

Determinants of Direct Cost of Schizophrenia: Findings from a Tertiary Hospital in Northern Nigeria

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ABSTRACT

Schizophrenia is a complex and costly illness, exacting heavy socioeconomic burdens on affected individuals, families and society. Few studies in the developing world have assessed the financial cost of schizophrenia and even fewer studies seek to evaluate which factors influence cost. This study therefore set out to determine the determinants of the direct cost of schizophrenia using findings from a tertiary hospital in Northern Nigeria. The study design was a comparative longitudinal study which comprised 270 patients with schizophrenia with 90 of them receiving acute phase treatment and 165 caregivers. The study instruments included the Mini International Neuropsychiatric Interview Plus (MINI Plus) used to make ICD-10 diagnosis of schizophrenia, a modified cost of illness questionnaire was used to assess cost of treatment, and the Positive and Negative Syndrome Scale used to assess symptoms' severity. The results obtained using the SPSS statistical package, version 20 revealed the mean age of participants to be 33.04 years (SD±9.743), with mean age at onset of schizophrenia to be 25.87 years (±8.139). Most of the participants were found to be single (45.6%) and of low socioeconomic class (88.5%). The Cost of illness had a statistically significant relationship with participants' illness presentation, number of caregivers, length of caregiving, illness severity, and socioeconomic status (SES). Mean monthly estimate of direct cost of treatment per patient was ₦55,464.75 (\$133.67) for acute patients, and ₦6,743.75 (\$16.25) for stable patient at an exchange rate of \$1=₦415. Conventional antipsychotics were the most prescribed. Regression analysis revealed the predictors of direct cost to be length of caregiving and SES. The conclusions from this study showed the determinants of direct cost of schizophrenia to include illness presentations, SES, length of caregiving, and illness severity with participants suffering frequent relapse or delayed intervention due to financial demands of treatment. Consequently, the intervention of government and policy makers in this regard will not only help in reducing patients' suffering and complications of prolonged non-treatment but also reduced the frequency of relapse and the burden on caregivers, government institutions and society.

Keywords: Cost of Treatment, Determinants, Northern Nigeria, Schizophrenia



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BACKGROUND

Cost of illness (COI) studies measure the economic burden of disease on society.¹ It is essential to government and private health decision makers in formulating, planning, prioritizing and financing projects and policies that will impact positively on the wellbeing of the people at costs that is affordable, efficacious and sustainable for both government and the people.¹⁻³ The direct cost measures the resources used in the treatment and prevention of an illness such as cost of drugs, investigations, transportation, feeding and accommodation. Indirect costs measures lost productivity for both patients and caregivers e.g. unemployment, and inability to take care of self, ect.¹⁻³ Intangible costs on the other hand describes financially unquantifiable costs such as suffering and pain etc.¹⁻³ In his editorial, Insel,⁴ noted that the full economic cost of mental disorders is not captured by analysis of health care costs as the cost of mental disorders are more “indirect” rather than “direct”. While this is a horrid reality, the picture in developing countries however is more pathetic considering that many patients with schizophrenia are lost within the community (due to ignorance, myths, stigma and superstition). Those identified have restricted access to care due to financial constraints, financial burnout on account of long pathway to care, and few mental healthcare professionals who predominantly work in urban and tertiary centres. In this context, direct cost of treatment is of prime concern. Reasonable estimates of the financial costs of schizophrenia are the foundations for making judgments about the socioeconomic impact of the disorder, the cost-effectiveness of treatment modalities and government policy decisions where necessary. In his review of literature, McEvoy⁵ found that the cost of schizophrenia in the United States in the year 2002 was estimated to be \$62.7 billion and noted that inpatient cost of schizophrenia has declined whereas outpatient cost and medication cost have increased when compared with an estimate a decade

