

Psychiatric Disorders amongst Caregivers who are First Degree Relatives of Patients with Schizophrenia

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Abstract

Purpose: Caring for a mentally ill family member is a challenging task. Caregivers who are first-degree relatives are at a higher risk of experiencing the negative consequences of caregiving. Our aim was to determine the pattern of psychiatric disorders amongst caregivers who are first-degree relatives of patients with schizophrenia. The study also examined the diagnostic accuracy of the GHQ -12 as a screening tool.

Methods: A dyad of 255 patients and caregivers was recruited. GHQ -12 was used to screen for psychiatric morbidity and MINI was used to diagnose specific psychiatric disorders in the caregivers. Patients' illness severity and level of functioning were assessed using BPRS and the GAF scales respectively.

Results: About 62 (24.3%) caregivers had a psychiatric disorder, the commonest was a current episode of a major depressive episode. The GHQ cut off point of 4 gave the best diagnostic accuracy with a likelihood ratio of 10.2. Psychiatric disorders in caregivers was significantly associated with caregiver's age, being a parent, being solely responsible for financing patient's treatment, age of the patient, illness severity and psychosocial functioning (p value < 0.05).

Conclusions: Psychiatric disorders were prevalent amongst caregivers who are first-degree relatives of schizophrenic probands. GHQ-12 cut-off point of 4 gave the best diagnostic accuracy for screening psychiatric morbidity and increased the probability of finding a psychiatric disorder in caregivers by 45 %. Therefore, routine screening of caregivers will aid early diagnosis of psychiatric disorders and appropriate psychological intervention.

Keywords: Psychiatric disorders; Caregivers; First-degree relatives; General health questionnaire-12; Schizophrenia

Introduction

Schizophrenia is a chronic psychiatric disorder characterized by dysfunction in one or more areas of functioning; interpersonal relations, work or education, or self-care [1]. It ranks among the 5th and 6th leading contributors to global disease burden among males and females respectively [2]. It runs a chronic course, which is characterized, by remission and relapses leading to deterioration in social functioning, occupational functioning [3] and a loss in productivity [1, 4]. The consequent economic impact of this disorder on both caregiver and care recipient is enormous. Direct and indirect costs arise from therapeutic interventions and loss of productivity respectively [1, 5].

Worldwide, patients with schizophrenia are mostly cared for in the communities by their relatives [6]. In Nigeria, these caregivers are mostly relatives who are likely to be mothers to the care recipients [7]. Care recipients are dependent majorly on their caregivers for their daily

activities [6]. This causes restructuring of household schedules and disruption in family routines [8]. This contributes to increased stress on caregivers.

Caregivers of people with mental disorders are at risk of developing psychological distress due to increased caregiver burden [9, 10]. Caregivers who are biological relatives of persons with schizophrenia have higher risk of developing mental disorders due to their genetic predisposition [7]. The level of associated risk is dependent on the type of mental disorder suffered by the care recipient, type of relationship with the care recipient and the level of caregiver burden [11]. First-degree relatives, due to their shared genetic makeup with the probands, have higher risk of developing psychiatric disorders [11].

In Nigeria, although the risks of psychiatric morbidity in caregivers are well documented, there are few studies on specific types of mental illnesses that caregivers may experience or suffer in course of caregiving. Knowledge of this could inform the basis for evaluating specific interventions designed to help caregivers of patients who suffer from schizophrenia. Secondly, there is no consensus on the cut off point for GHQ-12 for screening psychiatric morbidity. Some studies have used GHQ-12 cut off point of 2, 3 or 4 [12-14]. The diagnostic accuracy of varying GHQ-12 cut off points has not been examined. This study was aimed at assessing the diagnostic accuracy of various cut off points for GHQ-12 and also to determine the specific types of psychiatric disorders in caregivers who are first-degree relatives of patients with schizophrenia.

Subjects and Methods

The study design was cross-sectional with systematic random sampling. The study was conducted at the out-patient clinic of the Federal Neuro-Psychiatric Hospital (FNPH), Benin City, Edo State in Southern Nigeria.

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It is a tertiary government hospital that provides both in-patient and out-patient mental health services to the inhabitants of the state and its environs.

The participants comprised of a 'dyad' of a first degree relative (FDR); who is the primary caregiver, and the patient with schizophrenia attending the out-patient clinic. A primary caregiver was defined as a first-degree relative and a non-professional, non-paid person who was mostly involved with the everyday care of the patient. He/she should also be very likely to respond to any request for special assistance at any time, if such a request was made by the patient [15, 16]. A first-degree relative could be a biological parent, a full sibling, or biological child of the patient. Caregivers who were aged 18 years and above, first-degree relatives and the primary caregivers of the patient were recruited. Caregivers who could not communicate in English or declined consent to participate in the study were excluded. Patients who were diagnosed as having schizophrenia by the Consultant Psychiatrist and diagnosis confirmed using the psychotic module of the Mini International Neuropsychiatric Interview (M.I.N.I.) were recruited for the study. Ethical approval was obtained from the Ethics and Research Committee of the hospital (FNPH, Benin City). A written informed consent was obtained from every participant.

