Research Article

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Prevalence of Aggressive Behavior and Associated Factors among Patients with Schizophrenia Attending at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia, 2017

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Abstract: Mental illness and aggression are often seen as inextricably linked, creating a harsh stigma for patients and, at times, an uncomfortable environment for mental health professionals. There is a growing body of evidence on aggressive behavior towards others by people with schizophrenia. Thus, this study was designed to assess the prevalence of aggressive behavior and associated factors among schizophrenia patients attending at Amanuel Mental Specialized Hospital. Institutional based cross-sectional study was employed among 403 patients with schizophrenia attending at outpatient department of Amanuel Mental Specialized Hospital from May 1 to 31 2017. In choosing study participants, a systematic random sampling technique was used. Aggressive behavior was assessed by using Modified Overt Aggression Scale. The coded data was checked, cleaned and entered into EPI-INFO version 3.5.3 and then exported into SPSS version 20 for analysis. Besides, binary logistic regression was used to see association of factors observed in selected patients. First bivariate analysis was done to identify variables eligible for multivariable binary logistic regression. Then, the independent predictor factors were identified by multivariable logistic regression model. Later on, adjusted odd ratio was calculated at 95% CI and was used as measure of association. Finally, significance was declared at p-value of<0.05.The prevalence of aggression in this study was 107 (26.55%). Of this 81(75.7%) and 26(24.3%) were male and female, respectively. The commonest associated factors for aggressive behavior include male [AOR=2.61, 95%CI (1.21, 5.61)],unemployment[AOR=8.03, 95%CI (3.08, 25.95)],previous history of aggression[AOR=6.22, 95%CI (2.75, 14.10)], Psychotic symptoms[AOR=8.12, (3.11, 21.14)], poor social support[AOR=3.11, 95%CI (1.35, 7.17)] and alcohol use [AOR=2.40, 95%CI (1.02, 5.66)].The prevalence of aggression behavior was found to be slightly high. Occupation, diagnosis episode of schizophrenia, previous history of aggression, types of drug taken, psychotic symptom, social support and alcohol use were found to be significantly associated with aggressive behavior. Clinicians should consider early detection & management of aggression as top professional priority in this respect.

Keywords: *Aggression behavior, associated factors, Addis Ababa, Schizophrenia*

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1. Introduction

Mental disorders are identified to be the leading causes of disability worldwide, accounting for one-third of the years lost due to disability *(Stephen J, 2008).*In humans, aggressive behavior assumes the form of violent actions against others or self. Aggression implies the intent to harm or otherwise injure another person, an implication inferred from events preceding or following the act of aggression *(Kaplan HI, 2010).*Schizophrenia has been the diagnosis most often associated with aggression as it has been taken as a paradigm of insanity/psychosis, incompetence and dangerousness (Swanson JW, 2006). Evidence exists for an increased incidence of aggressive behavior in schizophrenia, estimated at two to ten times that of the general population **(***Hodgins S, 2001), Wallace, 2008, and Sheilagh H, 2008).*

A meta-analysis of published literature indicates that the proportion of aggression in individuals with schizophrenia estimates vary from 6 to 28% *(Bediou B, 2007).* Study conducted in Canada shows that those with schizophrenia had the occurrence of aggression over the course of the year was 14.8% *(Stuart H, 2003).*The most common type of aggressiveness was verbal and the least common was self-directed *(Bobes J, 2009).* In a study conducted in Prague the prevalence of aggression in patients with recurrent schizophrenia was 44.4% *(Vevera J, 2005).*