earlier. In Nigeria, Suleiman et al.⁶ estimated the financial cost of treating out-patients with Schizophrenia. They compared 50 Schizophrenia patients with 40 Insulin Dependent Diabetes Mellitus (IDDM) patients attending out-patient clinics. Their findings revealed that the cost of treatment per six months of IDDM was higher (₦11,791) compared to Schizophrenia (₦2,951.4). The cost of Insulin injections accounted for 92.8% of the cost of treatment for IDDM while cost of antipsychotic drugs accounted for 52.8% of the costs for schizophrenia. This study however did not consider costs for acute and in-patients care nor did it look at the relationship between cost of illness and severity of symptoms. Similarly, Amoo and Ogunlesi⁷ compared the cost of treatment of schizophrenia with that of diabetic patients but restricted to inpatients only. They found longer duration of admission for patients with schizophrenia compared with diabetic patients. Notably too, direct cost for schizophrenia per admission was significantly higher than cost for diabetes mellitus, in contrast to the findings by Suleiman et al.⁶ The cost of medication ranked highest among all item of cost for both patient groups. This study however failed to look at the cost for stable patients, and the implications for relapse prevention. Studies on COI generally are sparse in most developing countries and more so studies on cost of Schizophrenia in Nigeria. The study by Suleiman et al.⁶ was conducted almost three decades ago in Lagos (Southwest Nigeria), different from that of Northwest, Nigeria. Also, Second Generation Antipsychotics (SGA) were unavailable and modified Electroconvulsive Therapy (ECT) was unusual at this time. Suleiman and his colleagues conducted their study on stable out-patients Only. It will be rewarding to compare this finding with those of patients receiving acute phase treatment as well as the effects of symptoms severity on cost. This study was therefore carried out to establish the determinants of direct cost of treatment of schizophrenia in Northern Nigeria.

MATERIALS AND METHODS

This study is part of a larger study that sought to determine the cost of treatment of schizophrenia and its relationship with other variables such as cognitive impairment, burden of care and illness severity etc. A detailed version of the methodology is available in a previous study.⁸ Study Location: This study was carried out at the Ahmadu Bello University Teaching Hospital, located in Shika-Zaria of Kaduna State, Nigeria. The male and female psychiatric wards and the psychiatric clinics were used for this study. Study Population: (A) these were patients aged 15 years and above with a diagnosis of Schizophrenia.⁹ There were 2 patient groups: Group I: patients receiving acute phase treatment. Group II: patients who had been stable in the preceding six (6) months and were receiving maintenance treatment. (B) Caregiver(s) of patient with schizophrenia. The caregiver was any person (relative or paid help) who lived with or frequently visited the patient and was knowledgeable about the patient's daytime and nighttime behaviours. Patients were assessed once each month for three months.

Study Procedure

Inclusion Criteria (for patients): In-patients/out-patient diagnosed with Schizophrenia; Age 15 years and above (taking into consideration the typical epidemiological age of onset for schizophrenia).

Exclusion Criteria (for patients): Patients with history of stroke, head injury, intellectual disability or delirium despite previous diagnosis of schizophrenia; Patients who were less than 18 years (age of consent) and not accompanied by a caregiver.

Inclusion Criteria (for caregivers): Age 18 years and above; Caregiver(s) (NB: B above).

Exclusion Criteria (for caregivers): Caregiver(s) who are acutely ill; Caregivers who declined consent.

Study Design: This was a longitudinal comparative study, conducted between January and December 2015

Instruments used in this Study included

A structured COI questionnaire adapted from the Centers for Disease Control and Prevention (CDC), U.S. Department of Health & Human Services,³ was used to assess direct cost (e.g. cost of drugs, transportation, etc.).

The Positive and Negative Syndrome Scale (PANSS):¹⁰ developed by Kay et al.¹¹ for the assessment of positive and negative symptoms of psychotic disorders. It is a 30 items scale with a positive and negative subscales and a general psychopathology subscale and can be completed in 30 to 50 minutes. Reliability for each scale has been shown to be fairly high, with excellent internal consistency and inter-rater reliability.

The Mini International Neuropsychiatric Interview (MINI) PLUS:¹² This is a brief structured interview for major Axis I psychiatric disorders in the ICD-10 and DSM-IV. It requires Yes or No answers. Studies have shown high validity and reliability scores when compared with the SCID-P and CIDI. It has been used in Nigeria by Adewuya et al.¹³ The MINI PLUS section on schizophrenia was used. Socio-demographic questionnaire: was designed to obtain socio-demographic data such as age, gender, marital status, socioeconomic status (SES). For the purpose of this study a modification of Kuppaswamy SES Scale as revised by Guru Raj et al.¹⁴ was adapted for use. The SES was then classified into high, middle, and low socioeconomic class based on the total score obtained thus: a score of 26–29 = upper class; 11–25 = middle class; <11 = lower class. At the time of this write-up, the US\$ = ₦415; The minimum wage was ₦30,000. Data collection was carried out by 4 psychiatry residents and a consultant psychiatrist in the department. Sample Size Determination was based on the formula for comparison of two means.¹⁵ $n = (u+v)^2 (116.707)$. This represents the size of a group (if the two groups were to be of equal size). Small group size = fn , and $f = (c+1)/(2c)$ (for different size groups) $f =$ adjustment factor = $(2+1)/(2 \times 2) = 3/4$; $cn =$ number of larger group, $c =$ ratio of larger to smaller group = 2 Hence, $fn = 3/4 \times$

