

## Prevalence and Associate Factors of Suicidal Ideation and Attempt among People with Schizophrenia at Amanuel Mental Specialized Hospital Addis Ababa, Ethiopia

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### Abstract

**Background:** Suicidal ideation is an important phase in the suicidal process, preceding suicide attempts and completed suicide. Suicide and suicidal attempts among people with schizophrenia often result a significant psychological, social and financial burden. Therefore, this study aimed to assess the prevalence and associated factors of suicidal ideation and attempt among people with schizophrenia.

**Methods:** An Institution based cross-sectional study was conducted from November 2011 to May 2012 at Amanuel Mental Specialized Hospital among people with schizophrenia. Systematic random sampling technique was used to get a total of 423 samples from outpatient department of the hospital. Pre-tested structured questionnaire were used for interviewing the study participants. The collected data were, entered in to EPI-INFO software and analyzed by using SPSS version 19. Both bivariate and multivariate logistic regression analysis was done. Results: The prevalence of life time suicidal ideation and attempt among people with schizophrenia was found to be 27.3% and 19.3% respectively. Multiple logistic regression model revealed being single (AOR 3.04, 95% C.I.=1.404-6.588), attending secondary education (AOR 2.52, 95% C.I.=1.114-5.686), poor social support (AOR 3.11, 95% C.I.=1.025-9.422) were association with suicidal ideation and attempt. Similarly co morbid depression, hopelessness, family history of suicide associated with suicidal ideation and attempt among people with schizophrenia.

**Conclusion:** The rate of suicidal ideation and attempt in people with schizophrenia were found to be much higher than general population. Modifiable clinical factors like depression and poor psychosocial were risk suicide. Therefore, support should be given to manage suicidality of people with schizophrenia through creating social support system and clinical interventions during follow up.

**Keywords:** Suicidal ideation; Suicidal attempt; Schizophrenia

### Background

Suicide is a major public health problem and it is a fatal act that represents the persons wishing to die. There is a range, between thinking about suicide and acting it out. Some persons have ideas of suicide that they will never act on; some plan for days, weeks, or even years before acting; and others take their lives seemingly on impulse, without premeditation [1].

Globally, suicide represents 1.4% of the global burden of diseases, but the losses extend much further. In most European countries, the number of suicides is larger than annual traffic fatalities [2]. According to data from the World Health Organization suicide represented 1.8% of the global burden of disease and it is expected to increase to 2.4% by the year 2020. Suicide is among the 10 leading causes of death for all ages in most countries and in some countries, it is among the top three causes of death for people aged 15-34 years [3]. According to the nationally registered mortality data there were 5448 deaths due to

suicide in South Africa between 1984–1986 which was 1.3% of total death [4].

Suicidal ideation is an important phase in the suicidal process, preceding suicide attempts and completed suicide. Weak social ties and low support from friends or relatives have been significantly associated with suicidal ideation [5]. Attempted suicide is one of the major risk factors for completed suicide, is associated with psychiatric disorders, and is also a potentially fatal event [6].

The lifetime incidence of suicide for patients with schizophrenia is 10% to 13% compared to a general population estimate of about 1%. The magnitude of increased risk for suicide among schizophrenic's peaks before middle age and declines thereafter, although schizophrenic persons tend to be at increased risk throughout the life span [7]. Schizophrenia is a serious mental illness that can devastate the lives of people who suffer from it and the lives of their families. It usually strikes adolescents and young adults, disrupting their pursuit of educational and occupational goals and drastically reducing their quality of life. It occurs in all countries of the world and is among the ten leading causes of disability in those 18 to 44 years old [8].

Suicide and suicide attempts among individuals with schizophrenia often result in a significant psychological, social and financial burden upon individuals and families. For suicide attempts, there is a considerable cost to the community associated with hospital care, treatment and rehabilitation. In Australia, for example, the estimated cost associated with suicide and self-inflicted injury directly attributable to schizophrenia in 2001 was an estimated \$6 million, including \$4 million in hospital costs [9].

As many as half of all patients with schizophrenia experience suicidal ideation and/or make suicide attempts, compared to other patient groups, suicide attempts in schizophrenia appear to be greater violence and lethality, and more likely to be unexpected or “out of the blue.” In one study of emergency room admissions, schizophrenia patients were twice as likely as other patients to use a more violent (jumping, stabbing, hanging, firearm) rather than less violent (overdose, single cuts in non-dominant arm) suicide attempt method [10].

