

ORIGINAL ARTICLE

Direct Cost of Treating Acute Psychotic Episodes in Nnewi, South-East Nigeria

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INTRODUCTION

Recent reports indicate that mental disorders constitute a huge disease burden worldwide.¹ The WHO estimated that nearly five hundred million people all over the world have some form of mental disorder. In a representative population sample of community dwelling adults in western Nigeria, Gureje, *et al* reported a life time prevalence of any mental

ABSTRACT

Background: Major psychotic disorders such as the schizophrenias consume a high proportion of health budgets in developed countries. The economic implications of acute psychotic disorders in Nigeria have not been well documented.

Aim: To estimate the direct cost of treating patients with acute psychotic episodes in a mental health unit in Anambra State, Nigeria.

Methods: Forty one patients, 29 males (70.7%) with acute psychotic episode admitted between January and September 2006 in a small Private Psychiatric Clinic were assessed with the Brief Psychiatric Rating Scale (BPRS) at intake and on discharge. The cost of drugs, laboratory investigations and hospital services were estimated using the charges obtainable in nearby facilities.

Results: The 41 patients consumed over \$11,000 during the admission period. Hospital bill constituted the highest cost (70.1%), especially professional charges (Nursing fees and Doctor's fees which accounted for about a third of the entire costs). Patients on new generation antipsychotics tended to be discharged earlier than those on first generation drugs, but were more vulnerable to relapse.

Conclusion: The direct cost of treating acute psychotic episode in the present health service system is very high. Why avoiding "false economy," there is need to develop cost effective treatment strategies for persons with acute mental disorders.

Keywords: Bills, Health Services System, mental disorder, psychotropics

disorder to be 12.1%. As a part of the Nigerian Survey of Mental Health and Wellbeing, which covered about 22% of the national population, Gureje, *et al* also reported a lifetime prevalence of non-affective psychosis of 2.1%.

The increased health care costs and expressed concern by government and policy makers

have generated interest in the health economics of mental disorders. Although schizophrenia is said to affect only 1% of the adult world population, it has been reported to consume nearly 3% of the total health costs of western developed countries.²

Perhaps, because of this economic perspective and the disabling, chronic, recurrent nature of schizophrenia, many studies of its costs and cost-effectiveness have been documented.^{3,4,5,6,7,8,9,10,11} Few studies from developing countries have also shown that the cost of treating schizophrenia is high.^{12,13,14} These studies have involved schizophrenia at its various stages or courses, of which Guest and Cookson identified ten disease states through which patients move at some time in their illness.⁴

Health services systems vary greatly across cultures and nations. Developing countries present special challenges. First, mental health services systems in many developing countries are seriously underdeveloped. Knapp, *et al* identified six economic barriers to better mental health practice and policy in low and middle-income countries: information barrier, resource insufficiency, resource distribution, resource inappropriateness, resource inflexibility and resource timing.¹⁵

Second, trained mental health professionals are grossly in short supply in these countries. For example, in Anambra, South-East Nigeria, a district of over 4 million residents, there are only two psychiatrists in the University Hospital, two medical officers (with no further training in mental health beyond the undergraduate basic few weeks rotation in Psychiatry, who cover the state psychiatric unit with 8 psychiatry beds.

In our experience, over 70% of patients with mental disorders present as acute psychotic episodes in this setting. Families bring forward their relations who have mental

disorders only when they are disruptive and can no longer be tolerated.

The economics of acute psychotic disorders have not been as widely investigated as core schizophrenia. Yet reports have shown that the consequences of acute 'psychosis' can be grave to the society, especially in terms of violence and aggression for which effective treatments exist.¹⁶ There are considerable variations in costs for persons with different mental disorder diagnoses.¹⁷

The major aim of the present study was to estimate the direct costs of treating patients who presented with acute psychotic episodes in a mental health unit.

METHODOLOGY

Setting: The study was done at Nzube Specialist Clinic, a private mental health clinic, with 6 beds. The clinic is located in a village hall (Okpunoegbu), which also houses an eye and a child health clinic, in the University town of Nnewi, Anambra State (South-East Nigeria). It is supervised by a psychiatrist with the assistance of four specifically trained auxiliary psychiatric nurses (nurse aides). These auxiliary nurses, all with secondary school certificates had no prior experience in mental health care but had previously trained in other hospitals as nurse aids. Before engagement, they were specifically trained on the basic principles of mental health nursing over four weeks. The clinic receives referrals from Churches, individual Clergy, family physicians, other doctors and family members. Patients come from all the 21 council areas of Anambra, a district of over 4million residents. The Psychiatric Clinic was established in 2000 whereas the eye and child health clinics have been operating in the village hall for close to two decades.