120 = 90 (size of smaller group i.e. acute schizophrenia patients) Number of larger group = $2 \times 90 = 180$ (number of stable schizophrenia patients) Total sample size = $90 + 180 = 270$ Participants were recruited consecutively until the sample size was reached. Cost Estimation:³ Costs were calculated for registrations, admissions, consultations, drugs, investigations, transportation and feeding. In this study, the following evaluations for cost ensued: Mean Monthly Direct Cost Per Patient = Sum of all cost per patient over 3 months / 3. The Mean Annual Direct Cost Per Patient = Mean monthly direct cost per stable patient X 12 (months). The cost to the nation however must take into consideration costs of treatment for both acute and stable patients. This was calculated based on the assumption that majority of patient with schizophrenia receiving acute phase treatment become stable within six to eight weeks of treatment.¹⁶ Hence, the Mean Annual Direct Cost = monthly cost for acute patient (X 2 months) + monthly cost for stable patient (X 10 months); i.e. Mean Annual Direct Cost (per patient) = (Acute Cost X 2) + (Stable Cost X 10). NB: dividing this by 12 gives the monthly cost per person. The Mean National Direct Cost can then be estimated using the formula: Mean Annual direct cost per patient X Prevalence of schizophrenia in Nigeria X Estimated Nigerian population.³

NB the 12-month Prevalence of Schizophrenia in Nigeria = 1.1% (as found in the study by Gureje et al).¹⁷ Current Estimated Nigerian Population \approx 200,000,000 Hence Mean Annual Direct Cost to the Nation (in N) = Mean direct cost per patient X 1.1/100 X 200,000,000

Ethical Consideration

Ethical clearance was obtained from the Ethics and Scientific Committee of the Ahmadu Bello University Teaching Hospital. A written and signed consent was obtained before conducting the interview. All patients less than 18 years had a caregiver present. Patients and their caregivers were given due priority in terms of

prompt management in the wards and at the clinics. Diagnosis: The diagnosis of schizophrenia was based on fulfilling the criteria in the WHO's Tenth Revision of the International Classification of Disease and Related Health Problems, (ICD-10)¹⁸ as assessed using the MINI PLUS.

Data Analysis

Data was analyzed using version 20 of the Statistical Package for Social Sciences (SPSS). Relevant descriptive statistics were used for continuous and categorical variables and frequency distributions generated. Test of normality for all continuous variables were assessed using the Kolmogorov-Smirnoff test and consequently, non-parametric test statistics were then employed. These included the Mann-Whitney U test, Kruskal-Wallis test, and Spearman's correlation. Regression analysis was employed to determine the predictors of cost. All tests of statistics were carried out at 5% level of probability.

RESULTS

The socio-demographic characteristics of participants is as displayed in Table 1. A total of 270 subjects participated in this study with 1/3rd (33.3%) of them receiving acute phase treatment. The sex ratio was approximately 1:1 with 48.1% of the participants being males while their mean age was 33.04 (SD \pm 9.743; Range 15-60). Although patients who were single constituted 45.6%(123) of the participants with most them being males (96, 78.05%), only 7(2.6%) were of high socioeconomic class while majority (138, 51.1%) were unemployed. Only 28(10.37%) were benefitting from the National Health Insurance Scheme (NHIS). Sixty-one percent of the patients were accompanied by at least one caregiver and most of them were having their first episode or their first relapse (n=185, 68.5%). Patients with primary level education made up 29.6% (n=44), while 68(25%) attained tertiary education. Treatment Types Received by Participants indicates

that majority (n=204, 75.6%) received First Generation Antipsychotics (FGA) while some were also receiving treatment for a concurrent medical condition (n=17, 6.3%) or depression (n=8, 3%). Only one (0.4%) of the participants was on drug holiday while 12.2% received psychotherapy. The Mean Monthly Direct Cost per acute patient was \$133.67 (N55,464.75) while that for stable patients was \$16.25 (N6,743.75). The Mean Monthly National Cost = \$35.82 (N14,865.3). The Mean Annual Direct Cost of schizophrenia per patient was N178,383.6 (\$429.84) per patient and

