in schizophrenia is skewed in favour of the affluent countries, understanding the prevalence and determining factors of suicidal ideation and attempt among schizophrenia patients in low income countries like Ethiopia will be important in contributing to the accumulating evidence base. So this study could function as starting a succession of researches yet to come on this important area.

In addition this study aims for the result to be used as valuable input for prevention, early detection and management of suicidal behavior in schizophrenia patients.

1.4 Research Questions

1.4.1 What proportion of the patients with the diagnosis of schizophrenia has suicidal ideation and attempt?

1.4.2 Which sociodemographic and clinical factors are correlated with suicidal ideation and attempt in schizophrenia patients?

2. Objectives

2.1. General

The general objective of this study is to determine the prevalence of suicidal ideation and attempt and associated factors among patients with schizophrenia at Amanuel Mental Specialized Hospital.

2.2. Specific Objectives

- To determine the prevalence of suicidal ideation and attempt among schizophrenia patients,
- To describe the demographic characteristics of schizophrenia patients with suicidal ideation and attempt,
- To asses association between suicide and sociodemographic and clinical characteristics of schizophrenia.

3. Methodology

3.1. Study design

This study is based on the data obtained from placebo controlled trial of folate in patients with schizophrenia with residual symptoms being conducted at AMSH. A facility-based cross-sectional study was conducted by taking the baseline data from that trial.

3.2. Study setting

The primary study was conducted at Amanuel Specialized Mental Hospital. Amanuel specialized mental hospital is the oldest and largest psychiatric hospital in Ethiopia found in the capital Addis Ababa.

3.3. Study population

The reference population is all adult people with schizophrenia who live within the hospital catchment area.

The study population is all adult patients with a diagnosis of schizophrenia who are under follow up at AMSH.

3.3.1.Inclusion criteria

- Diagnosis of schizophrenia, any subtype
- Male or female
- Age 18- 65 years

3.3.2.Exclusion criteria

- Unable to provide informed consent or do not have a guardian to consent
- Unstable medical illness
- Unstable psychiatric illness

3.4. Sample size

The study used the total number of participants as a sample size which is 390. This sample size was determined from participants screened for the clinical trial.

3.5. Measures

Information regarding socio demographic characteristics like age, sex, marital status, educational level, employment status and living condition as well as clinical characteristics like age of onset of illness and duration of illness was collected from the primary data set**.** Outcome variables were measured using the Colombia Suicide Severity Rating Scale (CSSRS).

The CSSRS was developed for classifying suicidal and other self-injuries behaviours, initially developed for a trial in adolescents. It has gained wide acceptation with supported inter ratter agreement, convergent validity, divergent validity, specificity and sensitivity to identify suicidal behaviour, internal consistency and sensitivity to change by psychometric study. It asses different levels of suicidal ideation and behaviour (Interian et al, 2017)

3.6 Study Variables

3.6.1 Dependent Variables

1. Suicidal Ideation
2. Suicidal Attempt

3.6.2 Independent Variables

1. Age
2. Sex
3. Marital Status
4. Educational status
5. Employment Status
6. Living condition

7. Onset of illness
8. Duration of illness

3.6. Data management and analysis

Data was coded, entered and cleaned using the statistical Package for the Social Sciences (IPM SPSS, version 25.0.) Descriptive analysis was used to summarize the profile of the outcome and the independent variables. The dependent variables, suicidal ideation and attempt were categorized as Yes (1) and No (0). One to one logistic regression models were applied to asses for association between the selected independent variables and both dependent variables. The independent variables were selected based on evidence from existing literature and theoretical assumption of relevant association with the outcome variable.

Level of significance was set at p value < 0.05. The association between dependent and independent categorical variables was computed using the chi-square test. Factors that were found to show significant association with dependent variables in the initial univarate analysis were passed on to multivariable model for adjustment of potential confounding factors using multiple logistic regressions.

4. Ethical consideration

Besides all ethics approvable obtained for the primary study, ethical clearance was obtained from the Department of Psychiatry for this study, School of Medicine, Addis Ababa University. Data collection was anonymous and confidentiality was kept at all level of data collection on the primary study.

