

A 5-year review of physical and verbal aggression in a psychiatric ward in Ilorin, Nigeria

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Abstract

Objective: Violence on psychiatric wards is increasing globally. Its consequences are not just on the ward staff, but also other patients, relations and hospital facilities. There is a need for more studies especially in developing countries, where not many of such studies have been documented. The study aimed at determining the prevalence of aggression and its clinical and psychosocial factors in a tertiary psychiatric facility in Nigeria.

Method: A review of medical records of all patients admitted to the psychiatric ward, over a 5-year period in the study location.

Result: The prevalence of aggression was found to be 3.6% with Staff Observation Aggression Scale-Revised (SOAS-R) score of 18.1 ± 2.3 . Aggression was significantly associated with the male gender ($\chi^2 = 11.5$; $p = 0.001$), first 10 days of admission ($\chi^2 = 8.0$; $p = 0.005$), first 20 minutes of verbal aggression ($\chi^2 = 11.5$; $p = 0.001$), and during the evening shift as compared with morning and night duties ($\chi^2 = 25.3$; $df = 2$; $p = 0.000$). At bed occupancy of 50%, the chance of physical aggression increased to 84% ($\chi^2 = 20.5$; $p = 0.000$). There was no significant relationship between aggression and patient's religion ($\chi^2 = 0.5$; $p = 0.8$), who patient's delusion is directed at ($\chi^2 = 0.32$; $p = 0.6$) and previous episode of mental illness in patient ($\chi^2 = 0.0$; $p = 1.0$).

Conclusion: The obtained prevalence of 3.6% may be a reflection of under-reporting of aggression. It was suggested that the thrust of management of aggression should be preventive with attention paid to staff training and continuous improvement of ward culture, staff-to-staff and staff-to-patient dynamics and environment.

Key words: Violence; aggression; psychiatry unit

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Un avis de 5 ans d'agression physiques et verbal dans un ward psychiatrique à Ilorin, Nigeria

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Abstra

Objectif: la violence sur les services psychiatriques augmente globalement. Ses conséquences ne sont pas seulement sur le personnel du service, mais aussi d'autres patients, les relations et les établissements hospitaliers. Il y a un besoin de plus d'études en particulier dans les pays en développement, où pas un grand nombre de ces études ont été documentées. L'étude visait à déterminer la prévalence de l'agression et de ses facteurs cliniques et psychosociaux dans un établissement psychiatrique tertiaire au Nigeria.

Méthode: Un examen des dossiers médicaux de tous les patients admis à l'hôpital psychiatrique, sur une période de 5 ans dans le lieu de l'étude.

Résultat: La prévalence de l'agression a été trouvée à 3,6% avec le personnel d'observation Aggression Scale-Revised (SOAS-R) score de $18,1 \pm 2,3$. Aggression était significativement associée avec le sexe masculin ($\chi^2 = 11,5$; $p = 0,001$), les 10 premiers jours d'admission ($\chi^2 = 8,0$; $p = 0,005$), 20 premières minutes de l'agression verbale ($\chi^2 = 11,5$; $p = 0,001$), et pendant le quart du soir, contre matin et soir fonctions ($\chi^2 = 25,3$; $df = 2$, $p = 0,000$). Au lit occupation de 50%, le risque d'agression physique a augmenté à 84% ($\chi^2 = 20,5$; $p = 0,000$). Il n'y avait pas de relation significative entre l'agression et la religion du patient ($\chi^2 = 0,5$; $p = 0,8$), qui le délire du patient est dirigé vers ($\chi^2 = 0,32$; $p = 0,6$) et l'épisode précédent de la maladie mentale chez les patients ($\chi = 00$; $p = \text{dix}$).

Conclusion: La prévalence de 3,6% obtenue peut être un reflet de la sous-déclaration d'agression. Il a été suggéré que la poussée de la gestion de l'agression devrait être préventive avec une attention accordée à la formation du personnel et l'amélioration continue de la culture de service, le personnel-à-personnel et le personnel-patients dynamique et l'environnement.

Mots clés: Violence; agression; unité de psychiatrie

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INTRODUCTION

While there are many studies on violence on psychiatric wards (1,2), their findings have been contradictory in some cases. This has been mainly due to differences in what constitutes violence or aggression in a psychiatric ward. In this study, the definition suggested by Ng et al in 2001 was adopted. This proposes that physical aggression on a psychiatric ward is any unwelcome physical contact initiated by a patient against another patient or staff member or wilful damage to property. In addition, it states that verbal aggression is any threat of physical harm, with or without a weapon, or any threat of sexual harm to others (1).