Patients with schizophrenia in all age groups had a marked increase in mortality and suicide [11]. Even different studies conducted in developed countries revealed as factors like poverty, unemployment, loss of loved ones, arguments, breakdown in relationships, family history of suicide, alcohol and drug abuse and social isolation were associated with suicidal ideation and attempt among schizophrenic patients [12-28]. But the prevalence and risk factors for the suicidal ideation and attempts among schizophrenic patients were not well known, especially in low and middle income countries including Ethiopia. Therefore, this study was assessed the prevalence and associated factors of suicidal ideation and attempt among people with schizophrenia in Amanuel Specialized Mental Hospital, which is the only Specialized Mental Hospital in Ethiopia.

## Methods

### Study design and setting

An institution based Cross-sectional study was conducted from November 2011 to May 2012. This study was conducted at Amanuel Mental Specialized Hospital in Addis Ababa. It is one of the oldest hospitals established in 1930 E.C during the Ethio-Italian war and it is the only mental Hospital in Ethiopia. In the Hospital the health service had been given up in 1940 by low level psychiatric professionals. Starting from 1946-1970 the treatment was given by doctors came from Russia, Bulgaria, and Cuba. It is located in western part of Addis Ababa in Addis Ketema Sub-city, kebele 08. The hospital is working on increasing the efficiency & effectiveness of the serves to make itself the center of mental health care excellences by giving core mental clinical services, conducting research and trainings and other administrative services. On average 46,520 people with schizophrenia are seen as outpatients are treated each year and approximately 160 patients are admitted to the wards each month. The hospital has 300 beds that serve for all type of mental disorder patients including schizophrenia. The hospital has 13 OPDs. Sample size and sampling techniques.

The source population was all patients who were clinically diagnosed as schizophrenia at Amanuel Mental Specialized Hospital, and the study population was all schizophrenic Patients who attending the outpatient department at Amanuel Mental Specialized Hospital during the study period. Patients, who were clinically diagnosed as schizophrenia in the outpatient units of Amanuel Mental Specialized

Hospital, within the age group 18 years and above, were included in the study.

The minimum sample size required for this study was determined to be 423 using single population proportion formulas with the assumption of 50% prevalence of suicidal ideation and attempt, 95% confidence level, 5% margin of error and 10% non respondent. A systematic sampling technique was employed for the selection of the sampling units. The sampling fraction for this study was:  $1938/423 = 1/5$ . Hence, the sample interval was 5. Therefore; Individuals were chosen at regular intervals (every 5th). The selected patients were directed by the facilitator to the office where the data collectors were working.

### Data collection procedures

Data were collected on suicidal ideation (individuals who has positive response for ever thought of committing suicide by her/him) and suicidal attempt (individuals who has positive response for ever tried to kill herself/himself), socio demographic, clinical, substance related factors. A standardized structured questionnaire composed of closed-ended and open ended questions was used to collect the data. The questionnaire was adapted from World Mental Health (WMH) survey initiative version of the World Health Organization (WHO) composite International diagnostic interview (CIDI), which used to evaluate the prevalence of suicidal ideation and attempt among schizophrenic patients. The questionnaire was prepared in English and it was translated in to local language for easiness in interviewing the study participants. The data were collected by trained psychiatry nurses. They were collected the data by interviewing patients and patients' informant. Also they were approached and interviewed the selected respondents after informed consent was obtained. The data collectors were supervised daily and the filled questionnaires were checked daily by the supervisors and principal investigator.

### Data processing and analysis

First the filled questionnaires were checked for completeness and consistency. Then, the data were entered using EPInfo version 2002 and analyzed by SPSS version 19 software package. Descriptive statistics were used to explain the study participants in relation to study variables. Both bivariate and multivariate logistic regression analysis were conducted to identify factors associated with suicidal ideation and attempt among schizophrenic patients. The strength of the Association was presented by odds ratio with 95% C.I. P-value less than 0.05 were considered as a cutoff point for statistically significant. Ethical consideration. Ethical clearance was obtained from the Institutional Review Board (IRB) of college of medicine and health sciences, University of Gondar and from Amanuel Mental Specialized Hospital. The data collectors were clearly explained the aims of the study for study participant. The data collectors collected the Information after obtaining verbal consent from each participant. Respondents were also informed that they can refuse or discontinue participation at any time they want and they were informed that they can ask anything about the study. Information was recorded anonymously and confidentiality was assured throughout the study period.