N392,443,920,000 (\$945,648,000) for all patients with schizophrenia in Nigeria at 1\$ = N414 exchange rate. The relationship between Direct Cost of Illness and Socio-demographic Variables is shown in table 2 and was statistically significant for direct cost of illness and participants' presentation (M-W=1083, df=1, p<0.001), and SES (K-W=7.64, df=2, p=0.022). The correlates of Symptom Profile were depicted in Table 3 and revealed that all the subscales for PANSS had a statistically significant correlation with length of caregiving (p<0.001), number of caregivers (p<0.001), and COI (p<0.001). Additionally, the predictors of total cost of treatment of schizophrenia as illustrated in table 4 using Multiple Regression analysis found length of caregiving (p<0.001), and patients' socioeconomic status (p = 0.007) to be significant predictors of cost with length of caregiving having a stronger predictive value than SES.

Table 1: Socio-demographic Characteristics of Patients with Schizophrenia (n=270)

Variables	Frequency	%
Presentation:		
Acute	90	33.3
Stable	180	66.7
Total	270	100.0
Sex:		
Male	130	48.1
Female	140	51.9
Total	270	100.0
Marital Status:		
Single	123	45.6
Married	93	34.4
Divorced	38	14.1
Separated	6	2.2
Widowed	10	3.7
Total	270	100.0
Occupation:		
Employed	99	36.7
Unemployed	138	51.1
Student	33	12.2
Total	270	100.0
Education:		
None	44	16.3
Primary	80	29.6
Secondary	78	28.9
Tertiary	68	25.2
Total	270	100.0
SES:		
Low	239	88.5
Middle	24	8.9
High	7	2.6
Total	270	100.0
Caregiver Present:		
Yes	165	61.1

n = Number of participants SES: Socioeconomic Status

Table 2: Relationship between Direct Cost of Illness and Socio-demographic Variables

Socio-demographic variables	Cost of Illness		Statistics
	Mean Monthly Cost(₦)	SD, (95% CI)	Test Statistic; df; p-value
Presentation:			M-W = 1083.0
Acute	25398.19		df = 1
Stable	3087.21		p < 0.001
Sex:			M-W = 8924.50
Male	9511.83	±17038.80, (6555.11 – 12468.53)	df = 1
Female	11464.26	±18326.56, (8401.86 – 14526.67)	p = 0.784
Marital Status:			
Single	9928.83	±17726.67, (6764.72 – 13092.94)	
Married	10445.88	±16670.40, (7012.65 – 13879.11)	K-W = 0.294
Divorced	12502.32	±20298.73, (5830.29 – 19174.34)	df = 4
Separated	13395.50	±22506.99, (-10224.14 – 37015.14)	p = 0.990
Widowed	9336.00	±16515.68, (-2478.61 – 21150.61)	
Education:			
None	6104.64	±11631.88, (2568.22 – 9641.05)	K-W = 1.854
Primary	10839.28	±18589.57, (6702.37 – 14976.18)	df = 3,
Secondary	11306.44	±18150.19, (7214.20 – 15398.67)	p=0.603
Tertiary	12115.97	±19247.67, (7457.04 – 16774.90)	
SES:			
Low	10098.23	±1731.61, (7892.13 – 12304.34)	K-W = 7.64,
Middle	10319.67	±14459.38, (4214.01 – 16425.33)	df = 2
High	25769.14	±33112.05, (-4854.39 – 56392.68)	p = 0.022*
Occ. Status:			
Unemployed	9012.29	±15558.57, (6393.31 – 11631.27)	K-W = 5.420
Employed	9270.55	±15861.51, (6107.02 – 12434.07)	df = 2
Student	20607.70	±26662.15, (11153.71 – 30061.68)	p = 0.067
Caregiver Burden:			
Yes	15785.26	±21458.45, (12434.80 – 19135.72)	M-W =65.898,
No	4639.20	±1778.71, (2430.64 – 6847.76)	df=1; p = 0.470
NHIS Registered :			
Yes	8469.96	±16720.88, (1986.29 – 14953.64)	M-W =3206.5,
No	10761.88	±17841.23, (8502.69 – 13021.06)	df=1; p = 0.643

M-W: Mann-Whitney U test; K-W: Kruskal-Wallis Test;
df: Degree of Freedom; SES: Socioeconomic status
SD = Standard Deviation; CI = Confidence Interval
*Significant level = 0.05; ** Significant level 0.01