Violence on psychiatric wards is a growing concern because of its prevalence (3,4) and the increasing number of incidents (5). Some reports have quoted a rate of 5% (6) while others quoted 8% (1). In China, Zhou et al reported that prevalence of aggressive behavior in psychiatric wards ranged between 15.3% and 53.2% with pooled prevalence of aggression being 35.4% (95% CI: 29.7%, 41.4%) (7).

Often times, mental health professionals expect to encounter violence in their work with psychiatric patients (8). Among the health workers, nurses are especially vulnerable by virtue of the amount of time they spend with patients on admission (9,10). Apart from threat to life, violence in psychiatric practice also constitutes problems for health managers, in view of potential damage to properties.

Factors that predispose to violence on an acute psychiatric inpatient unit can be broadly divided into four categories, namely; patient, staff, environment, and staff-patient dynamics (1). Patient factors include gender (11), age (12,13), history of violence (14), social and economic status (15), and diagnosis, especially schizophrenia (16). Staff factors include inexperience or lack of training (5,14), lack of a clear role (17), and low staff-to-patient ratio (18). Environmental factors include time of day or day of the week of violence, patient's location within the unit (18), patient overcrowding (19,20), a non-therapeutic ward environment (21), and ward doors being closed (22). Factors related to staff-patient dynamics include lack of control by the staff (18), few or poorly organized activities, uncertainty, confusion, or fear about the staff-patient relationship (17), and poor staff-patient interaction (23). Other reported significant risk factors for aggression are positive psychotic symptoms such as hostility or suspiciousness,

delusions, disorganized behavior, auditory hallucinations, past history of aggression and involuntary admission (7).

The mainstay of management of aggression should be preventive through early intervention using reliable clinical and illness predictors for aggression rather than relying heavily on only reactive measures. Such preventive measures will include staff training on violence prevention (2,24), taking into consideration the patient, the staff and the culture of both the ward and the community. Also, there should be structured risk assessment during the first days of treatment (25). Inpatient psychiatric staff can decrease the potential for violence by using therapeutic relationship strategies such as using good communication skills, advocating for clients, being available, having strong clinical assessment skills, providing patient education, and collaborating with patients in treatment planning. Cultural improvements should include providing meaningful patient activities and appropriate levels of stimulation and unit staffing (26).

In Nigeria, not many studies have documented their findings on aggression among in-patients in a psychiatry ward (2). However, James et al, 2011 through the use of Attitude towards aggression scale (ATAS) and Perception of the prevalence of aggression scale (POPAS) found that aggression is negatively viewed by Nigerian psychiatric nurses and suggested training programmes for the nurses (2). This study is therefore aimed at further making contributions to the understanding of aggression among in-patients in a psychiatric ward in a developing country through the use of Staff Observation Aggression Scale-Revised (SOAS-R).

METHODS

The Setting: The study was conducted at the University of Ilorin Teaching Hospital, (UITH) Ilorin, Kwara State, Nigeria. The UITH, Ilorin is a tertiary hospital which offers medical services to patients from many parts of Nigeria. The psychiatric ward has 20 adult beds comprising of 10 each for male and females patients. Each of the wards measured 57 square metres (m²) with each patient occupying an average space of 5.7 m². The nurses run a shift of 7am to 2.30pm (morning), 2.30pm to 9pm (afternoon) and 9pm to 7am (night). The ward operates a semi-closed door policy.

Method: This is a retrospective study in which

the records of all patients admitted over a 5-year period (June 1st 2006-May 31st 2011) were reviewed for record of verbal (any threat of physical harm, with or without a weapon, or any threat of sexual harm to others) or physical aggression (any unwelcome physical contact initiated by a patient against another patient or staff member or wilful damage to property)(1). Data was extracted from the patients' records with the aid of a data collection sheet, the Staff Observation and Aggression Scale-Revised (SOAS-R). All folders were stripped of any means of identification before data were extracted. There is no link whatsoever of patient's identity with the data presented in this study.

The SOAS was first presented in 1987 by Palmstierna and Wistedt(27). It has an inter-rater reliability of 0.87 and kappa of 0.61(28). The SOAS can be used to rate both the nature and severity of aggressive incidents(29). The SOAS-R is the adjusted Dutch version of SOAS and consists of three additions namely; inclusion of auto-aggression by dividing column 3 into 'patient self' and 'other patients', inclusion of the printed definition of aggression on each SOAS form and three, 'seclusion' and 'physical restraints' were added to column 5 as possible measures for stopping aggression. The SOAS-R is quick to use and needs no training(29).