The supervising Psychiatrist visits every day and is called to see patients whenever the need arises. Typically, many family and or church members will accompany one patient

to the Clinic. During both the initial and subsequent consultations, eclectic psychoeducation is provided to the patients and those who accompany them. Only in rare cases it becomes possible to have private sessions with some patients, especially those in emotional distress or patients who have had psychotic episodes but have reasonably remitted.

This same scenario is essentially what obtains in the Public Hospital. However, partly because of bureaucracies and the number of patients seen in Public Hospitals, there is no doubt that more time is spent with the patients at the Private Clinic.

Participants: There were 41 patients, 29 males (70.7%). There was no statistically significant difference between the mean age of the males ($29.9 \pm 10.9SD$) and females ($27.9 + 5.2SD$), $p = 0.54$. Majority of the subjects (65.9%) were single.

Outcome Measures: The main outcome measures were disability (measured as severity of psychosis with the Brief Psychiatric Rating Scale, and cost of treatment.¹⁸

Procedure: All patients with acute psychotic episode (acute psychosis) admitted between January and September 2006 were included. Each patient was assessed with the Brief Psychiatric Rating Scale (BPRS) at intake and on discharge. Three months after discharge, the patients' records were reviewed to ascertain adherence to follow up.

The number of days spent on admission was calculated for each patient. All drugs used for the patients (from admission till discharge) were also calculated.

Cost of Drugs: Cost of drugs was determined from three sources. The drug pricing system of Nnamdi Azikiwe University Teaching Hospital Nnewi, State Psychiatric Hospital Nawfia (both in Anambra State) and a private pharmacy that supplies most of the

pharmaceuticals at Nnewi were compared for each of the drugs used at Nzube Clinic. The average price from the three sources was used to calculate the cost of the drugs used at Nzube Clinic, for the purposes of this study.

Hospital Bill: The billing system of Nnamdi Azikiwe University Teaching Hospital Nnewi and State Psychiatric Hospital Nawfia was used to calculate the hospital bill: bed fee, utility, service charge. Fee for meals was included although family members who usually prepare their own meal either in the clinic kitchen or at their own homes and bring the food to the patients feed patients at Nzube clinic. The cost of meals at Nnamdi Azikiwe University Teaching Hospital was applied. All admitted patients are required to have family members stay with the patient until discharge. The indirect costs were not included. The total direct cost for each patient was calculated as a summation of the cost of drugs, bed fee, utility and service charge. The actual bill paid by each patient to the clinic was recorded.

Cost of Investigations: Laboratory and other ancillary investigations costs are charged separately. As in the case of drugs, laboratory services may be obtained from different private operators. The average cost of laboratory tests from Nnamdi Azikiwe University Teaching Hospital and a private laboratory were used to estimate the cost of investigations. Only laboratory tests actually done were included.

Estimate for the total cost of treating acute psychotic episode in Anambra State for one year: There were no available records to determine how many patients in Anambra State were treated for acute psychotic episode in any single year. We adopted the study by Harding¹⁹ to estimate the number of persons with acute psychosis in one year. In a Community of 140,000, Harding found 51 people seen in a single day who had psychosis, severe enough to lead them away from their homes; 43 of these were in

traditional healers' homes. When we applied this to Anambra State with adult population of about 3 million (excluding children 15 years and below) we estimated that 1093 persons would be expected to have acute psychosis (in one year). If projected to Nigeria with 140 million persons we would expect about 5,000 cases of acute psychosis in a year.

RESULTS

Severity of 'Psychosis': On admission, the mean BPRS was 37.2 ± 14.3 SD and at discharge, 9.5 ± 3.9 SD. The BPRS score on admission was positively correlated with the length of stay ($r = 0.39, p = 0.012$).

The patients stayed on admission between 1 - 52 days (mean 19.1 ± 13.1 SD). Within 3 months after discharge, 7(17.1%) of the patients had relapsed. Females were twice more likely to relapse (OR = 2.3, 95% CI = 0.35 - 14.8) whereas married patients were at lesser risk of relapse (OR = 0.76, 95% CI = 0.28 - 2.02). Two (28.6%) of the seven patients (17.1% of the 41 patients) who took atypical antipsychotics had relapsed. Those who took atypicals and relapsed were almost statistically significantly different from those who took conventional psychotropics and relapsed ($t = 5.68, p = 0.06$). Patients who received atypical antipsychotics tended to be discharged a little earlier compared with those who took the conventional drugs ($p = 0.055$).