5. Result

5.1 Sociodemographic and clinical Characteristics of participants

A total of 390 participants were screened for folate trial at Amanuel mental specialized hospital, of those 67.9% were males. 40.9% of participants were between age 30 and 39 (153/374) with mean age of participants 38.02 years. Only 11% (43/390) were married. Regarding employment status 74.6% of all participants was not working. 93.6% of patients was living with others (363/388). 66.8% of study participants attended school for more than 8 years (258/388). Concerning clinical features majority (59.6%) of patients lived with the illness for more than a decade (193/324) while 50.7% (172/339) had age of onset between ages of 20-29 years. (Table 5.1)

Table 5.1: socio-demographic and clinical characteristics of patients with schizophrenia at Amanuel Mental Specialized hospital, Addis Ababa, Ethiopia

Characteristics	Number	Percentage (%)
Gender	390	
Male	265	67.9
Female	125	32.1
Age at screening	374	
Less than 20	4	1.1
20-29	61	16.3
30-39	153	40.9
40-49	103	27.3
Greater than 50	53	14.2
Marital status	390	

Married	43	11
Non-married	347	89
Employment status	390	
Employed	99	25.4
Not employed	291	74.6
Years of education	386	
No formal education	13	3.4
1-8	115	29.8
>8	258	66.8
Living arrangement	388	
Lives with others	363	93.6
Lives alone	25	6.4
Age of onset	339	
Less than 20	104	30.7
20-29	172	50.7
>29	63	18.6
Duration of illness	324	
Less than or equal 2	15	4.6
2-5	34	10.5
5-10	82	25.3
Greater than 10	193	59.6

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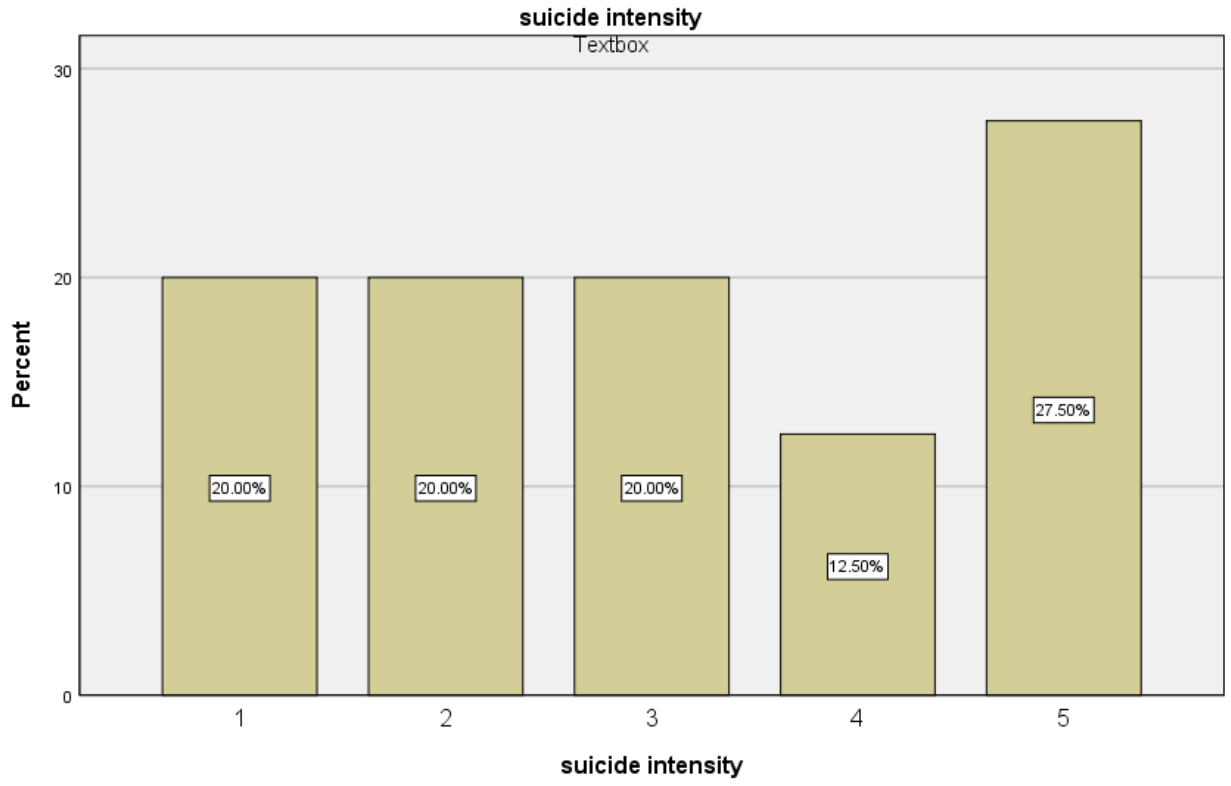
5.2 Description and prevalence of suicidal ideation and behaviour

