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Prevalence of Aggressive Behavior Among Acute Psychiatric Inpatients: A Cross-Sectional Study from a Tertiary Psychiatric Hospital in Kerala

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ABSTRACT

Background: Aggression and psychiatry have always been an area which have contributed to the stigma which a psychiatric patient faces. Aggressive behaviour is mostly seen in acute care settings. Studying aggressive behaviour is important as it plays important role in patient care and safety The safety of patient and the treating personal is of importance here. There is a dearth of studies in our country. This study tries to find the prevalence of aggressive behavior in psychiatric inpatients.
Method: This was a cross-sectional study with a sample size of 400. Consenting inpatients were included in the study. Diagnosis was based on DSM5. Basic data was collected using a semi structured questionnaire, illness severity was evaluated using BPRS (Brief Psychiatric Rating Scale) and aggressive behaviour was evaluated using MOAS (Modified Overt Aggression Scale).
Result: Our study revealed a prevalence of 30% aggressive behaviour with verbal aggression being the most common type of aggressive behaviour. Statistical analysis revealed an association between past history of aggression and aggressive behaviour in the current admission. A positive correlation was found between MOAS score and BPRS scores
Conclusion: Past history of aggression alone was seen associated with aggressive behaviour in the current study. A positive correlation was seen between MOAS score and BPRS scores.

Keywords: Aggressive behaviour, past history, MOAS, BPRS

INTRODUCTION

Aggression by psychiatric patients has long been considered a significant problem in psychiatric inpatient settings. "Aggression can be defined as any behavior directed to another individual ,carried out with the proximate or immediate intent to cause harm, along with a belief by the perpetrator that such behavior is likely to harm the target and that the target is trying to avoid the behavior"[(1)].Violence is aggression with extreme harm as its goal. All violence can be considered as aggression but the opposite is not true. The assessment and management of aggression are critical for every practicing mental health personnel. The behavior of psychiatric patients is often equated with violence, by the common

population. Studies have reported a direct relationship between psychiatric illness and violent behavior, which has led not only to this skewed perspective of the public but also to reduced health-seeking behavior by the patients[2]. Such claims have also been contradicted by many studies bringing into light the finding that socio-demographic risk factors of violence are the same in healthy and mentally ill persons[3,4] however acute phase of illness and certain situational factors affect aggressive behavior further complicating the relationship.[5,6]

Factors affecting aggression in psychiatric patients have been found to be past history of violence, male gender ,higher number of admissions, comorbid substance abuse, history of self-destructive behavior, and diagnosis of schizophrenia [7,8]. Aggression in the mentally ill has been studied in outpatient, inpatient, and forensic settings. Earlier studies on aggressive behavior in acute inpatient settings in psychiatry have revealed a prevalence of 8-44%.[9–11]. The lack of a standardized definition for violent behavior has led to improper classification and subsequent research. Human aggression can be characterized as verbal, physical, aggression directed towards objects and aggression towards self[12,13].

Aggression has consequences that affect multiple aspects of care, including concerns regarding patient safety, healthcare personnel safety, and the physical and mental health of caretakers and co-inhabitants in healthcare settings. It can also have effects on the provision of quality medical care with good treatment outcomes[14,15].Staff surveys had shown that 75% to 100% of nursing staff in acute psychiatric units have been subjected to assault by a patient at some stage in their career[16]. The tasks of acute inpatient care are to keep patients safe, assess their problems, treat their mental illness, meet their basic care needs and provide physical healthcare[17].The importance of studying aggression and its determinants is to create better-equipped hospital settings that promote patient safety and to predict and give special attention to cases likely to turn aggressive[18]. Many studies have been conducted on aggression among psychiatric patients in resource-rich settings which has helped in creating a better environment for patient care and managing aggression[6]. Such studies are lacking in resource poor settings thus limiting the scope of improvement. This study aims to cover such an existing gap by estimating the prevalence and determinants of aggression among inpatients in a tertiary psychiatric care setting in South India.

MATERIALS AND METHODS

Study design and setting - A hospital-based cross-sectional study was conducted among inpatients in a tertiary psychiatric hospital in Thiruvananthapuram, Kerala, India.

Study population and duration - The study population comprised patients admitted to the male and female acute care wards and the behavioural intensive care unit (ICU). Patients admitted to forensic wards were excluded. The study was initiated in February 2019, and the required sample size was achieved over a period of 8 months.

Sample size estimation and sampling - The sample size was calculated using the standard formula for cross-sectional studies - $n = \frac{Z_{\alpha}^2 pq}{d^2}$. Based on this calculation, a minimum sample size of 400 participants was estimated. Eligible participants were recruited consecutively until the required sample size was attained. We used a similar study by Chukwujekwu DC, Stanley PC [6] as a reference to reach the sample size.