Another study carried out in United States indicated that the prevalence of aggressive behavior among schizophrenia patients was 40.9%. Respondents rated the following groups as very or somewhat likely of doing something aggressive to others those have: drug dependence (87.3%), alcohol dependence (70.9%) (*Pescosolido BA, 2002). However, a s*tudy conducted in London recorded a surprisingly high level of aggression: 52% verbal aggression in male patients (46% in females), 39% aggression against objects (25% in females), and 23% against self (9%females), and 39% against other people (34%females) as measured by MOAS *(Soyka M,2002).* On the other hand, a cross sectional Study was conducted at Jos university teaching hospital, Nigeria shows that the prevalence of aggressive behavior were 21.9%.The patient exhibited different forms of aggression in the following frequencies: verbal aggression (45), aggression against property(31), auto-aggression(12), and physical aggression(40) *(Chukwujekwu DC,2011).* Likewise, in another cross-sectional study conducted at Aroneuro-psychiatric hospital in Nigeria. The results revealed that a total of 305 patients comprising 213 (69.8%) were male and 92 (30.2%) of them were females. Out of these, 73 patients manifested aggressive behavior. This represented a rate of 23.94 percent *(FatoyeFO, 2010).*

In a similar study conducted in Columbia, the common causes for aggressiveness and a prior for hospitalization uncovered to be medication non-compliance (73%), alcohol use (37%), and previous aggressive behavior (51%) *(Abderhalden C., 2008; Jeffrey W., 2000, Lindqvist P., 1998; Tardiff K., 2006; and Ashleigh Do., 2011).*Nevertheless, a study conducted in Japan indicated that aggressiveness is associated with unemployment, which usually brings in its wake financial insecurity and social decline. This tends to encourage a drift into a marginal existence characterized by poor housing, if not homelessness, in socially disorganized neighborhoods where substance misuse, interpersonal conflict and crime are commonplace (Logdberg G, 2004).

Quite significantly; though, the proportion of persons with schizophrenia who engage in aggressive behavior reflects 6-28% of the prevalence and risk factors for aggressive behavior are not well known, especially in low and middle income countries including Ethiopia*(Bediou B, 2007).*Thus, this study was conducted with the aim to assess the prevalence and associated factors of aggressive behavior among people with schizophrenia.

2. Methods and Materials

2.1 Study Design and Setting

Institutional based cross-sectional study design was employed at Amanuel Mental Specialized Hospital starting from the 1st of May to 30th of May, 2017. The hospital is located at Addis Ababa, Addis ketema sub city, kebele 08. It was established during the Ethio-Italian war in 1930 G.C and it is identified to be the only Mental Hospital in Ethiopia. At the beginning, the Hospital was established with intention to protect theRoyal families from mentally ill persons. Besides, at its earlier stage (until the 1940's) it is reported that the medical service was accommodated with low level psychiatric professionals. Yet, in the period between 1946 and 1970 G.C, the service and the treatment upgraded by doctors who came from Russia, Bulgaria, and Cuba. Currently, the hospital is working to improve the efficiency & effectiveness of the service by making itself a center of mental health care excellences in order to provide core mental clinical services, conducting research and trainings, and other administrative services.

2.2 Population

All patients who were clinically diagnosed as schizophrenia in AmanuelMental Specialized Hospital who were referred in the times specified were taken as source population. Specifically, the schizophrenic patients who were randomly selected and attending the outpatient department at the hospital during the study period were considered as study population.

2.3 Inclusion and Exclusion Criteria

Schizophrenia patients whose ages were considered 18 years and above and patients who were getting the treatment at out-patient department were included in this study. However, patients who didn't be able to respond for data collectors were excluded in this study.

2.4 Sample size determination and sampling techniques

The sample size for the study was determined using a single population proportion formula with the following assumption: Prevalence of aggressive behavior among schizophrenia patients to be 50% , margin of sampling error tolerated- 5% (0.05), critical value at 95% confidence interval of certainty (1.96), and 10% for non-response making the final sample size of 422 .

$$n = \frac{Z\alpha^2 p(1-p)}{d^2}$$

Where;

n= is the minimum sample size required

Z= standard normal distribution (Z=1.96) with confidence interval of 95% and α=0.05