Those who stayed only 2 weeks or less before discharge were almost four times more likely to relapse (OR = 3.7, 95% CI = 0.6-23.0) whereas those who stayed longer were at a lesser risk of relapse (OR = 0.6, 95% CI = 0.3 - 0.9).

Length of Stay on Admission

Drop-out: At 3 months, only 24 (54.5%) of the patients had kept their check-up appointment while the rest had dropped out of treatment. Age, sex, marital status, duration of admission and use of atypical antipsychotic

were not significantly associated with drop out (Table 1).

Table 1. Predictors of length of stay on admission (Multiple Regression)

Variable	B	t	p
Age	-.05	-.32	0.75
Oral chlorphine	.04	1.22	0.23
Oral anticholinergic	.24	1.49	0.15
Other oral conventionals	.05	3.0	0.005
Atypical	.55	2.9	0.007
Parenterals	.24	1.25	0.22
Admission BPRS	.06	0.54	0.59

Hospital Charges (Direct costs of treatment):

Table 2 shows the cost of various items on which charges were estimated.

Table 2. Hospital charges for 41 patients with acute psychotic episode

Item	Cost (\$)	% of total Bill
Food	1804.6	23.08
Nursing fee	1203.1	15.38
Utilities	1203.1	15.38
Bed fee	1203.1	15.38
Doctors fee	1203.1	15.38
Sundry fee	601.5	7.69
Antiseptics	601.5	7.69

Professional charges (Nursing fee and Doctor's fee) constituted the highest cost (31%), followed by food (23.1%).

Table 3. Total costs for all services and medications for the 41 patients with acute "psychosis"

Item	Cost (\$)	% (of total)
Hospital Bill	7820.0	70.80
Drugs	2451.2	22.19
Laboratory	630.8	5.71
Registration (card)	141.9	1.29
Total Cost	11043.9	

Hospital bill constituted the highest cost (70.1%).

If these costs were projected for one year for the whole of Anambra State, the cost implications would be as shown in Table 4. Put another way, Nigeria as a whole would

spend about \$1,732,120.60 annually on acute psychosis for adults above 15years.

Table 4. Estimated total costs for all services and medications to treat acute psychotic episode in Anambra for 12months

Item	Cost (\$)
Drugs	87125.6
Food	64144.5
Nursing	42763.0
Utilities	42763.0
Bed	42763.0
Doctor	42763.0
Sundry (Antiseptics)	21381.5
Registration	5044.6
Laboratory	22420.5
Total	371168.7

DISCUSSION

Within three months, 17% of the patients treated for acute psychosis had relapsed. Being male, married, and staying longer than 2 weeks on admission seemed to give little protection against relapse. Although those who took atypical antipsychotics might be discharged a little earlier than those who took 'conventional' antipsychotics, this seeming advantage may be offset by relapse. However, it must be noted that the level of medication adherence after discharge was not confirmed. The number of patients in this study was too small to permit any conclusions about the use and cost-effectiveness of atypical antipsychotics.

In our setting, there is usually great pressure from families, to discharge patients once such patients seem to have become manageable; it is not uncommon for families to request discharge as soon as a disruptive patient wakes up in a calm state after an initial sedation - sometimes a matter of a few hours. Attempts by hospital staff to convince families allow their ill members (patients) achieve reasonable remission prior to discharge often fail. In a fee-paying situation, families have the final say.

Nearly 42% of the patients had failed to keep their appointments within three months. Drop-out rates in our psychiatric services are extremely high. We have not been able to determine the risk factors and intervention for drop out. However, it is generally observed that most Nigerians are not used to the management of chronic, recurrent disorders. Often, what is expected is an instantaneous miraculous permanent cure - which may be promised outside orthodox medical setting (such as spiritual, native and alternative healing).

With advice from other family members, friends and a host of other solicited and unsolicited advisers, what often follows are endless trips from one treatment centre to another, seeking for the elusive permanent cure. To avoid stigma and burden of conscience, once a family hears that there is a place where someone has been totally cured of a mental disorder, they will take their relation with a mental disorder to the place - irrespective of distance, cost or other factors. These round trips no doubt constitute heavy direct and indirect costs.

In Anambra, as indeed other States/regions of Nigeria, there are no general medical insurance covers or any other means of social welfare provisions. All medical bills are paid out of pocket. In our setting, all patients pay directly for their laboratory and medication costs. The Teaching Hospital Pharmacy simply sells medications to patients as prescribed by the doctors. Such medications are also purchased outside the hospital from private pharmacists in town, especially when the hospital does not have the prescribed drugs in their stock: this common phenomenon has given rise to the local saying; "The hospital is a mere consulting room; all you have is o/s". (O/S means "Out-of-stock syndrome").