RESULTS

Table 1 shows the sociodemographic characteristics of the patients studied. Of a total of 693 patients seen over the 5-year study period (June 2006-May 2011), 35(5.05%) satisfied the definition of verbal or physical aggression. However, 10 of the 35 patients' records were not included in this study because the information recorded was grossly inadequate. Consequently, 25 (71.4%) of the total records of aggression were analyzed and presented in this report. This puts the prevalence of aggression at 3.6%. The patients' were aged 22-55years with a mean of 31.96 ± 7.2 years. Nineteen (76%) were males while 6 (24%) were females.

Table 2 shows the clinical characteristics of the respondents. All the patients had delusions, with 92% of them having delusion of persecution. The delusions were directed at relations, nurses and other ward staff only in nine (36%) of the patients, while it was directed in five (20%) at nurses and other staff only. In two (8%) episodes each, the violence was directed at nurses only, other patients only, doctors and patient's relations only, and other patients and other ward staff only.

In one (4%) each of the episodes, the violence was directed at doctors only, patient's relations only and other ward staff only. Majority (88%) had auditory hallucination which was persecutory in type while 3 (12%) had symptom of misidentification. There was a history of substance abuse (alcohol and cannabis) in 14% of cases. Only one of the patients had a history of martial art or paramilitary training.

The time of verbal aggression varied from morning shift 5(20%), to evening shift 17 (68%) and night shift 3 (12%). The time between verbal aggression and physical aggression ranged from 0 to 330 minutes with a mean of 36 ± 7.6 minutes. Majority of the patients displayed verbal aggression in the months of March (20%) and August (24%) with 12% occurring in other months. The time of physical aggression varied from morning shift (12%), evening shift (72%) to night shift (16%). Also, the peak months of physical aggression were March (20%) and August (24%) with other months recording between 4-16%. The SOAS-R score ranged from 9-20 with a mean of 18.1 ± 2.3 . The cause of provocation in the majority of patients (64%) was staff requiring patient to take medication. After the aggression, most victims were recorded to have felt threatened 16 (64%), had pain of 10 minutes (16%) and 10 minutes (20%). In all the cases, patients were restrained and given parenteral medication as a mean of stopping the aggression. In terms of days of the week, most episodes of physical aggression occurred on Friday 7 (28%), Tuesday 4 (16%), Mondays and Saturdays 3 (12%) each while other days constitute 8% each.

During the episodes of physical aggression, the number of patients on admission ranged from 7-15 with a mean of 11.4 ± 2.2 , the number of nurses on duty was 2 or 3 but usually 2 in 92% of cases. Sixty percent of the violence occurred when only 2 female nurses were on duty while when 2 male nurses were on duty only 4% of the violence occurred. At times of aggression, the bed occupancy rate varied from 35-75% with each patient having a minimum space of 7.6-16.3m² with a mean of $10.5 \text{m}^2 \pm 2.3$. Aggression was significantly recorded among the male patients (Yates corrected $\chi^2 = 11.5$; $p = 0.001$), in the first 10 days of admission (Yates corrected $\chi^2 = 8.0$; $p = 0.005$), first 20 minutes of verbal aggression (Yates corrected $\chi^2 = 11.5$; $p = 0.001$), among patients with delusion of persecution (Yates corrected $\chi^2 = 32$; $p = 0.000$), when one or

two female nurses are on duty (Yates corrected $\chi^2=38.7$; $p=0.000$), when there was a pre-morbid history of stubbornness (Yates corrected $\chi^2=8.0$; $p=0.005$) and when there was a history of substance (cannabis, alcohol) abuse (Yates corrected $\chi^2=11.5$; $p=0.001$). There was a significant chance of aggression during the evening shift as compared with morning and night duties (Yates corrected $\chi^2=25.3$; $df=2$; $p=0.000$). As the bed occupancy rate increases to

50%, the chance of physical aggression increased to 84% (Yates corrected $\chi^2=20.5$; $p=0.000$). There was no significant relationship between aggression and patient's religious orientation (Yates corrected $\chi^2=0.5$; $p=0.8$), who patient's delusion is directed at (Yates corrected $\chi^2=0.32$; $p=0.6$) and previous episode of mental illness in patient (Yates corrected $\chi=00$; $p=1.0$).