P= Prevalence of aggressive behavior among schizophrenia patients

d= Absolute precision or tolerable margin of error (d) =5%=0.05

The following assumption was made during determining the sample size

$$n = \frac{(1.96)^2 0.05(1-0.05)}{(0.05)} = 384$$

And taking 10% (38.4) for non-responsemaking the final sample size 384+38 = 422

A systematic random sampling technique was used to select the study participants from 12 months data 48,884 schizophrenic patients. Since participants during study period (within 2 weeks was 2036) so, the sampling fraction is:

K= N/n = 2036/422= 5 Where N: was the total number of patients who had followed up visit during the data collection period. Hence, the sampling interval was 5. Individuals were chosen at regular intervals (every 5^{th}) and the selected patients were directed by the facilitator to the office where the data collectors were working.

2.5 Data Collection and Measurements

Modified Overt Aggression Scale (MOAS) was used to assess the aggressive behavior. The Modified Overt Aggressive Scale is a one page protocol that documents and measures specific aspects of aggressive behavior based on observable criteria. The MOAS has four subscales of aggression (Verbal aggression, Aggression against Property, Auto- aggression and Physical Aggression against other people) which constitute a total of 16 items, within each Type of aggressive behavior. In this case, the high scores corresponds to a greater degree of violence which ranges between 0– 4 (from 0-none to 4 - extreme violence). And each subscales weight was multiplied with respondents score. Accordingly, each assumed a weight equivalent to; such as, verbal aggression weight 1, Aggression against property weight 2, Auto aggression weight 3 and physical aggression weight 4.

In this respect, it is to be recalled that aggressive behaviour was defined as a score of 3 or more in any of the MOAS sub scores. MOAS was validated and was used as a tool in studies executed on aggressive behavior in Spain and some other African countries; such as, South Africa and Nigeria. On the other hand, social support was measured using the Oslo-3 Social Support Scale (OSS-3) with three apparent questions. What is more, the response categories were assessed independently for each of the three questions, and a sum score was created by summarizing the raw scores. The Oslo-3 scale has been used in several studies, thus confirming its feasibility and predictive validity with respect to psychological distress. In this study, the scale is used as both a sum score and an item-by-item scale. Finally, the sum score scale ranging from 3–14, which was then operationalzed into three broad categories: "poor support" 3–8, "moderate support" 9–11 and "strong support" 12–14 were used. Besides, a semi structured questionnaire was used to collect socio- demographic characteristics and some clinical factors.

2.6 Data Collection Procedures

In order to realize the success of the research, data was collected by ten Psychiatric BSc nurses and three public health staffs were also participated as a supervisor. Data collectors and supervisors were trained for two days on the study instrument, consent form, how to maintain confidentiality and data collection procedure and data collection period which was collected for two weeks. Data was collected by interviewing patients and their caregivers (when available) during a routine follow-up visit. The patients and the families were interviewed whether the patient had behaved aggressively during the past week in any of these domains: verbal aggression and physical aggression towards others or him/her, or aggressive behavior towards objects. If that was the case, the investigator completed the Modified Overt Aggression Scale (MOAS) with the help of the patients or caregivers. In this regard, a pre-test was conducted for 21 patients (5% of the sample size) at AMSH two days prior to data collection. The questionnaire was translated backward and forward to Amharic and English using professional language translators. The supervision was held regularly

during the data collection period. To ensure the reliability of the data, it was checked on daily basis for its completeness and consistency.

2.7 Data Analysis

Data entry was facilitated using EPI-INFO version 3.5.3 and then exported into Statistical Package for the Social Sciences (SPSS) window version 20 for analysis. Descriptive summary using frequencies, percentage and graphs were used to present study results. In the process of analysis, the binary logistic regression model was used. Besides, while bivariate analysis was used for COR, the multivariate analysis employed to calculate AOR for variables which met p-value < 0.2 during the bivariate analysis. Consequently, P-value of < 0.05 was considered as statistically significant during the binary logistic regression.