Table 3: Correlates of Symptom Profile among Schizophrenia Patients

Variables	Test Statistic	STATISTICS			
		PANSS		General Subscale	Total
		Positive subscale	Negative subscale	General Subscale	Total
Age	r _s	-0.145	-0.155	-0.147	-0.172
	p-value	0.017*	0.011*	0.016*	0.005*
AAO	r _s	-0.001	-0.114	-0.017	-0.047
	p-value	0.988	0.061	0.782	0.441
COI	r _s	0.636	0.346	0.519	0.558
	p-value	<0.001	<0.001	<0.001	<0.001
Length of Caregiving	r _s	0.782	0.621	0.681	0.780
DUP	p-Value	<0.001**	<0.001**	<0.001**	<0.001*
	r _s	0.181	0.267	0.160	0.227
No. of Caregivers	p-Value	0.003*	<0.001**	0.008*	<0.001
	r _s	0.691**	0.558**	0.612**	0.693*
	p-value	<0.001	<0.001	<0.001	<0.001

**Significant at 0.01 level; *Significant at 0.05 level; r_s: Spearman's correlation

AAO: Age at onset; COI: Cost of Illness

DUP: Duration of Untreated Psychosis; PANSS: Positive and Negative Syndrome Scale

Table 4: Multiple Regression Model Showing Predictors of Total Direct Cost* among Schizophrenia Patients

Independent Variables	Coefficients		T	p-value
	Unstandardized	Standardized		
	B	Beta		
PANSS Total Score	-43.50	-0.040	-0.422	0.674
Age	1.514	0.001	0.214	0.831
No. of Caregivers	4261.5	0.130	1.741	0.084
Length of caregiving	3662.7	0.383	4.135	0.000
Socioeconomic status	10043.8	0.191	2.738	0.007

*R Square = 0.294; Adjusted R Square = 0.267; p<0.001; n = 165
Dependent Variable = Total cost

DISCUSSION

The socio-demographic characteristics of participants in this study revealed findings similar to those seen in other previous studies. The male to female ratio 0.9:1, is similar to several community and hospital based

studies which showed an almost 1:1 male: female ratio in the prevalence of schizophrenia.^{6,9,19} This is because the incidence and prevalence of schizophrenia in both males and females is approximately the same. The

mean age of participants is 33.04 (SD±9.743). This is similar to findings in other studies that schizophrenia can occur as early as ten years, as well as middle age,⁹ hence the age range of 15 to 60 years seen in this study. Additionally, some of the participants have been in treatment over a long period due to the chronic nature of schizophrenia. The mean age at onset of the illness was found to be 25.87 (±8.139).

Concerning the treatment types received by participants, most (75.6%) of the participants received FGA even though current management guidelines for schizophrenia did not advocate any of the antipsychotic groups as first line.²⁰ This may be due to their affordability and availability especially in low resource settings. Management regimen for patients with schizophrenia must take into consideration patients' preferences, peculiarities, tolerability, affordability and drug efficacy. Noteworthy, majority of our study participants are of low SES (88.5%), and not registered with the NHIS (89.6%) with most of the antipsychotics available under the NHIS scheme being FGAs. The mean monthly direct cost of treatment for acute phase schizophrenia is N55,464.75 (\$133.67). This differs from the estimate of N9882 by Amoo and Ogunlesi⁷ (whose estimate was per admission rather than per month). The mean direct cost of treatment for stable patients on the other hand was N6,743.75 (\$16.25) which also differed from the mean monthly estimate of N491 by Suleiman et al.⁶ This differences however needs to be interpreted cautiously in the light of fluctuations and periodic devaluation of the naira over the intervening period between these studies.