DISCUSSION

In Nigeria, only a few studies have been reported on patient aggression in psychiatric services. One of such studies focused on the experience of nurses towards aggression on a psychiatric ward using Attitude towards aggression scale (ATAS) and Perception of the prevalence of aggression scale (POPAS) (2). This study, focused on the prevalence of aggression on a psychiatric ward and its associated factors. The prevalence rate for physical aggression in this study was 3.6% which could not be compared with previous studies in Nigeria as there are no published prevalence rates found. However, the prevalence in this study is lower than the 8% reported in an acute in-patient psychiatric unit in rural New Zealand (1), the 5% per day reported by Nijman et al, 1997 (10) and a range of 15.3% to 53.2% reported by Zhou et al in China (7) in a closed psychiatric ward. Though the first two studies used retrospective method by analyzing data from ward records, the difference in prevalence might be due to difference in methodical recording of frequencies of violent incidents. The study by Zhou et al (7) was a meta-analysis of 19 studies of aggressive behavior in psychiatric ward in China.

In the study location, the total number of nurses per shift, as at time of study, varied from 2 to 3 in a 20-bed psychiatric ward. The few nurses on duty were usually fully engaged with nursing and administrative duties. This could account for the under reporting of behaviours that would have met the definition of aggression. Previous studies have noted the problem of under-reporting of cases of violence (31). Such problems were not

only found in retrospective studies but also in prospective ones (32). Some studies suggested that the ratio of unreported violence to that of reported ones may be up to five (33).

Most episodes of aggression occurred during the evening shift. This is in keeping with findings reported in previous studies (1,34). Various reasons have been adduced for such observation and include absence of structured ward activities, decreased supervision and waning of morning dose of medications (2). In the study location, the afternoon/evening period starts from 2.30pm and ends at 9.00pm. The first 30minutes constitutes the period of handover of duties among the nurses, while the visiting period for patients starts at 4.00pm and ends at 6.00pm. Within this period, there is a lot of distractions both on the part of nurses and other ward staff. Also, a significant percentage of aggressive episodes occurred in the months of March (20%) and August (24%). This might be due to decrease comfort level of the patients as these two months constitute the peak heat periods in the north-central zone of Nigeria where the study location is situated. The humidity level increases in March, just before the rains start in April, while during the raining season, the 'August break' (a regular and yearly temporary cessation of rains) is also very hot due to high humidity.

Aggression was found to have significant association with bed occupancy rate, premorbid history of stubbornness, history of substance abuse (cannabis and alcohol), number of female nurses on duty, the male gender patients, the first 20 minutes after verbal aggression, first 10 days after admission and the presence of delusion of persecution in patient. Previous reports are not agreed on the influence of staff/patient ratio on aggression (18,34). In this study also, there was no specific direction in terms of relationship of violence with staff/patient ratio. For example, a significant majority 14 (63.6%) of the episodes of aggression occurred when the staff/ratio was between 0.17 to 0.22 (a ratio of 2 nurses per 12 patients and 2 nurses per 9 patients). There were significantly no recorded episodes of violence at lower or higher nurse/patient ratios below 0.17 and above 0.22. However, at bed occupancy rate of 50% and above, the chance of aggression increases to 80%. A consideration of both observations might suggest that there is a critical number of nurse/patient ratio below which, chances of violence increases and above which, it decreases but only up to a point, beyond which there is no

further advantage in increasing the number of nurses. This will further suggest that the relationship between violence and nurse/patient ratio is not a simple arithmetic relationship but rather multifactorial. For example, during a shift, the presence of two nurses who are good communicators, in a comfortable well-structured 20-bed ward, may reduce the chances of violence when compared to a similar shift with 10 nurses whose communication skills are poor, and also working in a less comfortable ward with less structured ward activities.

CONCLUSION

Though the prevalence of aggression recorded in this 5-year retrospective study was 3.6%, it may actually be a reflection of under-reporting due to selective attention to more serious grades of violence. Such selective inattention may be due to work overload, cultural differences as to what constitutes violence and personal factors such as a staff not wanting to appear inefficient. In view of the potential dangers of violence, it is suggested that psychiatric facilities clearly define what constitutes violence based on community/ward cultures and traditions. Where there are no existing instruments for risk assessment, a screening instrument such as V-RISK-10(35) may be useful. Also, it is suggested that the main approach to violence on the wards should be preventive and proactive rather than reactive. All ward staff should be constantly trained on how to prevent and manage violence.