Among the participants 11.8% endorsed suicidal ideation with different severity (40/339) and 5.6% had had different levels of suicidal attempt.(19/320). Among participants who had suicidal ideation 20% had passive death wish while 27.5% had active suicidal ideation with specific plan and intent.

Table 5.2: Prevalence of suicidal ideation and attempt of patients with schizophrenia at Amanuel Mental Specialized hospital, Addis Ababa, Ethiopia

N=339	Suicidal ideation		Suicidal behaviour	
	Number	Percentage	Number	Percentage
Yes	40	11.8	19	5.6
No	299	88.2	320	94.4



1=wish to be dead 2=nonspecific suicidal thought 3=active suicidal ideation

4=active suicide with some intent 5=active suicide with specific plan and intent

Bar Chart 5.1: suicidal ideation intensity of patients with schizophrenia at Amanuel Mental Specialized hospital, Addis Ababa, Ethiopia

5.3Association of Suicidal ideation and participants characteristics

Among participants who had suicidal ideation,55% (n=22) were male; 82.5%(n=33) were not married; 84.6%(n=33) were living with others; 35% (n=14) were between age 40 and 49 years; 57.9% (n=22) attended school for 9 and above years; 75% (n=30) were not employed and regarding clinical characteristics, 53.1%(n=17) of participants had onset of illness between age of 20-29 years and 59.4% (n=19) lived with the illness for greater than 10 years.

To identify the association between suicidal ideation and attempt and socio-demographic and clinical characteristics bivariate analysis and multi-variable logistic regression was done for each variable. However, possibly because of small sample size and small number of positive cases of participants with suicidal ideation and attempt there were no significant association of dependent variables with any of independent variables and when there is the 95% confidence interval was very wide making the interpretation unrealistic.

5.4 Association of Suicidal attempt and participants characteristics

Among participants who had suicidal attempt, 63.2% (n=12) were male; 94.7%(n=18) were not married; 88.9%(n=16) were living with others; 52.6% (n=10) were between age 30 and 39 years; 72.2% (n=13) attended school for 9 years and above; 78.9% (n=15) were not employed and regarding clinical characteristics, 47.1%(n=8) of participants had onset of illness less than age of 20 years and 52.9% (n=9) lived with the illness for more than a decade.

Table 5.3: Description of suicidal behavior and participant characteristics of patients with schizophrenia at Amanuel Mental Specialized hospital, Addis Ababa, Ethiopia

Variable	Category	Suicidal Ideation		Suicidal Behaviour	
		No	Yes	No	Yes
Gender	Male	207(61.1)	22(6.5)	217(64.0)	12(3.5)
	Female	92(22.1)	18(5.3)	103(30.4)	7(2.1)

Marital status	Married	32(9.4)	7(2.1)	38(11.2)	1(0.3)
	Non-married	267(78.8)	33(9.7)	282(83.2)	18(5.3)
Living arrangement	With others	281(83.4)	33(9.8)	298(88.4)	16(4.7)
	Alone	17(5.0)	6(1.8)	21(6.2)	2(0.6)
Age group (years)	< 20	3(0.9)	1(0.3)	4(1.2)	0(0.0)
	20-29	44(13.2)	8(2.4)	50(15.0)	2(0.6)
	30-39	124(37.1)	13(3.9)	127(38.0)	10(3.0)
	40-49	78(23.4)	14(4.2)	85(25.4)	7(2.1)
	>50	45(13.5)	4(1.2)	49(14.7)	0(0.0)
Age of Onset (years)	< 20	81(27.2)	10(3.4)	83(27.9)	8(2.7)
	20-30	134(45.0)	17(5.7)	145(48.7)	6(2.0)
	>30	51(17.1)	5(1.7)	53(17.8)	3(1.0)
Duration of illness (years)	≤2	10(3.4)	3(1.0)	13(4.4)	0(0.0)
	2-5	29(9.9)	2(0.7)	30(10.2)	1(0.3)
	5-10	67(22.9)	8(2.7)	68(23.2)	7(2.4)