## Results

### Socio-demographic characteristics of the respondents

From the total of 423 people with schizophrenia targeted, 410 patients were enrolled and participated in the study, which yields a

response rate of 96.9%. The respondents were predominantly males 246(60.0%), with a mean age of 33.8 years (33.8 + 10.753 SD). Most of the respondents were single 258(62.9%). Majority of the respondents were unemployed 223 (54.4%). Two hundred sixty nine (65.9%) of the study participants were living with their family and 69 (16.8%) were living with spouse (Table 1).

Variables	Frequency(n=410)	Percent (%)
<b>Age</b>		
18-27	134	32.7
28-37	145	35.4
38-47	81	19.7
>=48	50	12.2
<b>Sex</b>		
Male	246	60
Female	164	40
<b>Religion</b>		
Orthodox	236	57.5
Muslim	100	24.4
Protestant	63	15.4
Others	11	2.7
<b>Marital Status</b>		
Single	258	62.9
Married	75	18.3
Separated/ Divorced/Widowed	77	18.8
<b>Ethnicity</b>		
Amhara	127	31.0
Oromo	132	32.2
Tigre	33	8.0
Gurage	98	23.9
Others	20	4.9
<b>Educational Status</b>		
No formal education	79	19.3
Primary education	91	22.2
Secondary Education	147	35.8
Above secondary education	93	22.7
<b>Employment status</b>		
Unemployed	223	54.4
Employed	187	45.6
<b>Monthly Income</b>		

<=569	295	72.0
>=570	115	28.0
<b>Current living with</b>		
Family	269	65.6
Alone	38	9.3
Spouse	69	16.8
Children	43	10.5
Others	21	5.1
<b>Perceived social support</b>		
Excellent	42	10.2
Very good	74	18.1
Good	123	30.0
Fair	110	26.8
poor	61	14.9

**Table1:** Socio-demographic characteristics, among People with Schizophrenia at AMSH Addis Ababa, Ethiopia, 2012.

### Proportion of suicidal ideation and attempt

The life time prevalence of suicidal ideation among 410 respondents were 112 (27.3%) [Males=17.1%, females=10.2%] and from the respondents 46(41.1%) reported to have suicidal ideation since less than or equal to 12 months. The magnitude of suicide attempt calculated was 79(19.3%) [Males =11.50%, females=7.8%] and the majority of the respondents 34(43.0%) reported to have suicidal attempt since less than or equal to 12 months. From the study Participants 91 (22.2%) of them had planned to commit suicide and

most of the participant 59(74.7%) attempt once in their life time experience. From the respondents 43 (54.4%) of them made a serious attempt to kill themselves and it was only luck that they did not succeed, 29(36.7%) they tried to kill themselves, but knew that the method they used was not fool-proof and hence these two assumptions indicates that their attempt was actual or it was an intent to die. Whereas, the rest 7(8.9%), who answered as their attempt was a cry for help but they did not intended to die indicates that they had engaged in suicide gesture (Table 2).

Variables	Frequency(n=410)	Percent (%)
<b>Ever seriously thought about committing suicide</b>		
Yes	112	27.3
No	298	72.7
<b>Duration of ever seriously thought</b>		
<=12 months	46	41.1
13-60 months	41	36.6
>=61 Months	25	22.3
<b>Ever made a plan for committing suicide</b>		
Yes	91	22.2
No	319	77.8
<b>Duration of ever made a plan for committing suicide</b>		
<=12 months	38	41.7
13-60 months	32	35.2

>=61 Months	21	23.1
<b>Ever attempt Suicide</b>		
Yes	79	19.3
No	331	80.7
<b>Duration of ever attempt Suicide</b>		
<=12 months	34	43.0
13-60 months	26	32.9
>=61 Months	19	24.1
<b>Number of suicidal attempted</b>		
Once	59	74.7
Twice	8	10.1
More than twice	12	15.2
<b>Level of seriousness of suicide attempt</b>		
I made a serious attempt to kill myself and it was only luck that did not succeed	43	54.4
I tried to kill myself, but knew that the method was not fool-proof	29	36.7
My attempt was cry for help. I did not intended to die	7	8.9

**Table 2:** Frequency distribution of life time prevalence suicide ideation and attempt, and plan among People with Schizophrenia at AMSH Addis Ababa, Ethiopia, 2012.

As presented in Figure 1. Most male and female study participants attempted committing suicide using hanging method [35.40% (28/79) and 20.20% (16/79)] respectively. Also females used poisoning method more than male respondents [12.60% (10/79)].

