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Title:

Incidence and correlates of Delirium in a West African Mental Health Clinic

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Abstract

Objective:

To determine the incidence of delirium in those patients presenting to a psychiatric clinic in Nigeria and to examine if any demographic or clinical variables were correlated with this diagnosis.

Method:

A prospective survey design. 264 consecutive new referrals to a psychiatric clinic in Nigeria were assessed for the presence of delirium using a standardised diagnostic scale. Data was analysed for normality and appropriate statistical test employed to examine the relationships between the presence of delirium and demographic and clinical variables.

Results:

18.2% of individuals presenting to the mental health clinics had delirium. No demographic variable was significant regarding the presence or absence of delirium. With regards to clinical variables duration of current symptoms, referral source, the presence of co-morbid physical illness and being rated as 'sick' (find out what this means) were significantly associated with the presence of delirium. Most delirium was due to infections. Nearly all patients with delirium were prescribed psychotropic medication (95.2%) and most attributed their symptoms to a spiritual cause.

Conclusion(s)

Delirium presents more commonly to psychiatry services in the less developed world compared to the West. Development efforts should focus on recognition and management of delirium to improve outcomes and maximise resources.

Introduction

Delirium is characterised by disturbances of memory, orientation, language skills, mood, thinking, perception, motor behaviour, the sleep-wake cycle and cognition with impaired attention as the core cognitive disturbance. [1, 2] Though it involves a constellation of symptoms that fluctuate over time it is thought that multiple aetiologies and mechanisms may converge to alter brain function and produce the characteristic symptoms of delirium. [3, 4] Delirium is frequently encountered in all health care settings. In the Western populations it affects between 9 to 30 out of every 100 patients admitted to general hospitals and 16 out of every 100 attenders in elderly accident and emergency. [5-8]

Despite being of public health importance delirium is under diagnosed or misdiagnosed, cases often being construed as mental illness or being given no diagnosis. [5, 7, 9]

There have been relatively few studies clarifying the importance of delirium in sub Saharan Africa in spite of its public health importance. The research available has tended to involve small sample sizes and retrospective study designs. We attempted to rectify this by determining the incidence of delirium in patients presenting for the first time to a psychiatric clinic in Nigeria our secondary objective was to examine if any demographic or clinical factors were associated with the diagnosis.

Methods

A prospective survey was carried out in Lagos, the largest city in Nigeria. Subjects were recruited from two teaching hospitals with psychiatric facilities. These centres accept referrals from all medical specialities in the capital as well as self referrals from individuals and their families. Participants gave written informed consent when possible. In cases where patients were too incapacitated to give informed consent, assessment was still made for delirium. This was felt to be ethically sound according to the most recent interpretations of the Helsinki declaration as assessing for delirium is a potentially lifesaving intervention and so is in the participants best interest. [10] In participants incapacitated at the time of initial assessment consent was sought from next of kin or later sought on recovery as recommended in other studies on capacity and consent in delirium research. [10, 11] Ethical approval was granted from the Ethics and Research Committee of Lagos State University Teaching Hospital.

Consecutive patients attending the psychiatric clinics were assessed using the confusion assessment method (CAM). [12] This tool can be administered in less than 5 minutes and closely correlates with DSM-IV criteria for delirium. Concurrent validation with psychiatric diagnosis has shown a sensitivity of 94-100% and specificity of 90-95%. The CAM has also been found to significantly correlate with the Mini-Mental Status Examination, the Visual Analog Scale for Confusion and the digit span test. [13] Interrater reliability (kappa 0.7-1.0) is generally moderate to high across studies. [14] Our ratings were conducted by a consultant psychiatrist and a higher trainee registrar grade psychiatrist. Having doctors administer the CAM has been found to lead to higher sensitivities compared to raters from other disciplines. [15-18] The raters in our study were trained using the CAM Training Manual. Ten cases were assessed by both raters and inter-rater reliability was found to be acceptable with a kappa's coefficient of 0.9. In cases identified as having delirium according to screening with the CAM or in cases of uncertainty an assessment was carried out by a consultant psychiatrist to have the diagnosis confirmed. Demographic details and information relating to past and current medical history were also recorded on each participant. If the patient was unable to communicate coherently these details were obtained from a relative. Any existing medical records were also checked for details of previous medication, medical and psychiatric history.

All consecutive patients attending the psychiatric clinic for the first time or as emergency referrals were included in the study over a period of 16 weeks. Two hundred and sixty four (264) subjects took part in the study. No individuals or their families that were approached refused to take part. Any individuals attending the psychiatric clinic for routine follow up were excluded from the study.