The mean annual direct cost of schizophrenia was estimated to be N178,383.6 (\$429.84) per patient and N392,443,920,000 (\$945,648,000) for all patients with schizophrenia in Nigeria. Estimates from UK and US ranged from \$2.34 billion to \$3270 billion but included both direct and indirect costs.²¹ It is noted here that Nigeria's 2022 Health budget of N724 billion (\$1,744,578,313.25) represented 4.2 percent of the annual budget, a far cry from the recommended 15

percent by the Abuja declaration.²¹ Our current study presents direct cost of treatment of schizophrenia only and takes into consideration both clinical and non-clinical costs. Saraceno and Saxena²² noted with dismay that about 80% of countries in Africa spend less than 1% of their health budget on mental health. It is not surprising therefore that funds are unavailable for treatment programs for the mentally ill. The socio-demographic determinants in this study found to have a statistically significant relationship with cost of illness included participants' illness presentation and SES. The needs of patients with acute phase symptoms are different from those of the stable patient. During the acute phase, patients are usually subjected to various investigations to rule out organic aetiology, they often require higher doses of medication, and closer monitoring to prevent them from harming themselves or others while some patients may require ECT. All these make the needs of the acutely ill patient more profound thereby escalating the cost of treatment. Several studies support this finding between patients' presentation and cost of treatment.^{7,19}

Gender, marital status and educational status did not have a statistically significant relationship with direct cost in this study. Though these factors are known to influence illness prognosis, they do not usually determine the type and extent of treatment given. A few studies have however reported higher cost of treatment among men²³ and among women too.²⁴

This study also found a statistically significant relationship between COI and SES in line with the findings from previous studies.^{19,25} Patient or caregivers' SES can influence the type and choice of treatment and the extent of interventions provided. Participants from a higher socioeconomic class are more likely to be able to afford SGA which are costlier and to carry out all necessary investigations.²⁴

Correlates of Direct Cost of Treatment of Schizophrenia: This study found a statistically significant negative correlation between cost of treatment and age of participants ($r = -0.174$; $p = 0.007$).

However, when this was controlled for presentation of participants (acute or stable), it failed to reach statistical significance ($p=0.983$; $p=0.506$). The negative correlation between direct COI with Duration of Untreated Psychosis (DUP) ($p = 0.552$) and Age at Onset of Schizophrenia (AAO) ($p = 0.990$) also did not reach statistical significance. The rationale for controlling for age is because age is not a driver of cost of treatment as shown by various studies.^{5-7,19,21}

The relationship between COI and DOI ($p < 0.001$) also failed to reach statistical significance when controlled for participants' presentation. This is because DOI do not influence cost of treatment rather, DOI may influence treatment and functional outcome.^{20,25} Some studies have however reported significant relationship between DOI and COI.^{6,25}

The relationship between number of caregivers and COI consistently showed statistical significance even after controlling for participants' presentation ($p < 0.001$). The number of caregivers is frequently a reflection of the severity of symptoms and the need for ongoing care. Studies have shown that the number of caregivers per patient influence the cost of treatment especially the indirect cost due to the effect of lost productivity.^{19,24-26}

The relationship between COI and patients' symptom profile (PANSS) was found to be statistically significant only for the positive symptom subscale of PANSS and remains so even after controlling for participants' presentation. Externalizing positive symptoms are frequently dramatic and require ongoing clinical attention, hence necessitating urgent care and may require higher doses of medication for symptoms de-escalation. This pattern is also seen in studies that compare cost of in-patient and outpatient treatment.^{7,25} Negative symptoms however attract less attention and may even go unnoticed.

The predictors of direct costs of schizophrenia in this study included length of caregiving and SES of patients. The number of caregivers per patient is a reflection of the degree of need for care and will

ultimately determine cost of treatment.

Limitation

There are no formal standardized cost estimates particularly for services that have been subsidized or taken up by government such as cost of consultation, equipment and maintenance of structures from which to make references and enhance standardization

CONCLUSION

The determinants of direct cost of treatment of schizophrenia in this study include mode of presentation, socioeconomic status, number of caregivers and length of caregiving, and presence of positive symptoms. The cost estimates here do not include cost of incarceration and other criminal justice activities, cost of social insurance, half/full way homes, and other therapeutic and rehabilitation programs which are sparse in Nigeria.

All caregivers were family members, relatives and/or friends. This not only places huge financial burden on the family but reflects the inability of family to employ the services of caregiver(s)

The difference between costs for acute schizophrenia and costs for stable patients emphasizes the need for efforts geared towards drug adherence and relapse prevention such as effort towards stigma reduction, enlightenment programs and community care.

Recommendations

The effects and complications of schizophrenia are multifaceted. The modest estimate found in this study does not put into consideration the cost of rehabilitation programs for persons with treatment resistance, persistent residual symptoms, continuing cognitive deficits, incarcerations and poor socioeconomic functioning. The inclusion of these sources of direct costs as well as indirect cost will give a better picture of the enormity of the socioeconomic burden to the nation.

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Conflict of Interest

There was no conflict of interest

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