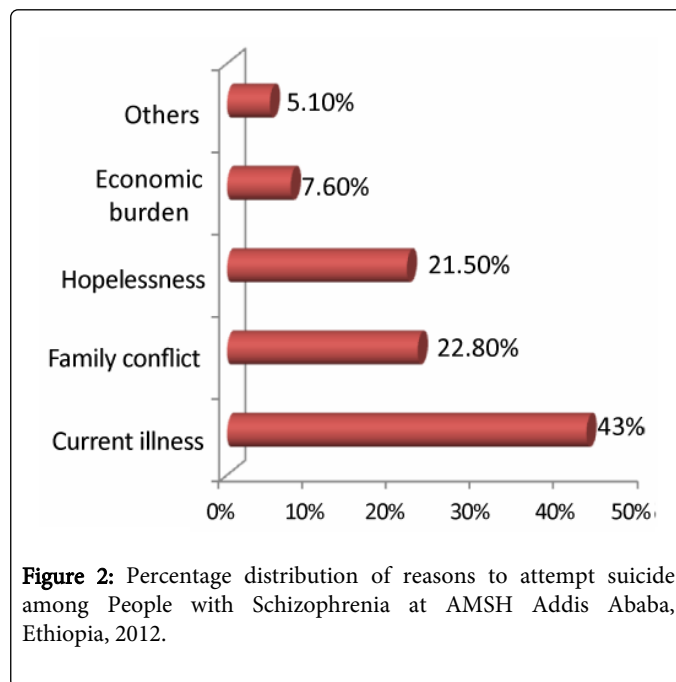
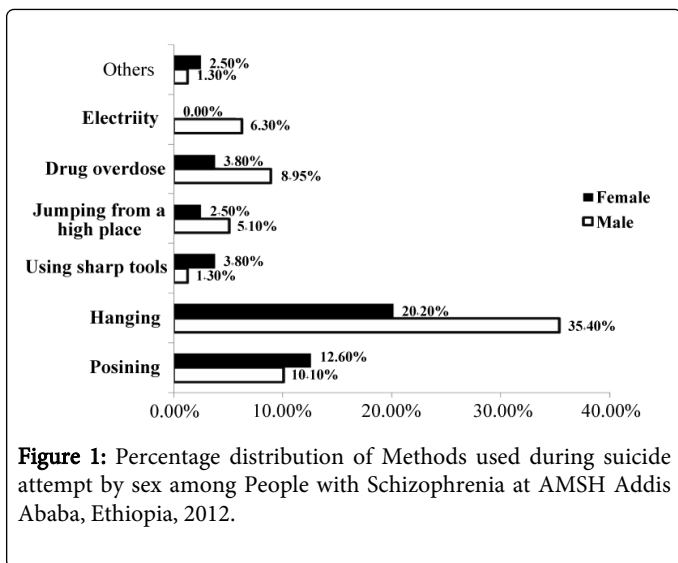
As presented in Figure 2 suicidal attempt mainly due to their current mental illness was reported by 43% (34/79) patients followed by family conflict 23%(18/79), 21%(17/79) were due to hopelessness.

### Schizophrenia related characteristics of respondents

As presented in Table 3; among respondents majority of them first episodes 192(46.8%) and 140(34.1%) were greater than or equal to 61 months since diagnosed. Most of the respondents have positive symptoms of schizophrenia which account 176(42.9%) have hallucination and 108(26.3%) have delusion but 267(65.1%) have no negative symptoms. About 62(15.1%) of participants had co morbid depression and 54(13.2%) was reported had physical illness. Only 24(5.9%) had family history of committing suicide and 53(12.9%) had family history of suicide attempt. Based on this study 127(31.0%) were substance use after diagnosis and 167(40.7%) were ever used substance.

### Factors associated with suicidal ideation and attempt

Primary bivariate logistic regression analysis was carried out between the independent and dependent variables. The independent variables include socio-demographic, Schizophrenia disorder and Substance use related variables. The bivariate analysis revealed that marital status, educational status, social support, episodes of delusion, hallucination, no positive symptoms, co- morbid depression, hopelessness, duration of illness, physical illness, family history mental illness, family history suicide attempt, family history suicide, chat chewing, drinking alcohol, and smoking cigarettes were significant association with suicidal ideation and attempt. In addition, ages of study participants were associate with suicidal attempt. But sex, religion, ethnicity, employment status, monthly income, disorganized behavior/speech, lose of personal motivation and others negative symptoms of schizophrenia were not significantly associated with suicidal ideation. After the above crude analysis, multiple logistic regression analysis was done to control the confounding effect of each variable. The variables that p-value <0.2 in bivariate analysis were