Data collection - Ethical approval for the study was obtained from the Institutional Ethics Committee and Scientific Committee prior to commencement (CA no. 3166/16/MHC/TVM) Data were collected after obtaining informed consent from adult participants or their informants, and from guardians in the case of minors. Socio-demographic and clinical details were collected using a pre-tested semi-structured questionnaire. Clinical assessments were conducted within the shortest feasible

interval following admission, typically within one week.

Study tool - Primary psychiatric diagnoses were established based on the criteria outlined in Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM -V). The severity of mental illness was assessed using the Brief Psychiatric Rating Scale (BPRS).[19] Aggressive behaviour was measured using the Modified Overt Aggression Scale. The Modified Overt Aggression Scale (MOAS) is a structured instrument used in clinical and inpatient psychiatric settings to assess the frequency and severity of aggressive behaviours, estimate changes in aggressive behavior over time and evaluate the outcomes of any appropriate intervention. It classifies aggression into four domains - verbal aggression, aggression against property, autoaggression (self-directed behaviour), and physical aggression towards others with each domain consisting of five items, scored from 0 (no aggression) to 4 (severe aggression within that category). The scores in each domain are then weighted differently and total score is calculated. [20]

Statistical analysis - Data were analysed using IBM SPSS Statistics v16. Quantitative variables were summarised as mean and standard deviation, while categorical variables were presented as frequencies and percentages. Univariate logistic regression analysis was performed to estimate unadjusted associations, with a p-value <0.05 considered statistically significant. Spearman's rank correlation coefficient was used to assess the relationship between BPRS and MOAS scores. Variables with a p-value <0.2 in univariate analysis were included in multivariable logistic regression using the enter method. Multiple model combinations were explored, and the model with the highest Nagelkerke R^2 value was selected as the final model.

RESULTS

The mean (SD) age of the study population was 38(12.21) years. The majority of participants were males (67.3%), from rural settings (99.3%), and from below poverty line (BPL) families (88.8%). **(Table 1)**

Table 1 – Table showing distribution of study variables in the study population (N=400)

Variable	Statistic
Gender (n, %)	
Male	269, 67.2
Female	131, 32.8
Marital status (n, %)	
Never married	203, 50.7
Ever married	197, 49.3
Educational status – graduate and above (n, %)	59, 14.8
Family history of mental illness present (n, %)	210, 52.5
Living with family (n, %)	395, 98.8
Duration of illness (n, %)	
0-20 years	345, 86.3
21-40 years	50, 12.5
41 years and above	5, 1.3
Past history of aggression present (n, %)	220, 55
Regular use of medications (n, %)	99, 24.8
Comorbid substance abusers present (n, %)	123, 30.8
Age in years (mean, SD)	38, 12.2
BPRS score among clinical diagnoses in study population (mean, SD)	
Major depressive disorder	29.92, 8.56
Schizophrenia spectrum disorder	27.57, 5.94
Bipolar disorder – mania	26.58, 5.88
Borderline personality disorder	23.50, 4.95
Bipolar disorder – depression	27.57, 5.13

Intellectual developmental disorder	25.71, 7.96
Attention deficit hyperactive disorder + conduct disorder	24, 0
Intellectual developmental disorder + Bipolar disorder1- Mania	25, 0
Schizophrenia spectrum disorder + Intellectual developmental disorder	24, 0
Major depressive disorder + borderline personality disorder	27, 0

On analysis, a positive correlation was found between BPRS scores and MOAS scores in individuals with aggression, which was found to be significant (p<0.001), with a Spearman rank correlation coefficient = 0.255. Only history of past violence has been found to be significantly associated with aggressive behaviour in the study population(p<0.001). From MOAS scoring, aggressive behaviour was found to be present in 120 participants (30%). (Table 2)
Unadjusted analysis showed that most socio-demographic and clinical variables were not significantly associated with aggressive behaviour. However, a past history of violent behaviour was strongly associated with aggressive behaviour (OR: 4.15; 95% CI: 2.55–6.77; p<0.001). Similarly, higher BPRS scores were significantly associated with aggression (OR: 2.48; 95% CI: 1.59–3.88; p<0.001). Participants diagnosed with mood or personality disorders had higher odds of aggressive behaviour compared to those with developmental or psychotic disorders (OR: 1.61; 95% CI: 1.04–2.49; p=0.031). Variables such as duration of illness greater than 10 years, comorbid substance use, absence of insight, and past history of suicide attempt showed higher odds of aggressive behaviour, although these associations were not statistically significant.