	>10	155(52.9)	19(6.5)	165(56.3)	9(3.1)
Employment Status	Working	76(22.4)	10(2.9)	82(24.2)	4(1.2)
	Not working	223(65.8)	30(8.9)	238(70.2)	15(4.4)
Education (Years of stay in school)	No education	9(2.7)	2(0.6)	11(3.3)	0(0.0)
	1-8	85(25.4)	14(4.2)	94(28.1)	5(1.5)
	≥9	203(60.6)	22(6.6)	212(63.3)	13(3.9)

6. Discussions

6.1 Prevalence of suicidal ideation and attempt

The study provided essential information regarding the prevalence and associated factors of suicidal behaviour among schizophrenia patients. The prevalence rate of suicidal ideation and attempt was 11.8% and 5.6% respectively. The prevalence of suicidal ideation and behaviour was significantly less than reported in other studies. One article reported 40-79% patients with schizophrenia had suicidal ideation at least once in their life time It was also reported a 22.59%of self-harming behaviour and 10% attempted suicide among patients with schizophrenia (Jakhar et al, 2017) Ina comprehensive meta-analysis done in china the prevalence of life time suicidal ideation was 26.8% in cross sectional studies and 20.1% in cohort studies while a 1 month prevalence of suicidal ideation was 22%. In the same study the life time suicide attempt prevalence was 14.6% (Dong et al, 2017).

In Ethiopian studies a life time of suicidal ideation and attempt was 64.8% and 19.2% among patients attending psychiatric OPD at Gondor, Ethiopia where 38% of participants had a diagnosis of psychosis (Mekonen& Kebede, 2011).In another Ethiopian study done in rural community of Butajira during the 10 year follow up period 13.1% of patients with schizophrenia attempted suicide (Shibre et al, 2014)

The difference between our study and others could be the difference in nature of populations as some reports indicate suicide is more common in rural communities (Phillips et al, 2004). Other main reason could be the nature of participants who had long duration of illness and relatively better clinical condition for trial (Popovic et al, 2014). Possible under reporting of suicide ideation and attempt due to stigma could be also the reason for lower rate of suicidal ideation and attempt.

6.2 Sociodemographic and clinical Characteristics of participants

In the current study male gender was observed with higher prevalence of both suicidal ideation and attempt, this is in concordance with other studies as being male is an established risk factor for suicide in schizophrenia patients traditionally (Popovic et al, 2014; Hor & Taylor, 2010; Hettige et al, 2017). However, some studies report being female is a risk factor (Phillips et al, 2004; Shibre et al, 2014).

The study showed not being in marital relationship, being single, separated or divorced, has high suicidal ideation affirming the widely held belief that marriage protects from suicide (Shibre et al, 2014)which is a similar outcome with other studies(Hor & Taylor, 2010; Hettige et al, 2017).

From our sample a majority (93.6%) of participants live with others. This might create over representation of patients with suicidal ideation and attempt leading to apparent increased risk.

Regarding clinical characteristics participants who lived with the illness for more than 10 years showed increased rate of suicide ideation but not for attempt. This is in contrast to reports of risk of suicide is higher at early course of the illness ((Popovic et al, 2014). This result again can be affected by the nature of our sample with 59.6% of participants were lived with schizophrenia for more than a decade.

Concerning age of onset patients who had illness onset above 30 years had less rate of suicidal ideation and attempt which is in contrast to reports of late illness onset predisposes for suicide (Hor & Taylor, 2010).

6.3 Strengths and Limitations

One of the strength of this study is being use of high quality data collection for use of clinical trials which include robust sociodemographic and clinical characteristics, besides suicidal behaviour, using standard instruments.

However, as the study was however limited by a cross-sectional design, which makes it difficult to determine the direction of causality, because the data used for this report was obtained from the screening phase of the clinical trial. The assessment of direction of causality will require a longitudinal study design. Secondly, while the study was adequately powered, a study with a larger sample size would enable exploration of more variables in further statistical detail.