2.8 Ethical Consideration

Ethical clearance was obtained from Amanuel Mental Specialized Hospital. The data collectors were clearly addressed the purpose of the study to participants. The right was given to the study participants to refuse or discontinue the study at any time of the data collection procedure. For the purpose of anonymity, the participant's and all the other personal information kept entirely anonymous and confidential while and after the data collection procedure has been realized. Pertaining to the benefits aspired, the researchers would like to express their commitment and beliefs that the findings will help to prevent and manage aggressive behavior in people with schizophrenia.

3. Results

3.1 Socio-Demographic Characteristics

The response rate was 95.5% and of whom 266 (66.0%) male and 137 (34.0%) female) were participated in this study. The mean age of participants was 33.9 years (SD ±10.28) and its distribution ranged between the ages of 18 and 60. Of the total participants; 215 (53.3%) were Orthodox Christians, 125 (31.0%) Oromo, 198 (49.1%) never married, 190 (47.1%) jobless and 120 (29.8%) attended no formal education, 169 (41.9%) used to earn less than 400.00 birr on monthly bases. More than half of the study subjects, 230 (57.1%) were from Urban and 350 (86.8%) were living with their family. **(Table 1)**

Table 1: Distribution of schizophrenia patients by socio demographic factors attending at AmanuelMental Specialized Hospital; May, 2017(n=403)

Variables	Category	Frequency	
		Number	Percent (%)
Age	18-24	65	16.1
	25-34	165	40.9
	35 -44	111	27.5
	45-54	39	9.8
	≥55	23	5.7
Sex	Male	266	66.0
	Female	137	34.0
Residence	Urban	230	57.1
	Rural	173	42.9
Income	<400 birr	169	41.9
	400-900 birr	57	14.1
	900-1200 birr	99	24.6
	>1200birr	78	19.4
Religion	Orthodox	215	53.3
	Muslim	133	33.1
	Protestant	55	13.6
Marital status	Single	198	49.1
	Separated	68	16.9
	Divorced	51	12.7
	Married	86	21.3
Ethnicity	Amhara	117	29.0
	Oromo	125	31.1
	Gurage	115	28.5
	Tigray	46	11.4
Education	No formal education	120	29.8
	Primary	109	27.0
	Secondary	116	28.8
	Above secondary	58	14.4
Occupation	Employed	62	15.4
	Self business	122	30.3
	Student	29	7.2
	Jobless	190	47.1
Living circumstance	With family	350	86.8
	Alone	53	13.2

3.2 Aggression Related Factors

Concerning clinical characteristics of the participants, 222(55.1%) had the diagnosis of recurrent schizophrenia, 300 (74.4%) were on conventional antipsychotic drug, 163(40.4%) had poor social support, 52(12.9%) of the study subjects had symptoms of commanding hallucination, 54 (13.4%) persecutory delusion and 70 (17.4%) had previous history of aggression. Current substance use among 316 (78.5%)

participants who used substance since aggression initiation, 122 (30.3%) of the respondents were using Khat.**(Table 2)**

Table 2: Distribution of schizophrenia patients by factors related aggressive behavior attending at Amanuel Mental Specialized Hospital; May, 2017(n= 403)

Variables	Categories	Frequency	
		Number	Percent (%)
Diagnosis	First episode	40	9.9
	Second episode	141	35.0
	Recurrent	222	55.1
History of aggression	Yes	70	17.4
	No	333	82.6
Types of Drug taken	Typical antipsychotic	300	74.4
	Atypical antipsychotic	103	25.6
Nature of aggression	Verbal aggression	41	10.19
	Aggression against objects	26	6.46
	Auto - aggression	17	4.23
	Physical aggression	23	5.72
	Both verbal & physical	48	11.9
Time of aggression	None	263	65.3
	Morning	35	8.7
	After noon	40	9.9
	Evening/night	65	6.1
Psychotic symptoms	No symptoms	297	73.7
	Persecutory delusion	54	13.4
	Command hallucination	52	12.9
Social support	Poor support	163	40.4
	Moderate support	157	39.0
	Strong support	83	19.6
Current substance use	Alcohol	74	18.4
	Khat	122	30.3
	Smoking	107	26.6
	Cannabis	13	3.2
	No	87	21.5