Table 2 – Table showing association of study variables with aggressive behaviour (N=400)

Variable	Aggressive behaviour present (n=120) (n.%)	Aggressive behaviour absent (n=280) (n.%)	Unadjusted OR (95% CI)	p-value
Age groups (median-37 years)				
<=37 years	64, 30.9	143, 69.1	1.095(0.713-1.680)	0.678
>37 years	56, 29	137, 71		
Sex				
Male	83, 30.9	186, 69.1	1.134(0.716-1.796)	0.593
Female	37, 28.2	94, 71.8		
Marital status				
Currently married	39, 27.7	102, 72.3		
Others	81, 31.3	178, 68.7	1.190 (0.757-1.872)	0.451
Education status				
Graduate and above	14, 23.7	45, 76.3	1.450 (0.763-2.755)	0.257
Below graduate	106, 31.1	235, 68.9		
Employment status				
Unemployed	91, 31.5	198, 68.5	1.300 (0.795-2.123)	0.295
Employed	29, 26.1	82, 73.9		
Socio-economic status				
APL	11, 24.4	34, 75.6		
BPL	109, 30.7	246, 69.3	1.370 (0.669-2.803)	0.390
Duration of illness in years				
<=10 years	63, 26.6	174, 73.4		
>10 years	57, 35	106, 65	1.485 (0.964-2.288)	0.073
Medication status				
On regular medication	33, 33.3	66, 66.7	1.230 (0.756-2.001)	0.405
Not on regular medication	87, 28.9	214, 71.1		
Comorbid substance				

use				
Present	43, 35	80, 65	1.396 (0.886-2.199)	0.150
Absent	77, 27.8	200, 72.2		
Insight				
Present (grades 2- 6)	31, 25.2	92, 74.8	1.405 (0.870-2.268)	0.164
Absent (grade 1)	89, 32.1	188, 67.9		
Family h/o mental illness				
Yes	68, 32.4	142, 67.6	1.271 (0.826-1.954)	0.275
No	52, 27.4	138, 72.6		
Past h/o suicide attempt				
Yes	25, 25.5	73, 74.5		
No	95, 31.5	207, 68.5	1.485 (0.964-2.288)	0.265
Past h/o violent behaviour				
Yes	93, 42.3	127, 57.7	4.150 (2.545-6.765)	<0.001
No	27, 15	153, 85		
Diagnosis				
Mood/personality	72, 34.8	135, 65.2	1.611(1.044-2.487)	0.031
Developmental/psychotic	48, 24.9	145, 75.1		
BPRS scores (median-37)				
Higher (>=37)	80, 39	125, 61	2.480 (1.586-3.877)	<0.001
Lower (<37)	40, 20.5	155, 79.5		

Multivariable logistic regression analysis identified several factors independently associated with aggressive behaviour. **(Table 3)** Individuals with a past history of violent behaviour had significantly higher odds of aggression (adjusted OR: 4.57; 95% CI: 2.71–7.72; p<0.001), making it the strongest predictor in the model. Similarly, participants with high BPRS scores were more likely to exhibit aggressive behaviour (adjusted OR: 2.82; 95% CI: 1.73–4.62; p<0.001). Being on regular medication was also significantly associated with aggression (adjusted OR: 1.80; 95% CI: 1.04–3.12; p=0.037), as was the presence of mood or personality disorders (adjusted OR: 1.68; 95% CI: 1.03–2.73; p=0.036). Other variables, including duration of illness greater than 10 years, comorbid substance use, absence of insight, and past history of suicide attempt, were not statistically significant in the adjusted model. The model demonstrated a Nagelkerke R^2 of 0.227, indicating that approximately 22.7% of the variability in aggressive behaviour was explained by the included variables.

Table 3 – Table showing adjusted analysis for association of study variables with aggressive behaviour

Variable	Adjusted OR (95% CI)	p-value
Duration of illness>10 years	1.242 (0.771-2.003)	0.373
On regular medication	1.798 (1.037-3.119)	0.037
Comorbid substance uses present	1.408 (0.844-2.348)	0.190
Insight absent(grade1)	1.473 (0.861-2.521)	0.157
Mood/personality disorder	1.678 (1.033-2.727)	0.036
Past history of suicide attempt	1.646(0.934-2.903)	0.085
Past history of violent behaviour	4.570 (2.706-7.719)	<0.001
High BPRS score	2.824 (1.726-4.620)	<0.001

Nagelkerke R Square - 0.227, Chi-square=11.906, p<0.155

DISCUSSION

Aggression in psychiatry settings is a long-debated subject often leading to skewed perception of the public towards psychiatric patients. From various studies, it has been proposed that the most reliable predictor of

future aggressive behavior is past history of violence. Other factors which have been shown to be associated are male gender, greater number of admissions, co morbid substance abuse, history of self-destructive behavior, and a diagnosis of schizophrenia.[6,7]. This study was undertaken to find out the prevalence of aggression in acute inpatient settings, the characteristics of aggressive behaviors, and the factors associated with the same.