6.4 Conclusion and recommendation

This study reported the prevalence of suicide ideation and attempt in patients with schizophrenia as 11.8% and 5.6% respectively. Factors with observed increased suicidal ideation and attempt were male gender, not being in marital relationship, living with others, having greater than 10 duration of illness.

In accordance with the study we recommend a thorough clinical evaluation for assessment of suicidal ideation and attempt in schizophrenia patients as the risk factors are conflicting and needs further studies to delineate factors affecting suicide in schizophrenia.

7. Reference

1. WHO (2014) Preventing suicide: a global imperative. Geneva: World Health Organisation.
2. Hetigge, N.C., Bani-Fatemi, A., Sakinofsky, I., Luca, V. (2017) A biopsychosocial evaluation of the risk for suicide in schizophrenia, CNS Spectrums 23(4), 253-263.
3. Viktor, I., Vilma, V., Kadri, H., Vesna, P., Marija, R. (2010) some characteristics of patients with schizophrenia who attempted suicide. Prilozi 31(2), 183-193.
4. Dong M., Wang F., Zhang L., Ungvari G., Ng C. Meng X., Yuan Z., Wang G., Xiang T. (2017) Suicide-related behaviours in schizophrenia in China: a comprehensive meta-analysis. Epidemiology and psychiatric science, 1-10.
5. Shibre T., Hanlon C., Medhin G., Alem A., Kebede D., Teferra S., Kullgren G., Jacobsson L., Fekadu A. (2014) Suicide and suicide attempts in people with severe mental disorders in Butajira, Ethiopia: 10 year follow-up of a population-based cohort. BMC psychiatry 14(1), 150.
6. Nakagawa M., KaWanishi C., Yamada T., Sugiura K., Iwamaoto Y., Sato R., Morita S., Odawara T., Hirayasu Y. (2011) Comparison of characteristics of suicide attempters with schizophrenia spectrum disorders and those with mood disorders in Japan. Psychiatry research 188, 18-82.
7. Fekadu A., Medhin G., Kebede D., Alem A., Cleare A., Prince M., Hanlon C., Shibre T. (2015) Excess mortality in severe mental illness: 10-year population-based cohort study in rural Ethiopia. The British journal of psychiatry 206, 289-296.

8. Lui S. (2009) Risk factors for deliberate self-harm and completed suicide in young Chinese people with schizophrenia. Australian and New Zealand journal of psychiatry 43: 252-259.
9. Zhang X., Juradi R., Zoghbi A., Chan D., Xiu M., Tan Y., Yang F., Korten T. (2013) Prevalence, demographic and clinical correlates of suicide attempts in Chinese medicated chronic inpatients with schizophrenia. Journal of psychiatric research 47, 1370-1375.
10. Reutfors J., Bahmanyar S., Jonsson E., Ekbom A., Nordstrom P., Brandt L., Osby U. (2010) Diagnostic profile and suicide risk in schizophrenia spectrum disorder. Schizophrenia research 123, 252-256.
11. Reutfors J., Bahmanyar S., Jonsson E., Brandt L., Boden R., Ekbom A., Osby U. (2013) Medication and suicide risk in schizophrenia: A nested case–control study. Schizophrenia research 150, 416-420.
12. Hor K., Taylor M. (2010) Suicide and schizophrenia: a systematic review of rates and risk factors. Journal of pscychopharmacology 24(11), 81-90
13. Brugnoli R., Novick D., Haro J., Rossi A., Bortolomasi M., Freidiani S., Borgherini G. (2012) Risk factors for suicide behaviors in the observational schizophrenia outpatient health outcomes (SOHO) study. BMC psychiatry 12(1), 83
14. Banaweari G., Vankar G., Parikh M. (2012) Comparison of suicide attempts in schizophrenia and major depressive disorder: An exploratory study. Asia-pacific psychiatry volume aop issue aop.
15. Niehaus D., Lauret C., Jordaan E., Koen L., Ooesthuizen P., keyter N., Muller E., Mbanga N., Deleuze J., Mallet J., Stein D. (2014) Suicide Attempts in an African Schizophrenia Population: An Assessment of Demographic Risk Factors. Suicide and life threatening behavior 34(3).