Each dyad was recruited through a systematic random sampling method over a period of 3 months. Both patients and caregivers were assessed using a socio-demographic questionnaire to ascertain variables like age, gender, level of education etc.

Screening for psychiatric morbidity

The General Health Questionnaire (GHQ) – 12 is a 12 item, self-administered screening questionnaire, designed for use during consultations aimed at identifying people with a probable psychiatric morbidity. It is the most widely used screening instrument for common mental disorders and also serves as a general measure of psychiatric well-being. Each item on the scale has four responses and it utilizes 2 scoring methods: bimodal scale (0-0-1-1) and a 4-point Likert-type scale (0-1-2-3). Total scores were calculated by summing up the total scores for each item using the bimodal method of scoring. It was used to screen for probable psychiatric morbidity in all the FDRs. The sensitivity, specificity, negative and positive predictive values and likelihood ratios of varying the cut off points of GHQ-12 from 2 through 3 to 4 were studied.

Assessment for a psychiatric disorder

Occurrence of a psychiatric disorder in the FDRs was assessed using the Mini International Neuropsychiatric Interview (M.I.N.I.). It is a short structured diagnostic interview used for making diagnosis for major Axis 1 psychiatric disorders in DSM-IV and ICD-10. It comprises of 16 modules labelled A to P, each corresponding to a particular diagnostic category. Each module except for the psychosis module consists of screen question(s) and diagnostic boxes. It has been shown to have similar reliability and validity properties with the Composite International Diagnostic Interview (CIDI), but can be administered within a shorter time than the CIDI.

Assessment of illness severity

The Brief Psychiatric Rating Scale (BPRS) was used to assess the illness severity of the patients. It is an 18- item clinician rated instrument used to assess the level of severity of 18 symptoms construct e.g. hallucinations, grandiosity, suspiciousness etc. in patients with psychosis. Total scores were obtained from the 7-point rating scale ranging from not present to extremely severe. Scores from each item were summed up to give a total score, which was the index of illness severity.

Assessment of level of functioning

The level of functioning for each patient was assessed using the Global Assessment of Functioning (GAF) scale. The GAF scale is a clinician rated assessment of the level of functioning of a patient. It is a numeric scale that rates subjectively: social, occupational and psychological functioning of adults.

Data generated from the study was analyzed using the Statistical Package for Social Sciences (SPSS) version 22 and GraphPad Prism version 6. Summary statistics were done using frequencies in tables. Test of association between psychiatric morbidity and categorical variables (gender, level of education, employment status etc.) were performed using the Pearson's Chi-square test. Mann Whitney U test was used to test difference between numerical variables (age, duration of time spent in caregiving per day etc.) between caregivers with psychiatric morbidity and those without. Also, predictor of psychiatric morbidity was ascertained following a regression analysis with presence or absence of a psychiatric morbidity as the dependent variable.

Alpha level of significance was set a-priori as $p < 0.05$. Diagnostic accuracy of various GHQ-12 cut off points was assessed by testing for sensitivity, specificity, positive and negative predictive values and Likelihood Ratios.

Results

Caregivers

The mean age (SD) of the caregivers was 45.1 (12.3) years. The caregivers were mostly married (61.6%) females (65.5%) with secondary level of education (33.3%) and were employed (83.1%). One hundred and sixty-seven (65.5 %) caregivers earned more than N10, 000 (\$50) monthly. A majority of the caregivers lived with the patient (93.3%), had been caring for the patient for more than 48 months (52.9%) and were solely responsible for payment of their treatment (51%) (Tables 1 and 2).

Patients

The mean age (SD) of the patients was 36.7 (13.4) years. There were mostly unmarried (89.4%) males (54.1%) with secondary level of education (45.1%) and were unemployed (78.4%). Median duration of illness was 72 months. The median BPRS and GAF scores were 30 and 60 respectively.