Analysis

Statistical analysis was done using SPSS version 15. [19] Continuous data was tested for normality by using Kolmogorov-Smirnov test. None of the continuous data in our sample assumed normal distribution hence the Mann Whitney U test was used to look at differences between continuous variables. Differences between categorical data were tested using the Chi square test.

Results

Forty eight out of 264 individuals (18.2%) presenting to the psychiatric clinics had delirium according to CAM criteria. With regards to the demographic variables of age, sex, ethnicity, employment status and relationship status no significant differences were found in those with and without delirium. (See table 1). Educational attainment and religion also had no association with the presence or absence of delirium.

With regards to clinical variables the duration of current symptoms, referral source and the presence of co-morbid physical illness were significantly associated with the presence of delirium (see table 2). The number of medications prescribed, the mean number of previous episodes of psychiatric illness, the number of previous admissions to hospital and the length of previous psychiatric illnesses were not significantly associated with the presence of delirium.

In those with delirium in our sample, 52.1% had infections. Gastrointestinal infections (33.3%) and malaria (10.4%) were the most common cause. Write the number (16.7%) of those with delirium had a non infectious co-morbid physical illness such as diabetes, cardiac disease or a post operative state. Write the number (31.3%) of those with delirium had an uncertain/ undiagnosed co-morbid physical illness.

Most patients with delirium were prescribed psychotropic medication (95.2%) consisting of typical anti-psychotic, anti-cholinergic, tricyclic antidepressant, mood stabiliser or a combination of these drugs. (See table 3)

Nearly all of those with delirium (93.7%) felt their condition was due to a spiritual cause (evil, the devil, spirits) rather than a medical process. In those who were seen at the mental health clinics for reasons other than delirium a similarly high number (86%) attributed their symptoms to a spiritual origin.

Discussion

The incidence of delirium found in our sample (18.2%) was much higher than incidences found in community studies in Western populations where delirium has been estimated at 0.4% in those over the age of 18, 1.1% of those over the age of 55, and 13.6% in those over 85. [8] We did expect rates of physical illness and delirium to be higher in Nigeria which is rated by the World Health Organisation as a stratum 'D' developing country with a high child and adult mortality compared with Europe and North America that are classified as stratum 'A' countries with very low child mortality and low adult mortality. [20] We found that most individuals had delirium due to infections, with gastrointestinal infections being the most common source. This finding was in keeping with other research in West Africa which found that delirium is not uncommon in West Africa. [21] With infectious disorders being implicated most often. [22] In another study, it was reported that 73.1% of those with typhoid fever had delirium with younger people found to be most at risk. [23] Furthermore most deaths in a Nigerian psychiatric inpatient population have been found to occur in males under 40 with infection being the single most common cause of death. [24] More recently the same author also found rates of physical morbidity of 27.2% in a Nigerian psychiatric hospital with infection most commonly affecting the central nervous system as acute brain syndrome. [25] It is therefore imperative that psychiatrists in the developing world are vigilant for infectious diseases in patients presenting with confusion. Nearly a third of those in our study with delirium had an uncertain or undiagnosed co-morbid physical illness. This perhaps reflects the difficulties clinicians face in West Africa without the luxury of laboratory or radiology investigations to confirm their initial

physical examination findings.

Our findings suggest that delirium is found on initial presentation to psychiatric services both through self referrals from the public and via referrals from other medical specialities. This finding may reflect high levels of physical illness and subsequent delirium in the general population due to poverty, malnutrition, tropical infectious diseases and a lack of primary care. However our findings also suggest a lack of awareness amongst general public and health professionals that individuals may become confused and delirious due to physical ill health. In part this may reflect cultural explanations for an individual behaving in a confused manner. Nearly all subjects attributed their symptoms to a spiritual rather than medical cause. There seems to have been a negligible effect of socio-demographic factors on the prevalence of these beliefs, for example greater educational or economic attainment did not seem to result in a different explanation for symptoms. It is therefore reasonable to assume that some health workers may share these beliefs about spiritual forces causing confusion. Our findings seem to reflect the pervasiveness of spiritual explanations for physical and psychiatric illness in West Africa. This is in keeping with other research which has shown that a significant number of African patients will first attend traditional or religious healers before they seek treatment from psychiatric services. [26] As a result of this physical illness and therefore delirium may be more severe by the time the patient does present to a health clinic. This theory seems to be supported by our results which found duration of symptoms to be significantly associated with the presence of delirium.