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REFERENCES

1. Ng B, Kumar S, Ranclaud M, Robinson E. Ward crowding and incidents of violence on an acute psychiatric inpatient unit. *Psychiatr Services* 2001; 52: 521-5
2. James BO, Isa EW and Oud N. Patient aggression in psychiatric services: the experience of a sample of nurses at two psychiatric facilities in Nigeria. *Afr J Psychiatry* 2011; 14; 130-3.
3. Haller RM, Deluty RH: Assaults on staff by psychiatric inpatients: a critical review. *Br J Psychiatry.* 1988; 152:174-9.
4. Hubschmidt T: The prosecution of violent psychiatric inpatients: one respectable intervention. *Psychiatr Praxis.* 1996; 23:26-8.
5. Hodgkinson PE, McIvor L, Phillips M: Patient assaults on staff in a psychiatric hospital: a two-year retrospective study. *Med Sci Law.* 1985; 25:288-94.
6. Nijman HLI, Allertz WWF, Merckelbach HLGJ, a Campo JMLG, Ravelli DP. Aggressive behaviour on an acute psychiatric admission ward. *Eur J Psychiat.* 1997; 11: 106-14.
7. Zhou JS, Zhong BL, Xiang YT, Chen Q, Cao XL, Correll CU et al. *Asia Pac Psychiatry.* 2015 doi: 10.1111/appy.12209. [Epub ahead of print]
8. Fottrell E: A study of violent behaviour among patients in psychiatric hospitals. *Br J Psychiatry.* 1980; 136:216-21.
9. Hurlebaus A. Aggressive behavior management for nurses: an international issue. *J Healthc Prot Manage.* 1994; 10:97-106.
10. Perron A, Jacob JD, Beauvais L, Corbeil D, Berube. Identification and management of violence in psychiatry: nurse and patient perception of safety and dangerousness. *Rech Soins Infirm.* 2015; 120: 47-60.
11. Lee HK, Villar O, Juthani N, Bluestone H. Characteristics and behavior of patients involved in psychiatric ward incidents. *Hosp Community Psychiatry.* 1989; 40:1295-7.
12. Larkin E, Murtagh S, Jones S: A preliminary study of violent incidents in a special hospital (Rampton). *Br J Psychiatry.* 1988; 153:226-31.
13. Jonker EJ, Goossens PJJ, Steenhuis IHM, Oud NE. Patient aggression in clinical psychiatry; perception of mental health nurses. *J Psychiatr Ment Health Nurs* 2008; 15:492-9.
14. Blomhoff S, Seim S, Friis S. Can prediction of violence among psychiatric inpatients be improved? *Hosp Community Psychiatry.* 1990; 41:771-5.
15. Estroff SE, Zimmer C, Lachicotte WS, Benoit J. The influence of social networks and social support on violence by persons with serious mental illness. *Hosp Community Psychiatry.* 1994; 45:669-79.
16. Craig TJ: An epidemiologic study of