16. Luckhoff M., Koen L., Jordaan E., Niehaus D. (2014) Attempted Suicide in a Xhosa Schizophrenia and Schizoaffective Disorder Population. Suicide and life threatening behavior 44(2).
17. Alem A, Jacobsson L, Kebede D, Kullgren G: Awareness and attitudes of a rural Ethiopian community toward suicidal behaviour. A key informant study in Butajira, Ethiopia. Acta Psychiatr Scand 1999, 100:65–69
18. Kebede D, Alem A. Suicide attempts and ideation among adults in Addis Ababa, Ethiopia. Acta Psychiatrica Scand 1999: 100: 35-39.
19. Kebede D, Ketsela T:Suicide attempts in Ethiopian adolescents in Addis Abeba high schools.Ethiop Med J1993,31(2):83–90
20. Mekonnen D, Kebede Y:The prevalence of suicidal ideation and attempts among individuals attending an adult psychiatry out-patient clinic in Gondar, Ethiopia.Afr Health Sci2011,11(1):103–107
21. Kiran Jakhar, Ram Pratap Beniwal, Triptish Bhatia, Smita N. Deshpande: Self-harm and suicide attempts in Schizophrenia,Asian Journal of Psychiatry http://dx.doi.org/10.1016/j.ajp.2017.08.012
22. Michael R Phillips, Gonghuan Yang, Shuran Li, Yue Li: Suicide and the unique prevalence pattern of schizophreniain mainland China: a retrospective observational study, Lancet 2004; 364: 1062‑68
23. Alejandro Interian, Megan Chesin, Anna Kline, Rachael Miller, Lauren St. Hill, Miriam Latorre, Anton Shcherbakov, Arlene King & Barbara Stanley:Use of the Columbia-Suicide Severity Rating Scale (C-SSRS) to Classify Suicidal Behaviors, Archives of Suicide Research, DOI: 10.1080/13811118.2017.1334610
24. Isjanovski Viktor, Vukovic Vilma, Hadjihamza Kadri,Pejoska-Gerazova Vesna, Raleva Marija (2010): some characteristics of patients with

schizophreniawho attempted suicide,Biol. Med. Sci., MASA, XXXI, 2, p. 183–193 (2010)

8. Appendix

Demographics and Family History

1. Gender: Male / Female

2. Ethnicity: Amhara / Gurage / Oromo / Sidama / Tigray / Other _____

2a. If Ethnicity is "Other", specify: _____

3. Marital Status: Single / Married / Separated / Divorced / Widowed / Cohabiting

4. Highest Education Level: _____ (years of education)

5. Occupation:_____

6. Living Arrangement: Lives alone / Lives with parental family / Lives with marital family / Lives with other relatives / Lives with friends

B. Medical Information

7. Psychiatric Diagnoses:	7a. Age of Onset (years):	8. Allergies:
_____	_____	_____
_____	_____	_____
_____	_____	_____

COLUMBIA - SUICIDE SEVERITY RATING SCALE (C-SSRS): BASELINE

Randomization ID:	**Eval ID:**
Assessment Date: *(dd/mm/yyyy)*	**Visit #:** *(check one)* ❑Screening ❑Baseline ❑Week 2 ❑Week 4 ❑Week 8 ❑Week 10 ❑Week 12 ❑Week 16
Was any data collected for this form?	❑Yes *(Assessment completed)* ❑No *(Assessment not completed)*

At Baseline, ask about lifetime suicidal ideation and behavior. After Baseline, ask about suicidal ideation and behavior since the last visit.

SUICIDAL IDEATION

Ask questions 1 and 2. If both are negative, proceed to "Suicidal Behavior" section. If the answer to question 2 is "yes," ask questions 3, 4 and 5. If the answer to question 1 and/or 2 is "yes", complete "Intensity of Ideation" section below.

1. Wish to be dead: ❑$_1$ *Yes* ❑$_0$ *No*

   Subject endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up. Have you wished you were dead or wished you could go to sleep and not wake up?