Variables	Frequency(n=410)	Percent (%)
<b>Episodes diagnosed for schizophrenia</b>		
First episode	192	46.8
Second episode	115	28
Recurrent	103	25.1
<b>Duration of the illness since diagnosed</b>		
<=12 months	131	32
13-60 months	139	33.9
>=61 months	140	34.1
<b>Positive Symptoms of schizophrenia for the last 1 month</b>		
Delusion	108	26.3
Hallucination	176	42.9
Disorganized behavior/speech	50	12.2
No symptoms	173	42.2
<b>Negative symptoms of last 1 month schizophrenia for the</b>		
Lose of affective response	41	10
Blunted Affect	16	3.9
Lose of personal motivation	89	21.7
Lose of verbal expression	49	12
No symptoms	267	65.1
<b>Co morbid Depression</b>		

Yes	62	15.1
No	348	84.9
<b>Physical illness</b>		
Yes	54	13.2
No	356	86.8
<b>Felt hopelessness over the past 12 months</b>		
Yes	163	39.8
No	247	60.2
<b>Drug treatment</b>		
Yes	383	93.4
No	27	6.6
<b>Insight</b>		
Yes	259	63.2
No	151	36.8
<b>Family history of mental illness</b>		
Yes	121	29.5
No	289	70.5
<b>Family history of suicide attempt</b>		
Yes	53	12.9
No	357	87.1
<b>Family history of suicide</b>		
Yes	24	5.9
No	386	94.1
<b>Ever substance use</b>		
Yes	167	40.7
No	243	59.3
<b>Substance use after diagnosed</b>		
Yes	127	31
No	283	69

**Table 3:** Frequency distribution of schizophrenia related characters tics among People with Schizophrenia at AMSH Addis Ababa, Ethiopia, 2012

included in multivariate analysis. Variables with p-value < 0.05 were taken as statistically significance variable.

As shown in Table 4; single people with schizophrenia were 3.04 times more likely to have suicidal ideation than those separated/divorced/widowed (AOR 3.04, 95% C.I=1.404-6.588). In addition, the clients who attend secondary education were 2.52 times more likely to have suicidal ideation than those no attended formal education (AOR 2.52, 95% C.I=1.114-5.686). Study participants who had poor social support were 3.11 times more likely to have suicidal ideation than those excellent social support (AOR 3.11, 95% C.I=1.025-9.422). Those respondents who report no positive symptoms were 39 % times less likely to have suicidal ideation than who didn't report (AOR 0.39, 95% C.I=0.209-0.683). Study participants who report co morbid depression

were 5.41 times more likely to have suicidal ideation than who didn't report (AOR 5.41, 95% C.I= 2.764-10.60). Respondents who report hopelessness were 2.51 more likely to have suicidal ideation than who didn't report (AOR 2.51, 95% C.I=1.459-4.320). Study participants who were the duration of illness 13-60 months were 3.46 more likely to have suicidal ideation than those the duration of illness less than or equal to 12 months (AOR 3.46, 95% C.I=1.683-7.10) and who reports the duration of illness greater than or equal to 61 months were 3.71 more likely to have suicidal ideation than those the duration of illness less than or equal to 12 months (AOR 3.71, 95% C.I=1.814-7.566). Respondents who report family history suicide attempt were 2.34 more likely to have suicidal ideation than who didn't report (AOR 2.34, 95% C.I=1.141-4.787) (Table 4).