3.3 Prevalence of Aggressive Behaviour

The overall prevalence of aggression in the study population was found to be 26.55%. Of the total respondents 41 (10.19%) had a verbal aggression, 26 (6.46%) had aggression against property, 17 (4.23%) had auto aggression, and 23 (5.72%) had a physical aggression while 48 (11.9%) had both verbal and physical aggression. **(Figure 2)**

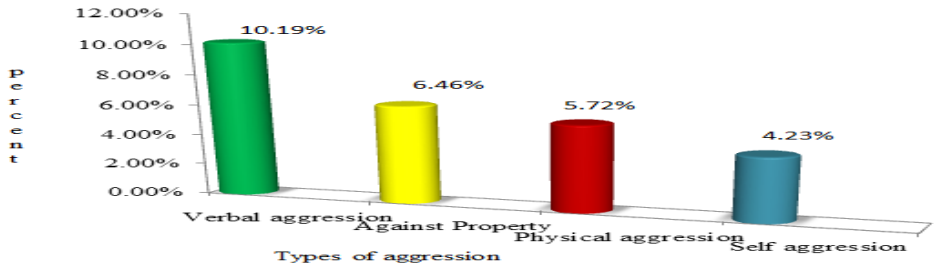

Figure 2: Subtypes of aggressive behavior among schizophrenic patients having aggressive behavior attending at amanuel mental specialized hospital; May, 2017.

Concerning the relationship between aggressive behavior and the patients socio demographic characteristics: 80 (74.77%) were males, 54 (50.50%) were living in urban parts of the country , 57 (53.27) of the participant used to earn a monthly income below 400 birr, 62 (57.94%) were single and 84 (78.50%) were also jobless. Looking at the patients, the clinical related factors 70 (65.42%) had a recurrent diagnosis of schizophrenia, 40 (37.38%) had previous history of aggression, 91 (85.05%) were taking typical antipsychotics, 28 (26.17%) and 24 (22.43%) had commanding hallucination and persecutory delusion respectively. On the other hand, seventy (65.42%) had apoor social support while 27 (25.23%) were using alcohol, 39 (36.45%) were consuming Khat and 7 (6.54%) were also using cannabis at the time of study.

3.4 Factors associated with Aggressive Behavior

In the multivariable logistic regression analysis sex [AOR=2.61, 95%CI (1.21, 5.61)], occupation[AOR=8.03, 95%CI (3.08, 25.95)], previous history of aggression [AOR=6.22, 95%CI (2.75, 14.10), current psychotic symptom[AOR=8.12,95% CI (3.11,21.14)]social support [AOR=3.11,95%CI(1.35,7.17)] and alcohol use [AOR=2.40,95%CI (1.02,5.66)] were found to be statistically significant with aggression. **(Table 3)**

Table 3:Multivariate logistic regression analysis of associated factors for aggressive behaviors among schizophrenia patients attending at Amanuel Mental Specialized Hospital; May, 2017(n=403)