   1a. If Yes, describe:

2. Non-Specific Active Suicidal Thoughts: ❑$_1$ *Yes* ❑$_0$ *No*

   General non-specific thoughts of wanting to end one's life/commit suicide (e.g. "I've thought about killing myself") without general thoughts of ways to kill oneself/associated methods, intent, or plan during the assessment period. Have you actually had any thoughts of killing yourself?

   2a. If Yes, describe:

3. Active Suicidal Ideation with Any Methods (Not Plan) without Intent to Act: ❑$_1$ *Yes* ❑$_0$ *No*

   Subject endorses thoughts of suicide and has thought of at least one method during the assessment period. This is different than a specific plan with time, place or method details worked out (e.g. thought of method to kill self but not a specific plan). Includes person who would say, "I thought about taking an overdose but I never made a specific plan as to when, where or how I would actually do it...and I would never go through with it". Have you been thinking about how you might do this?

   3a. If Yes, describe:

4. Active Suicidal Ideation with Some Intent to Act, without Specific Plan: ❑$_1$ *Yes* ❑$_0$ *No*

   Active suicidal thoughts of killing oneself and subject reports having some intent to act on such thoughts, as opposed to "I have the thoughts but I definitely will not do anything about them". Have you had these thoughts and had some intention of acting on them?

   4a. If Yes, describe:

5. Active Suicidal Ideation with Specific Plan and Intent: ❑$_1$ *Yes* ❑$_0$ *No*

   Thoughts of killing oneself with details of plan fully or partially worked out and subject has some intent to carry it out. Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?

   5a. If Yes, describe:

COLUMBIA - SUICIDE SEVERITY RATING SCALE (C-SSRS): BASELINE

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INTENSITY OF IDEATION

The following features should be rated with respect to the most severe type of ideation (i.e., 1-5 from above, with 1 being the least severe and 5 being the most severe). Ask about time he/she was feeling the most suicidal.

6. Most Severe Ideation Type # (1 – 5): ☐

7. Most Severe Ideation Description of Ideation:

8. Frequency ☐
   How many times have you had these thoughts?
   - *1 = Less than once a week*
   - *2 = Once a week*
   - *3 = 2-5 times in week*
   - *4 = Daily or almost daily*
   - *5 = Many times each day*

9. Duration
   When you have the thoughts, how long do they last?
   - *1 = Fleeting - few seconds or minutes*
   - *2 = Less than 1 hour/some of the time*
   - *3 = 1-4 hours/a lot of time*
   - *4 = 4-8 hours/most of day*
   - *5 = More than 8 hours/persistent or continuous*

10. Controllability ☐
    Could/can you stop thinking about killing yourself or wanting to die if you want to?
    - *1 = Easily able to control thoughts*
    - *2 = Can control thoughts with little difficulty*
    - *3 = Can control thoughts with some difficulty*
    - *4 = Can control thoughts with a lot of difficulty*
    - *5 = Unable to control thoughts*
    - *0 = Does not attempt to control thoughts*

11. Deterrents ☐
    Are there things - anyone or anything (e.g. family, religion, pain of death) – that stopped you from wanting to die or acting on thoughts of committing suicide?
    - *1 = Deterrents definitely stopped you from attempting suicide*
    - *2 = Deterrents probably stopped you*
    - *3 = Uncertain that deterrents stopped you*
    - *4 = Deterrents most likely did not stop you*
    - *5 = Deterrents definitely did not stop you*
    - *0= Does not apply*

12. Reasons for Ideation ☐
    What sort of reasons did you have for thinking about wanting to die or killing yourself? Was it to end the pain or stop the way you were feeling (in other words you couldn't go on living with this pain or how you were feeling) or was it to get attention, revenge or a reaction from others? Or both?
    - *1 = Completely to get attention, revenge or a reaction from others.*
    - *2 = Mostly to get attention, revenge or a reaction from others.*
    - *3 = Equally to get attention, revenge or a reaction from others and to end/stop the pain.*
    - *4 = Mostly to end or stop the pain (you couldn't go on living with the pain or how you were feeling).*
    - *5 = Completely to end or stop the pain (you couldn't go on living with the pain or how you were feeling).*
    - *0 = Does not apply*

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SUICIDAL BEHAVIOR

(Check all that apply, so long as these are separate events; must ask about all types.)