Therefore, when inpatients are discharged, the hospital charges only for food and professional services (doctors, nurses, utilities

and sundry). Charges for drugs, consumables, and laboratory services come from those who render them within or outside the hospital. Because of this arrangement, all inpatients are required to have their relations with them to run around for the patients' drugs, laboratory and other needs. The close ties between families sometimes, mean that upwards of five or more family members are present in the hospital 24 hours every day as the patient remains on admission. Those informal caregivers either cut down or totally stop their work to look after the ill person. The indirect costs occasioned by this system of health service can be enormous. Our study however did not investigate indirect costs.

In this regard, there is only a thin line between private and public sector health institutions in Nigeria. Cost differences may lie only in professional rather than other sundry charges. In fact, administrative bottlenecks warrant that patients and their families undergo several time consuming processes before getting services in public hospitals, whereas in private health institutions there is minimal time consumption. Consequently, some may prefer private hospitals in the first instance, especially where government hospitals do not seem to have superior services compared to private institutions. In the final analysis, the costs of mental disorders in private and public hospitals may be essentially the same.

Acute psychotic episode because of its externalizing nature is more likely to attract therapeutic attention whether at traditional, religious or orthodox centre. Nigerians heavily patronize non-orthodox mental health facilities and the financial burden of acute psychosis may not be easily determined.^{20,21,22} Studies of acute psychotic episodes in Nigeria appear to be scanty. Ohaeri and Adeyemi reported that "acute psychosis" constituted about 14% of the 206 cases that presented as psychiatric emergency in a general hospital.²³ It is possible that many Nigerians who have

acute psychotic episodes do not reach orthodox care services.

Studies of psychiatric costs in Nigeria thus seem to have been limited to 'stable' patients. While Suleiman, *et al* studied the cost of treating Nigerian patients with schizophrenia as outpatients, Amoo and Ogunlesi reported on the cost implications of inpatients with schizophrenia.^{13,24} In that study, the authors reported that the direct cost of treating inpatients with schizophrenia was higher than that of inpatients with diabetes mellitus but the indirect costs did not differ significantly. In both of these two Nigerian studies, cost of medication ranked highest in all items of cost for both patients with schizophrenia and diabetes mellitus. This contrasts with the present study where hospital bill ranked highest.

In Nigeria, even when the Central Government has ownership of health institutions, the system and methods of bills are widely different as each institution is at liberty to fix its charges. The same is true of costs of medications. Both the cost and supply of drugs are purely an open market competition. However, in some states, as opposed to Federal Government controlled health institutions, drug supplies may be uniformly arranged by a central medical supplies department for the whole state. In such cases, prices of drugs supplied by the state are controlled uniformly.

As the Nigerian health services system is currently organized, the cost of acute psychotic disorder is quite high for ordinary citizens. Unfortunately, government budgets do not usually reflect these realities. Whereas in this report we estimated that acute psychotic disorder would cost about \$370,000 in Anambra, the state government budget for 2007 had no allocation either to general mental health care or acute psychosis. State health budgets usually do not go beyond 2% of the entire budget. It will be necessary for mental health practitioners in poor resource,

low-income settings to develop pragmatic and innovative cost – effective interventions for mental disorders in general, and acute psychotic disorders in particular. Some suggestions have been made in this direction.

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The limitations of our study must be acknowledged for a cautious interpretation of the results. There are no soft wares databases to determine the number of patients in Anambra who had acute psychotic episodes (with or without treatment). Our study population was quite small and projections/estimates based on a study elsewhere may not necessarily be compatible with real life experience.

We focused on direct costs. However, costs of mental illness go beyond fiscal cash. Such issues as medications costs, hospitalization costs, medication adherence, medication switching, social functioning, adverse drug changes, laboratory monitoring, relapse rates, responder days, incremental costs, lost productivity, traveling etc must be fully assessed in comprehensive cost analysis studies. Satisfaction by clients, perceived effectiveness and even cost itself, among many other factors may influence the choice of where patients or family members prefer to be treated. We did not study any of these factors.

In our poor resource, low-income setting, the cost of acute psychosis is very high. In such depressed economy, direct cost means more to the citizens who have to pay directly out of pocket. There is an urgent need to develop cost effective treatment strategies for persons with acute mental disorders who need them in developing countries. At any rate false 'economy' must always be avoided.²⁷

CONCLUSION/RECOMMENDATION

The direct cost of treating acute psychotic episode in the present health service system is very high. While avoiding "false economy,"

there is need to develop cost effective treatment strategies for persons with acute mental disorders.

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