	Suicidal ideation			
Marital Status	Yes(%)	No(%)	OR (95% CI)	OR (95% CI)
Single	86(33.3)	172(66.7)	2.250(1.93,4.243)*	3.041(1.404,6.588)**
Married	12(16.0)	63(84.0)	0.857(0.368,1.998)	1.395(0.516,3.772)
Separated/Divorced/widowed	14(18.2)	63(81.8)	1	1
Educational Status	Number	Number	Crude	Adjusted
No formal Education	17(21.5)	62(78.5)	1	1
Primary education	27(29.7)	64(70.3)	1.539(0.764,3.099)	1.630(0.683,3.894)
Secondary Education	51(34.7)	96(65.3)	1.937(1.027,3.656)*	2.517(1.114,5.686)*
Higher education	17(18.3)	76(81.7)	0.816(0.385,1.729)	0.977(0.379,2.516)
Perceived social support				
Excellent	9(21.4)	33(78.6)	1	1
Very good	25(33.8)	49(66.2)	1.871(0.776,4.512)	1.463(0.523,4.097)
Good	23(18.7)	100(81.3)	0.843(0.355,2.003)	0.549(0.196,1.536)
Fair	23(20.9)	87(79.1)	0.969(0.407,2.310)	0.780(0.277,2.198)
Poor	32(52.5)	29(47.5)	4.046(1.658,9.873)**	3.108(1.025,9.422)*
No positive symptoms				
Yes	33(19.1)	140(80.9)	0.471(0.296,0.751)**	0.378(0.209,0.683)**
No	79(33.3)	158(66.7)	1	1
Co morbid Depression				
Yes	37(59.7)	25(40.3)	5.387(3.052,9.508)***	5.413(2.764,10.600)***
No	75(21.6)	273(78.4)	1	1
Hopelessness				
Yes	66(40.5)	97(59.5)	2.973(1.900,4.652)***	2.510(1.459,4.320)**
No	46(18.6)	201(81.4)	1	1
Duration of illness since diagnosed				
<=12 months	24(18.3)	107(81.7)	1	1
13-60 months	40(28.8)	99(71.2)	1.801(1.013,3.202)*	3.456(1.683,7.100)**
>=61 Months	48(34.3)	92(65.7)	2.326(1.324,4.087)**	3.705(1.814,7.566)***
Family history of suicide attempt				
Yes	23(43.4)	30(56.6)	2.309(1.275,4.180)**	2.337(1.141,4.787)*
No	89(24.9)	268(75.1)	1	1

**Table 4:** Multivariate analysis between some of selected factors and suicidal ideation among People with Schizophrenia at AMSH Addis Ababa, Ethiopia, 2012. \* P-value<0.05, \*\* P-value<0.01, \*\*\* P-value<0.001 Hosmer and Lemeshow Test P-value 0.07



As shown in Table 5; single people with schizophrenia were 4.11 attend secondary education were 3.81 times more likely to have suicidal attempt than those separated/ suicidal attempt than those no attended formal education (AOR 3.81, divorced/widowed (AOR 4.11, 95% C.I.=1.563-10.827). The clients who 95% C.I.=1.414-10.253).

	Suicidal Attempt		OR (95% CI)	OR (95% CI)
	Yes (%)	No (%)		
<b>Marital Status</b>				
Single	65(25.2)	193(74.8)	3.368(1.474,7.695)**	4.114(1.563,10.827)**
Married	7(9.3)	68(90.7)	1.029(0.343,3.091)	1.822(0.521,6.378)
Separated/Divorced/Widowed	7(9.1)	70(90.9)	1	1
7(9.1)	70(90.9)	1	1	
<b>Educational Status</b>				
No formal education	9(11.4)	70(88.6)	1	1
Primary education	19(20.9)	72(79.1)	2.052(0.870,4.844)	2.062(0.721,5.892)
Secondary Education	39(26.5)	108(73.5)	2.809(1.281,6.156)*	3.808(1.414,10.253)**
Higher education	12(12.9)	81(87.1)	1.152(0.458,2.896)	1.385(0.440,4.358)
<b>Perceived social support</b>				
Excellent	5(11.9)	37(88.1)	1	1
Very good	18(24.3)	56(75.7)	2.379(0.812,6.964)	2.289(0.618,8.479)
Good	18(23.7)	105(85.4)	1.269(0.440,3.659)	1.157(0.316,4.239)
Fair	14(12.7)	96(87.3)	1.079(0.363,3.207)	1.123(0.295,4.270)
Poor	24(39.3)	37(60.7)	4.800(1.653,13.936)**	4.465(1.134,17.573)*
<b>No positive symptoms</b>				
Yes	18(10.4)	155(89.6)	0.335(0.190,0.591)***	0.300(0.149,0.600)**
No	61(25.7)	176(74.3)	1	1
<b>Co morbid Depression</b>				
Yes	28(45.2)	34(54.8)	4.796(2.680,8.58)***	4.733(2.306,9.713)***
No	51(14.7)	297(85.3)	1	1
<b>Hopelessness</b>				
Yes	49(30.1)	114(69.9)	3.109(1.871,5.166)***	2.489(1.352,4.584)**
No	30(12.1)	217(87.9)	1	1
<b>Duration of illness since diagnosed</b>				
<=12 months	20(15.3)	111(84.7)	1	1
13-60 months	27(19.4)	112(80.6)	1.338(0.709,2.525)	2.332(1.057,5.102)*
>=61 Months	32(22.9)	108(77.1)	1.644(0.886,3.052)	2.256(1.036,4.909)*
<b>Family history of suicide attempt</b>				
Yes	17(32.1)	36(67.9)	2.247(1.187,4.255)*	2.185(0.992,4.810)
No	62(17.4)	295(82.6)	1	1