Actual Attempt:

A potentially self-injurious act committed with at least some wish to die, as a result of act. Behavior was in part thought of as method to kill oneself. Intent does not have to be 100%. If there is any intent/desire to die associated with the act, then it can be considered an actual suicide attempt. There does not have to be any injury or harm, just the potential for injury or harm. If person pulls trigger while gun is in mouth but gun is broken so no injury results, this is considered an attempt.

Inferring Intent: Even if an individual denies intent/wish to die, it may be inferred clinically from the behavior or circumstances. For example, a highly lethal act that is clearly not an accident so no other intent but suicide can be inferred (e.g. gunshot to head, jumping from window of a high floor/story). Also, if someone denies intent to die, but they thought that what they did could be lethal, intent may be inferred.

Have you made a suicide attempt? Have you done anything to harm yourself? Have you done anything dangerous where you could have died? What did you do? Did you ____ as a way to end your life? Did you want to die (even a little) when you ____? Were you trying to end your life when you ____? Or did you think it was possible you could have died from ____? Or did you do it purely for other reasons/ without ANY intention of killing yourself (like to relieve stress, feel better, get sympathy, or get something else to happen)? (Self-Injurious Behavior without suicidal intent)

13a. Did subject make an actual attempt? ☐1 *Yes* ☐0 *No*

[IF YES, COMPLETE Q13B, Q13C, AND Q13D. OTHERWISE, SKIP TO Q13D.]

13b. Total # of actual attempts: ☐☐

13c. If Yes, describe:

13d. Has subject engaged in Non-Suicidal Self-Injurious Behavior? ☐1 *Yes* ☐0 *No*

Interrupted Attempt:

When the person is interrupted (by an outside circumstance) from starting the potentially self-injurious act (if not for that, actual attempt would have occurred). Overdose: Person has pills in hand but is stopped from ingesting. Once they ingest any pills, this becomes an attempt rather than an interrupted attempt. Shooting: Person has gun pointed toward self, gun is taken away by someone else, or is somehow prevented from pulling trigger. Once they pull the trigger, even if the gun fails to fire, it is an attempt. Jumping: Person is poised to jump, is grabbed and taken down from ledge. Hanging: Person has noose around neck but has not yet started to hang - is stopped from doing so.

Has there been a time when you started to do something to end your life but someone or something stopped you before you actually did anything?

14a. Did subject have an interrupted attempt? ☐1 *Yes* ☐0 *No*

[IF YES, COMPLETE Q14B AND Q14C. OTHERWISE, SKIP TO Q15A.]

14b. Total # of interrupted attempts: ☐☐

14c. If Yes, describe:

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SUICIDAL BEHAVIOR *(CONTINUED)*

(Check all that apply, so long as these are separate events; must ask about all types.)

Aborted Attempt:

When person begins to take steps toward making a suicide attempt, but stops themselves before they actually have engaged in any self-destructive behavior. Examples are similar to interrupted attempts, except that the individual stops him/herself, instead of being stopped by something else.

Has there been a time when you started to do something to try to end your life but you stopped yourself before you actually did anything?

15a. Did subject make an aborted attempt? ☐1 *Yes* ☐0 *No*

[IF YES, COMPLETE Q15B AND Q15C. OTHERWISE, SKIP TO Q16A.]

15b. Total # of aborted attempts: ☐☐

15c. If Yes, describe:

Preparatory Acts or Behavior:

Acts or preparation towards imminently making a suicide attempt. This can include anything beyond a verbalization or thought, such as assembling a specific method (e.g. buying pills, purchasing a gun) or preparing for one's death by suicide (e.g. giving things away, writing a suicide note).

Have you taken any steps towards making a suicide attempt or preparing to kill yourself (such as collecting pills, getting a gun, giving valuables away or writing a suicide note)?

16a. Did subject make any preparatory acts or behaviors? ☐1 *Yes* ☐0 *No*

[IF YES, COMPLETE Q16B AND Q16C. OTHERWISE, SKIP TO Q17.]

16b. Total # of preparatory acts or behaviors: ☐☐

16c. If Yes, describe:

Suicidal Behavior:

17. Suicidal behavior was present during the assessment period? ☐1 *Yes* ☐0 *No*

Completed Suicide: Do Not Complete at Baseline Visit

18. Completed suicide? ☐1 *Yes* ☐0 *No*