Explanatory variables	Frequency	Aggressive behavior		COR (95% CI)	AOR (95% CI)
	N (%)	Yes	No		
Sex					
Male	266 (66.0)	80	186	1.75(1.07, 2.88)*	**2.61(1.21, 5.61) ****
Female	137(34.0)	27	110	1.00	1.00
Monthly income					
<400 birr	169(41.9)	57	112	2.14(1.12, 4.08)*	1.32(0.53, 3.26)
400-900 birr	57(14.1)	22	35	2.64(1.22,5.73)*	3.28(1.07, 10.04)
900-1200 birr	99(24.6)	13	86	0.63(0.28, 0.99)*	0.64(0.20, 2.01)
>1200birr	78(19.4)	15	63	1.00	1.00
Occupational status					
Employed	62(15.4)	57	5	1.00	1.00
Self business	122(30.3)	107	15	0.48(0.16, 0.93)*	0.25(0.65, 0.99)
Student	29(7.2)	9	20	3.54(1.16, 10.75)*	5.28(1.18, 23.52)
Jobless	190(47.1)	84	106	6.23(2.69, 14.38)*	**8.03(3.08, 21.95)** **
History of aggression					
Yes	70(17.4)	40	30	5.29(3.07, 9.12)*	**6.22(2.75, 14.10)** **
No	333(82.6)	67	266	1.00	1.00
Psychotic symptoms					
No symptoms	297(73.7)	55	242	1.00	1.00
Persecutory delusion	54(13.4)	28	26	4.74(2.57,8.71)*	**8.12(3.11, 21.14) ****
Command hallucination	52(12.9)	24	28	3.77(2.03, 7.00)*	**7.05(2.88, 21.39) ****
Social support					
Poor support	163(40.4)	70	93	2.72(1.48, 4.98)*	**3.11(1.35, 7.17)****
Moderate support	157(39.0)	19	138	0.49(0.25, 0.99)*	0.56(0.22, 1.43)
Strong support	83(19.6)	18	65	1.00	1.00
Alcohol					
Yes	74(18.4)	27	47	1.93(1.13, 3.32)*	**2.40(1.02, 5.66)****
No	329(81.6)	80	249	1.00	1.00

Key= *** p-value <0.2 statistically significantP-value of Hosmer and Lemeshow test =0.88

4. Discussion

The overall prevalence of aggressive behavior in the study area was 26.55. When comparing the finding with other similar studies conducted in the area it appears to be slightly higher. For instance, the prevalence rate in Canada14.8% [*Stuart H (2003)*], Nigeria Jos hospital 21.9% *(Chukwujekwu DC,2011)*, & Nigeria Neuro psychiatric hospital 23.94% (*FatoyeFO, Amoo G, 2010)*. Meta-analysis of published literature indicated that the prevalence of aggressive behavior in schizophrenia ranged from 6% -28 % *(Bediou B,2007)*. The possible reason for the difference in the magnitude of prevalence can be due to the socio cultural difference in the study population, clinical related factors and methodological differences; like using different screening tools. This is because; for instance, 55.3% of study the participants in the current study area had exhibited a recurrent episode of schizophrenia unlike the 44.14% in Prague and 24.6% in Nigeria *(Vevera J,2005, FatoyeFO,Amoo G, 2010)*. The other possible factors that caused a higher aggressive behavior in this study area might be the higher substance use (78.41%) unlike the 34% in Canada *(Stuart H, 2003)*.

The overall prevalence of a subtypes of aggressive behavior in the current study area manifested to be(10.19%) for verbal aggression, (6.46%) for aggression against property, (4.23%) for auto aggression, (5.72%) for physical aggression and (11.9%) recorded to be for both verbal and physical aggression while (6%) of the participants had all types of aggressions. What is more, the most common type of aggressiveness was discovered to be the verbal aggression and the least common was the self-directed one which is in line with study done in Spain and London *(Bobes J,2009, Soyka M (2002)*.Most of the time aggression was observed at evening and night time which was 16.1% which was coincide with study done in Nigeria (*FatoyeFO,Amoo G, 2010*).The possible reason may be aggression partly explained socio culturally in the sense that in our environment, verbal or physical exchange is often a means of settling conflicts instead of discussing issues.

During multivariate analysis socio-demographic factors including age, residence ethnicity, religion, educational level and living circumstance were not found to be statistically associated with aggressive behavior**.** Hence, this finding is consistent with many of the previous studies conducted in this respect *(Vevera J,2005, Chukwujekwu DC,2011)*. Contrary to this finding, a study done in Columbia on mental ill patients depicts older age and better education level were negatively associated with aggressive behavior *(FatoyeFO,Amoo G (2010), Jeffrey W,2000)*.The possible explanation might be participants in those studies might had repeated episode for diagnosis of schizophrenia which implies that these patients were aware of the consequences of aggression such as relapses and hospitalizations which resulted in developing fear due to a prior exposure

Sex was observed to be significantly associated with aggressive behavior in this study (74.77%), which also coincides with studies done in Nigeria (60.5%) and UK (49.1%) *(FatoyeFO,Amoo G 2010,Sheilagh H, 2008)*.The possible reason might be that males were more prone to physical aggression than females had to do with biological, psychological, and social factors. Another possible reason could be the fact that males tend to express themselves at a higher rate feelings. Females are therefore much more likely to respond to anger with feelings of depression, anxiety and shame.