**Table 5:** Multivariate analysis between some of selected factors and suicidal attempt among People with Schizophrenia at AMSH Addis Ababa, Ethiopia, 2012. \*P-value<0.05, \*\* P-value<0.01, \*\*\* P-value<0.001 Hosmer and Lemeshow Test P-value 0.768

Study participants who had poor social support were 4.46 times more likely to have suicidal attempt than those excellent social support (AOR 4.46, 95% C.I=1.134-17.573). Those respondents who report no positive symptoms were 0.30 times less likely to have suicidal attempt than who didn't report (AOR 0.30, 95% C.I=0.149-0.60). Study participants who report co morbid depression were 4.73 times more likely to have suicidal attempt than who didn't report (AOR 4.73, 95% C.I=2.306-9.713).

Respondents who report hopelessness were 2.49 more likely to have suicidal attempt than who didn't report (AOR 2.49, 95% C.I=1.352-4.584). Study participants who were the duration of illness 13-60 months were 2.33 more likely to have suicidal ideation than those the duration of illness less than or equal to 12 months (AOR 2.33, 95% C.I=1.057-5.102) and who reports the duration of illness greater than or equal to 61 months were 2.26 more likely to have suicidal attempt than those the duration of illness less than or equal to 12 months (AOR 2.26, 95% C.I=1.036-4.909). Respondents who report family history suicide attempt were 2.18 more likely to have suicidal attempt than who didn't report (AOR 2.18, 95% C.I=0.992-4.810).

## Discussion

Schizophrenic patient were exposed for suicidal ideation and attempt which is an important in the process of commuting complete suicide. In addition to this there is different socio- demographic, behavioral and disease related factors which associate with suicidal ideation and attempt. Also suicidal ideation and attempt affect the life of individual and his/ her families.

On this study the prevalence of Suicidal ideation was 112 (27.3%) [Male=17.1% and female 10.2%]. This finding was higher when compared to a community based studies in Addis Ababa, Ethiopia which was 2.7% [6]. The reason for the higher magnitude of suicidal ideation in this study could be due to the difference in study population. But magnitude of suicidal ideation on this study was lower compared to the study finding in Gondar which was 64% [20]. The reason for this discrepancy might be due to including all patients who visits psychiatric clinic in Gonder study unlike this study which was only schizophrenic patients.

The studies conducted in Kenya, Turkey, Korea and Athens revealed as the proportion of suicidal thought/Ideation were 9%, 31.36%, 51.3% and 20.4% respectively [13-15,19]. The reason for this

discrepancy may be due to using difference instruments, the socio cultural difference among people participated in the studies. In addition there discrepancy in using current and the life time prevalence of suicidal ideation.

Concerning suicidal attempt, 79 (19.3%) [Males=11.5% and females=7.8%] of study participants had history of suicidal attempt in their life time experience, which was similar with the study finding in Gondar 19.2% [20]. But it is higher than the study findings in Addis Ababa, Butajira Ethiopia, Kenya and Turkey which indicate the life time prevalence of suicidal attempt 0.9% and 3.2%, 5.1% and 18 % respectively [6,19,15,21]. The possible reason for this discrepancy might be due to the difference in the study population. But it was lower than the study finding done in India among patients with schizophrenia which showed 22% ever suicidal attempt [16]. Perhaps this discrepancy may be due to the difference instruments used to asses' suicidal attempt, and they used hospitalized patients unlike this study used out patients.

More than seven methods were used to attempt suicide. The most commonly used method was hanging which was 44 (55.6%). This was similar with the study finding conducted in Gondar, Butajira and Addis Ababa on which the highest proportions of study participants were used hanging to attempt, suicide (6,20,21). But it is different from the study finding done in Turkey which indicates drug overdose was the most commonly used method for suicidal attempt [15]. Multiple logistic regression model revealed that marital status, educational status, perceived social support, no positive symptoms, co-morbid depression, hopelessness, duration of illness since diagnosis were statistically significant association with both suicidal ideation and attempt among schizophrenics patients.