- problems associated with violence among psychiatric inpatients. *Am J Psychiatry*. 1982; 139:1262-6.
17. Katz P, Kirkland FR: Violence and social structure on mental hospital wards. *Psychiatry*. 1990; 53:262-77.
 18. Lanza ML, Kayne HL, Hicks C, Milner J. Environmental characteristics related to patient assault. *Issues Ment Health Nurs*. 1994; 15:319-25.
 19. Palmstierna T, Huitfeldt B, Wistedt B. The relationship of crowding and aggressive behavior on a psychiatric intensive care unit. *Hosp Community Psychiatry*. 1991; 42:1237-40.
 20. M ILMIS Project Group: Monitoring inner London mental illness services. *Psychiatr Bull*. 1995; 19:276-80.
 21. Atakan Z. Violence on psychiatric inpatient units: what can be done? *Psychiatr Bull*. 1995; 19:593-6.
 22. Bowers L, Allan T, Simpson A, Jones J, Van Der Merwe M, Jeffery D. Identifying key factors associated with aggression on acute inpatient psychiatric wards. *Issues Ment Health Nurs*. 2009; 30:260-71.
 23. Cheung P, Schweitzer I, Tuckwell V, Crowley KC. A prospective study of assaults on staff by psychiatric patients. *Med Sci Law*. 1997; 37:46-52.
 24. Livingston JD, Verdun-Jones S, Brink J, Lussier P, Nicholls T. A narrative review of the effectiveness of aggression management training programs for psychiatric hospital staff. *J Forensic Nurs*. 2010; 6:15-28.
 25. Abderhalden C, Needham I, Dassen T, Halfens R, Haug HJ, Fischer JE. Structured risk assessment and violence in acute psychiatric wards: randomized controlled trial. *Br J Psychiatry*. 2008; 193:44-50.
 26. Hamrin V, Iennaco J, Olsen D. A review of ecological factors affecting inpatient psychiatric unit violence: implications for relational and unit cultural improvements. *Issues Ment Health Nurs*. 2009; 30:214-26.
 27. Palmstierna T, Huitfeldt B, Wistedt B. The relationship of crowding and aggressive behavior on a psychiatric intensive care unit. *Hosp Community Psychiatry*. 1991; 42: 1237-40.
 28. Lambert MJ and Hill CE. Assessing psychotherapy outcomes and processes. In A.E Bergin & SL Garfield (Eds). *Handbook of psychotherapy and behavior change* (4th ed., pp. 72-113), New York; Wiley.
 29. Nijman HLI, Muris P, Merckelbach HLGJ, Palmstierna, T, Wistedt B, Vos A.M et al. The Staff Observation Aggression Scale-Revised (SOAS-R). *Aggressive Behaviour*. 1999; 25: 197-209.
 30. Myers KM, Dummer DL. Self- and other-directed violence on a closed acute-care ward. *Psychiatr Q* 1984; 56:178-88.
 31. Owen C, Tarantello C, Jones M, Tenant C. Violence and aggression in psychiatric units. *Psychiatr Serv* 1998; 49: 1452-7.
 32. Lion JR, Synder W, Merrill GL. Underreporting of assaults on staff in a state hospital. *Hospital and Community Psychiatry*. 1981; 32: 497-8.
 33. Edwards JG, Jones D, Reid WH, Chu CC. Physical assaults in a psychiatric unit of a general hospital. *Am J Psychiatry*. 1988; 145:1568-71.
 34. Kalogerakis MG. The assaultive psychiatric patient. *Psychiatr Q*. 1973; 45: 372-81.
 35. Roaldset JO, Hartvig P, Bjorkly S. V-RISK-10: validation of a screen for risk of violence after discharge from acute psychiatry. *European Psychiatry* 2011; 26: 85-91.

Table 1: Sociodemographic data of patients with aggression within the study period

Variable	frequency n(%)
Year of study	
2006- 2007	4 (16)
2007- 2008	2 (8)
2008- 2009	2 (8)
2009- 2010	14 (56)
2010- 2011	3 (12)
Age	
Range	22-55years
Mean	31.96
s.d	7.2
Gender	
Male	19 (76)
Female	6 (24)
Religion	
Christianity	19 (76)
Islam	6 (24)
Language spoken fluently	
Yoruba/English	13 (52)
Yoruba	8 (32)
Hausa/English	2 (8)
English	1 (4)
Yoruba/English/Hausa	1 (4)
Level of education	
Primary	0 (0)
Secondary	16 (64)
Tertiary	9 (36)
Bed occupancy rate	
Range	35-75%
Mean	56.8%
s.d	11.1
Space per patient	
Range	7.6 -16.3m ²
Mean	10.5m ²
s.d	2.3
Nurse patient ratio	
Range	0.13-0.29
Mean	0.19
s.d	0.05

n sample size

% percent in column brackets

Table 2: Clinical data of patients with aggression within the study period (N=25)

Variable	frequency n(%)
Total duration of illness (years)	
Range	1-20
Means	2.9
s.d	1.5
Number of episodes	
Range	1-6
Means	2.9
s.d	1.5
Duration of index illness (days)	
Range	25-90
Means	36.9
s.d	13.8
Duration of admission before aggression (days)	
Range	4-35
Means	10
s.d	7.5
Diagnosis	
Paranoid schizophrenia	15 (60)
Bipolar affective disorder	3 (12)
Substance induced psychosis	4 (16)
Others	3 (12)
Time of physical aggression	
Morning	3(12)
Evening	18(72)
Night	4(16)
Day of aggression	
Friday	7(28)
Tuesday	4(16)
Monday	3(12)
Saturday	3(12)
Wednesday	2 (8)
Thursdays	2 (8)
SOAS-R score	
Range	9-20
Mean	18.1
s.d	2.3
Type of aggression	
Leg kick/hand punch of target's body	20 (80)
Spitting of saliva at target's face	3 (12)
Slapping of target's face	2 (8)

n sample size

% percent in column brackets