Unemployment was also found to be significantly associated with aggressive behavior in this sample, which is in line with studies done in Nigeria and Japan (*FatoyeFO, Amoo G, 2010, Logdberg G,2004)*. The possible reason might be the fact that unemployment is a potential cause of frustration, which in turn underlies the manifestation of aggressive behavior, even among individuals not suffering from a mental disorder. Furthermore, those patients could also be more knowledgeable and might possess greater insight with regard to their condition.

Participants who had previous history of aggression were about six times more likely to be aggressive than those who hadn't previous history of aggression which is in line with study conducted in Nigeria. One of the major findings in this study is that there is a significant association between aggression in a psychiatric patients and a history of previous acts of aggression *(FatoyeFO, Amoo G, 2010)*.

Psychotic symptoms were about eight and seven times more likely to be aggressive than those who hadn't psychotic symptoms which is in line with studies conducted in Nigeria, Canada and Columbia; most of the aggressive patients reported experiencing psychotic symptoms preceding their acts of aggression and there is a significant association between commanding hallucination, delusion of persecution (belief that people are against them) and aggression *(Chukwujekwu DC,2011, Stuart H (2003), Jeffrey W,2000)*.

Participants who were using alcohol were two times more likely to be aggressive than those who didn't used. This finding coincides with study done in USA and Columbia which reported aggressive was associated in patients with substance use particularly with Alcohol use (*Pescosolido BA,2002, Jeffrey W,2000, and Lindqvist P,1998)*. Poor social

supports were about three fold to be aggressive as compared to patient having strong social support (*Lindqvist P,1998*). Possible reason includes the specified substance use can have negative impacts on a person's internal state causing increased cognitive anomalies and unpleasant withdrawal symptoms. Since the study design was cross sectional cause and effect cannot be ascertainedThe recall bias might have occurred due to the fact that the data was collected from the patients themselves. This study didn't measure the severity of psychotic symptoms that elicited aggressive behavior rather the emphasis was on types of psychotic symptoms that preceded an act of aggression.

5. Conclusion

In this study about one third of the study participants had exhibited an aggressive behavior. This was found to be slightly higher than the previous studies conducted The gender based classification of maleness, unemployment, previous history of aggression, psychotic symptom, poor social support and alcohol use were also found to be statistically significantwith respect to aggressive behavior. On the other hand, age, residence, religion, ethnicity, educational status, living circumstance, and cigarette use were not significantly associated with aggressive behavior. Thus, in order to improve the observable traits of the patients, the social support system and access to Opportunities have to be thought through by concerned stakeholders. What is more, males and people who consume alcohol should also be given special emphasis since they are at high risk for developing aggressive behavior syndrome.

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List of abbreviation

AOR……..Adjusted Odds Ratio
COR……..Crude Odds Ratio
CI……..Confidence Interval
OSS-3……..Oslo-3 Social Support Scale
MOAS……Modified Overt Aggression Scale
SPSS ……..Statistical Package for the Social Sciences

Availability of data and materials

The datasets used and/or analyzed during the current study are availablefrom the corresponding author on reasonable request.

Authors' contributions

KM and AA had taken a principal role in the conception of ideas, developing methodologies, data collection, analyses and write up of the article. KM and AA participate in data analysis and had a great contribution to the write up of the draft and approval of the final version of the manuscript. All authors read and approved the final manuscript.

Conflict of Interest

The authors declare that they have no competing interests.

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