In this study, the marital status was significant predictor on suicidal ideation and suicidal attempt. Those single schizophrenia patients were 3.04 times more likely to have suicidal ideation than those separated/divorced/widowed (AOR 3.04, 95% C.I=1.404-6.588). The reason for this may be those single individuals were got low social support than the counterpart. This finding is in line with the study conducted in India and USA which showed there is significant association between marital status and suicidal ideation [16].

In line with the study conducted in different regions of the world including India and USA, and Chinese indicate those schizophrenic patients at the higher level of education status were more likely to have suicidal ideation and attempt [16,26,27]. The clients who attend

secondary education were 2.52 times more likely to have suicidal ideation than those who not attend formal education (AOR 2.52, 95% C.I.=1.114-5.686). The possible reason for this may be those schizophrenic patients at higher educational status might have greater insight or awareness of psychiatric condition was associated with increased risk of suicide, and this association was mediated by depression and hopelessness for the future.

Perceived social support was one of the predicting variables for suicidal ideation. Those Study participants who had poor social support were 3.11 times more likely to have suicidal ideation than those excellent social support (AOR 3.11, 95% C.I.=1.025-9.422). This is in line with WHO report in 2004 and the finding on *Journal of Psychosomatic Research* 2010 which showed Weak social ties and low support from friends or relatives have been significantly associated with suicidal ideation [2,5].

In this study those respondents who report no positive symptoms were 2.56 times less likely to have suicidal ideation than who didn't report (AOR 2.56, 95% C.I.=1.464-4.785). Similarly with this finding of a systematic review on rates and risk factors of suicide and schizophrenia co- morbid depression was significantly associated with suicidal ideation [27]. In this study those participants who report co-morbid depression were 5.41 times more likely to have suicidal ideation than who didn't report (AOR 5.41, 95% C.I.= 2.764-10.60).

In this study those respondents who report hopelessness were 2.51 more likely to have suicidal ideation than who didn't report (AOR 2.51, 95% C.I.=1.459-4.320). This may be due to that individuals with felling of hopelessness were not thinking positively and not eager to use any opportunities which make them in a better position. This finding was similar with the study conducted in Taiwan and Chinese which indicate those schizophrenic patients with felling of hopelessness were more likely to have suicidal ideation [17,24,26].

In this study family history of suicidal attempt were significantly associated with suicidal ideation and attempt among schizophrenic patients. Those respondents who report family history suicide attempt were 2.34 more likely to have suicidal ideation than who didn't report (AOR 2.34, 95% C.I.=1.141-4.787). The possible reason for this may be from a biological perspective, suicidality may be inherited. However, environmental and non genetic factors such as shared exposure to family stress and common lifestyles could contribute to the suicidal behavior of both patients and their family. This is in line with WHO report, the study finding in Korea and a systematic review on rates and risk factors of suicide and schizophrenia which indicate schizophrenic family history of suicidal were more likely to have suicidal ideation [2,14,27].

As limitations, this study assessed the life time prevalence rather than the point or current prevalence of suicidal ideation and attempt. In addition, it assessed their status of suicidal ideation and attempt based on their stated response; on this case individuals may not disclose their actual thought or attempt about suicide.

In conclusion this study reveals that a substantial number of people with schizophrenia have suicidal ideation and attempt. The rate of suicidal ideation and attempt in people with schizophrenia is found to be much higher when compared with the rate from the general population, which shows it is a significant public health issue that requires a great emphasis. Being single, attending higher education, poor social support, having family history of suicidal attempt, co-morbid depression, hopelessness, later duration of illness since

diagnosis were significantly associated with suicidal ideation and attempt.

Therefore, Ministry of health should prepare and train health worker on screening tool for suicidal ideation and attempt for people with schizophrenia to reduce risk of suicide among people with schizophrenia. Health care providers should screen all schizophrenic patients for suicidal ideation and attempt on a regular basis and provide necessary clinical interventions, treatment and support. Health care providers should spent time with close relatives of patients to let them know the importance of social support. Farther more It is important raising awareness of the public about early diagnosis, treatment, predisposing and precipitating factor through educational campaigns. Lastly, further investigation should be continued to explain exhaustively effect of schizophrenia on suicidal ideation and attempt.

## Competing Interests

The authors declare that they have no competing interests.

## Authors' Contributions

ZN designed the study, participated in the data collection, performed analysis and interpretation of data and drafted the paper and prepared the manuscript. HS, ZY and AM assisted in the design, approved the proposal with some revisions, participated in data analysis and revised subsequent drafts of the manuscript. All authors read and approved the final manuscript.

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