Our study revealed the prevalence of aggressive behavior among inpatients to be 29%.Ina meta-analysis by Dack C, Ross J, Papadopoulos C, Stewart D, Bowers L [9] on patient factors associated with psychiatric in-patient aggression the prevalence ranged from 18-44%. This variation maybe due to the different study settings, varying definitions given to aggression and violence, reporting bias, and different types of scales used. Past history of violence was the only factor found to have an association with aggressive behavior in the current admission (χ^2, $p<0.001$). The current diagnosis was another variable that showed some association but failed to reach significance (p-0.005). A positive correlation was found between the MOAS score and the BPRS score which was found to be significant ($p<0.001$).

This study used MOAS to assess the prevalence of aggressive behavior in the inpatients. Other cross-sectional studies using MOAS from Nigeria[6], and Jordan [21] also showed similar results to our study. Using MOAS, the types of aggressive behavior were, verbal (26.3), against property (1.8%), against self (1%), and physical aggression (11.8%). Other studies by Maguire and Ryan[22], Nicholls TL, Brink J, Greaves C, Lussier P, Verdun-Jones S [23], and Renwick L, Stewart D, Richardson M, Lavelle M, James K, Hardy C, et al [24]have also revealed that verbal aggression was more common than physical aggression.

The current study revealed no association between specific diagnoses and aggressive behavior. Studies by Monahan J, Arnold J.[25] and Nijman HL, Allertz WF, Merckelbach HL, Ravelli DP [10] found no significant association between diagnoses and aggressive behavior. However, many studies from outside India show an association between varying diagnoses and aggressive behavior. Grassi L, Peron L, Marangoni C, Zanchi P, Vanni A.[11] found an association between a diagnosis of schizophrenia and aggressive behavior. Michelle Raja and Antonella Azzoni in their study showed an association between aggression and diagnoses of schizophrenia ,mania, personality disorder, and no diagnosis of depression[26]. Antonacci DJ, Manuel C, Davis E.[27] found increased aggressive behavior in patients with intellectual development disorder.

In our study, significant correlation was found between BPRS scores and MOAS scores in individuals with aggression. Studies from outside India provided similar results, Witt k et al [8] in a systematic review and meta-analysis on risk factors for violence in psychosis have found that positive symptoms and severe psychopathology are associated with aggressive behavior. Amore M, Menchetti M, Tonti C, Scarlatti F, Lundgren E, Esposito W, et al.[28] also found that higher BPRS scores were associated with violent incidents. High BPRS scores were significantly associated with aggressive behavior in a study by Michelle Raja and Antonella Azzoni[26]. Most of the previous studies used different scales and so a MOAS and BPRS correlation was seen only in a few studies.

Limitations

As most of the information was taken from the caregivers through direct interviews, the probability of recall bias is high. Potential for inaccuracies in data on medication adherence in most study participants cannot be excluded as most of the caretakers had their jobs, leaving patients to self-manage the medications. Forensic wards were excluded because of the inability to obtain informed consent from relatives/caretakers.

CONCLUSION

This study concludes that the prevalence of aggressive behavior among acute psychiatric inpatients was 29% in a tertiary psychiatric hospital. Most of the patients were male and belonged to the age group of 31- 40 years, belonging to BPL families and from rural settings. The majority had education up to secondary level only. The most common diagnoses in the study were schizophrenia spectrum disorders and bipolar mood disorders with a family history of mental illness in 52.5%. There was poor adherence to medications in 75.2% and the majority had poor insight regarding their illness. The most common form of aggression was verbal aggression. Past history of aggression was found to be associated with aggressive behavior in the current admission. Severity of aggressive behavior (MOAS Score) and severity of psychiatric symptoms (BPRS Score) were correlated.

The findings of our study contradicted the notion that levels of physical aggression toward objects and people would be high in tertiary care settings. However, the study has reemphasized that the best predictor for aggression in any setting as past history of violence and to some extent the diagnosis and the severity of illness. The study has opened up the necessity for planning safer behavioral ICU settings and training mental health professionals in violence prediction and specific procedures like verbal de-escalation.

Declaration by Authors

Ethical Approval: Approved

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