The association between duration of symptoms and the presence of delirium also likely reflects misdiagnosis and incorrect treatment on the part of health professionals. If individuals with delirium are inadequately treated their symptoms will persist for longer. With regards to the form that misdiagnosis takes among patients with physical illnesses in the West, between 6 and 20% of delirium cases have been found to be wrongly attributed as having a mental disorder. [27, 28] Certain factors have been found to be associated with missed diagnosis. These include younger age; referrals outside of family practice service; orientation to person, place, and time; and a previous psychiatric diagnosis, particularly bipolar affective disorder. [29, 30] Interestingly our study did not find any relationship between age and previous psychiatric diagnosis and the presence of delirium. This may reflect a comparative lack of contact with primary care or psychiatric services in Nigerian populations compared to their Western counterparts.

Of note from our study was that 21.4% referrals from general medical outpatients, 17.7% of referral from Accident and Private Hospitals and 31.6% from the Accident and Emergency department had delirium. This highlights the importance of training health professionals in these environments to recognise and treat delirium. This has long been recognised the role of a liaison psychiatry in Europe and the United States where round 10% of cases seen by liaison services have delirium. [31] Where liaison services have been established in West Africa previous work has shown delirium to be the commonest syndrome presenting to liaison psychiatry services in Nigeria, once again reflecting the great importance of this condition to mental health professionals in sub-Saharan Africa. [32]

As well as placing the individual in danger whilst the correct potentially life saving medical treatment is delayed, misdiagnosis of delirium also exposes the individual to potential iatrogenic harm through the irrational prescribing of psychotropic drugs. Our study highlighted some concerning trends in prescribing for individuals with delirium. Foremost amongst these was the finding that nearly all patients with delirium were prescribed some kind of psychotropic drug (only 4.2% of patients with delirium received no psychotropic medication). Whilst some individuals may have been on medication for a pre-existing mental disorder prior to developing delirium our findings probably reflect misdiagnosis and incorrect treatment on the part of health professionals before referral to psychiatric services. At the very least our findings reflect poor practice with regards to psychiatric medication and delirium as it is recommended that the dose of routine psychiatric medication is reduced or even stopped during episodes of poor physical health. [33] From our findings the use of typical anti-psychotics could be considered appropriate in patients with delirium as many drugs of this class are recommended for behavioural disturbance in this condition. [33]

However the large number of patients we identified being prescribed both typical antipsychotic drug and an anti-cholinergic was concerning given the evidence that the latter medication is thought to worsen delirium. [34] The administration of medicines to reverse anti-pyramidal side effects also suggest that anti-psychotics are being used in high doses when ideally all psychotropic medications should be prescribed at the lowest possible dose in those with delirium. This, together with the fact that a large number of patients were being prescribed mood stabilisers (without blood plasma level monitoring being available), tricyclic anti-depressants or a combination of mood stabilisers and anti-cholinergic medication when delirious was alarming, particularly as these medications themselves can cause or contribute to confusion. [34] Our findings may also reflect uncertainty by health professionals regarding how to manage behaviourally disturbed individuals with delirium. By this rationale non-psychiatrists may feel it best to treat an individual with whatever psychotropic drug is available as 'doing something is better than doing nothing' all the while prescribing an agent that exacerbates the delirium. Our findings may also reflect the reality of trying to manage individuals with behavioural disturbance when there are inadequate nursing staff and safe facilities in which to manage them.

Strengths & Limitations of our study

Studies that have been conducted on delirium in Africa to date have been few and mostly conducted on inpatients. What studies are available tend to have methodological shortcomings such as small numbers of subjects, retrospective designs relying on symptoms of delirium being recorded in the case notes and a lack of validated rating tools being used. Many studies also date from the 1980s and so will not reflect the impact of HIV/AIDS on the physical and mental health of populations in sub Saharan Africa. With this in mind it was interesting to note that none of our sample with delirium reported having a diagnosis of HIV or had a diagnosis of HIV in their medical records in spite of local prevalence rates of 3.1% for Adults aged 15 to 49. [35] There may of course have been individuals who were not aware of their HIV positive status or subjects may have declined to disclose their HIV positive status due to stigma surrounding the condition. We hope to have addressed most of the methodological shortcomings of previous research on delirium in Africa with our study. Limitations of our design included a sample size being drawn only from the capital city. Lagos has the largest concentration of psychiatric and medical facilities in Nigeria. Our study showed that a longer duration of symptoms (not being quickly treated) was significantly associated with the presence of delirium. We suspect that rates of delirium will be higher in rural parts of West Africa where individuals do not have access to medical care available in the capital. Further research in different localities is therefore needed to clarify this.

Implications of our study

Our findings suggest that delirium will be more of an issue for psychiatrists in the less developed world compared to their Western counterparts. Psychiatrists in the less developed world will therefore need to have a greater level of training and knowledge regarding the detection and management of delirium and physical health problems. This will particularly be the case in areas where laboratory and radiological investigations are limited and a psychiatrist may have not have the luxury of specialist medical colleagues to refer to for input. In short psychiatrists in the less developed world will need have to have better clinical skills than their Western counterparts in diagnosing delirium. Resources should therefore be focused on improving detection of delirium at first assessment and diverting these cases to appropriate medical services. Our study suggests that the CAM may be a useful screening tool for this purpose in Sub-Saharan Africa..

Misdiagnosis and under diagnosis of delirium can have devastating consequences with reported inpatient mortality rates in the West of up to 26%, death rates on discharge of 14.5-37% and mortality rates of up to 50% at one year. [7, 36, 37] If there was no fatal outcome, symptoms of delirium have been found to persist for months resulting in lengthy admission, increased hospital costs and disability. [38] Delirium seems to carry an especially grave prognosis in Africa with psychiatric hospital mortality rates of 60.4%

being reported in Ethiopia. [39] The evidence from the Western countries suggests that detection of delirium results in shorter in-patient stays, lower mortality and improved independence after discharge. [18, 40] This means there are potentially huge benefits to patients and financial savings to be made by improving the detection and management of delirium. [41] Detecting and managing delirium is therefore of particular importance in sub-Saharan Africa where health resources are scarce and mortality high.

Table 1: Demographic variables

Variable		Delirium present. Mean (Standard deviation)	Delirium not present Mean (Standard deviation)	Statistical test.	P value
Age		31.6667 (10.58)	30.1991(7.55)	U= 4294.5a	0.58
Sex	Male	26 (54.2)	121 (56.0)	?2 = 0.55b	0.82
	Female	22 (45.8)	95 (44.0)		
Ethnicity	Yoruba	28 (58.3)	127 (58.8)	?2 = 1.705 b	0.426
	Igbo	17 (35.4)	63 (29.2)		
	Other	3 (6.3)	26 (12.0)		
Employment	Employed	31 (64.6)	129 (59.7))	?2 = 0.389 b	0.426
	Unemployed	17 (35.4)	87 (40.3)		
Relationship status	Living alone	31 (64.6)	137 (63.4)	?2 = 0.23 b	0.88
	Cohabitation	17 (35.4)	79 (36.6)		
Earnings	Less than average income	7 (14.6%)	15 (6.9%)	?2 = 3.0 b	0.083
	Greater than average income	41 (85.4%)	201 (93.1%)		

* p<0.05 considered significant; ^aMann Whitney (U) was used for continuous data; ^b Chi Squared (?²) was used for categorical data

Table 2: Clinical Correlates

Clinical variable	Delirium present Mean (Standard deviation)	Delirium not present. Mean (Standard deviation)	Statistical test	P value
Length of illness (if had previous psychiatric illness) in months	4.5 (5.5)	4.4 (5.0)	U = 4984 a	0.674
Number of episodes (number of previous psychiatric presentations)	1.7 (0.9)	1.97 (1.37)	U = 4866.5 a	0.585
Mean number of admissions	1.0 (0.85)	1.12 (0.95)	U = 4935 a	0.585
Duration of current symptoms (months)	0.8117 (1.12)	0.3 (0.5)	U = 2395.5 a	<0.001*
Number of current medications	1.9 (0.78)	1.97 (0.99)	U = 5016 a	0.697
Referral source	Primary care	5 (2.3)		
	General Hospital Inpatients	1 (2.1)	?2 = 9.83 b	0.043*
	Private health care	14 (29.2)		
	General Medical Outpatient clinics	27 (56.3)		
	Accident & Emergency	6 (12.5)		
Presence of co-morbid physical illness	Present	21 (43.8)	?2 = 11.567 b	<0.001*
	Not present	27 (56.3)		

* p<0.05 considered significant; ^a Mann Whitney (U) was used for continuous data; ^b Chi Squared (?²) was used for categorical data

Table 3: Psychotropic drug prescription in individuals with delirium

Drug Type	Percentage of those with delirium prescribed
Typical anti-psychotics	31.3%
Typical anti-psychotic and anti-cholinergic	20.8%
Tricyclic anti-depressant	20.8%
Mood stabiliser	12.5%
Mood stabiliser and anti-psychotic	10.4%
No medication	4.2%

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