Table 1: Socio-demographics of caregivers and patients

Demographic Characteristics	Caregivers	Patients
Age: mean (± SD)yrs	45.1(12.03)	36.7 (13.4)
Gender		
Male	88	138
Female	167	117
Religion		
Christianity	250	249
Islam	3	4
African Traditional Religion	2	2
Marital Status		
Unmarried	98	228
Married	157	27
Educational level		
No formal education	21	20
Primary	69	63
Secondary	85	115
Post-secondary	29	27
Tertiary	51	30
Employment status		
Employed	212	55
Unemployed	43	200

Table 2: Other socio-demographic characteristics of caregivers

Variable	N	%
Median Monthly Income (*\$)		
≤ Median (\$50)	88	34.5
> Median (\$50)	167	65.5
Monthly Expenditure (\$)		
≤ Median (\$30)	130	51
> Median (\$30)	125	49
Duration of care for patient since onset of illness		
≤48 months	135	52.9
>48 months	120	47.1
Duration of time spent caring for the patient per day		
≤12 hours	152	59.6
>12 hours	103	40.4
Who pays for patient's treatment		
Caregiver alone	130	51
Patient alone	8	3.1
Caregiver and patient	4	1.6
Other relatives	82	32.2
Caregiver and other relatives	31	12.2
Relationship with the patient		
Father	18	7.1
Mother	107	42
Sibling	91	35.7
Child	39	15.3
Are you currently living with the patient?		
Yes	238	93.3
No	17	6.7

The current exchange rate is based on prevailing parallel market rate in Nigeria.

CI is Confidence Interval calculated by using modified Wald method (GraphPad Prism v7)

Sensitivity and Specificity of the GHQ -12

Using three different cut off points for the GHQ -12, the diagnostic accuracy of the GHQ varied (Table 3). Sensitivity decreased as specificity increased from cut of points of 2 to 4 (p value < 0.04). Therefore, a choice of GHQ-12 cut of point is a trade-off. However, the highest Likelihood ratio of 10.2 was observed for a cut-off point of 4, which implied an increased probability of 45 % for identifying psychiatric disorders in caregivers. At cut off points of 2 and 3, the GHQ-12 has probabilities of 15 and 30 % respectively for identifying psychiatric disorders in caregivers who are first-degree relatives.

Psychiatric diagnosis

Psychiatric disorders were present in 62 (24.3%) caregivers. The pattern of psychiatric disorders among FDRs is as shown in figure 1. The commonest psychiatric disorder was Major depressive episode current, 39 (62.9%). Caregivers' and patients' factors (correlates) associated with psychiatric disorders in the FDRs were: FDRs age, level of education, being a parent, being solely responsible for financing patient's treatment and patient's age, illness severity and poor psychosocial functioning respectively (p value < 0.05) (Table 4).

Significant variables from the univariate analysis were entered into a logistic regression model to determine independent predictors of psychiatric disorders among caregivers. The Hosmer & Lemeshow test ($X^2 = 7.574$, $df = 8$, $p = 0.476$) showed that the model generated was a good fit as it had a p-value 0.467. The model however explained 12.8% in terms of variation (Cox & Snell $R^2 = 0.128$) of these variables on the outcome measure. The results showed that GAF scores independently predicted the occurrence of psychiatric disorders among caregivers (p value < 0.003; OR 1.03).

Discussion

The GHQ-12 cut of point of 4 has a Likelihood ratio of 10.2, which implied a probability of 45 % for identifying psychiatric disorders in caregivers. This cut off point has better specificity and predictive values. It also has a better balance of sensitivity and specificity. It shows a better discriminatory power in identifying caregivers with psychiatric morbidity, who have specific psychiatric disorder.

Nearly a quarter of the caregivers had a psychiatric disorder. The commonest psychiatric disorder was Major depressive disorder current. This agrees with previous studies, which have reported significant levels of depression among caregivers of people with schizophrenia [17-19]. In Nigeria, the lifetime and 12-month prevalence of major depressive episode is 3.1% and 1.1% in normal adults [20]. The prevalence in this study population is far above that in normal adults. A possible explanation could lie in the causal relationship between stressful life events and depression [21]. Stressful life events, such as caring for a chronically ill family member, could predispose to depressive disorders. Symptoms of this disorder may go unnoticed as caregivers may attribute them to normal reaction to a stressful event; thus, a delay in seeking timely psychological intervention. In this study, none of the caregivers diagnosed with any psychiatric morbidity was willing to seek further evaluation and treatment. Their reasons for refusal were not explored in this study. Alcohol use disorders were also prevalent among this population of caregivers. Some studies have reported varying severity of alcoholism among caregivers of people with schizophrenia [10, 22, 23]. Caregivers may be predisposed to higher risk of alcohol use disorders due to the negative experiences of caregiving. Alcohol use may be adopted as a maladaptive coping strategy. In Nigeria, alcohol constitutes a major part of the locally formulated medicines for treatment of common ailments [24]. Some of the caregivers may self-medicate their physical and psychological distresses with alcohol.

A low level of psychotic disorder among caregivers was reported in this study. The literature is sparse with information on psychotic disorders in caregivers of persons with schizophrenia. This may be due to lack of routine screening for these disorders in caregivers. Also, caregivers with psychotic disorders may be severely impaired and therefore unable to render caregiving services. Similar to other studies [25-28], we found an occurrence of anxiety disorders among caregivers. The only type of anxiety disorder identified was panic disorder lifetime. The low prevalence reported in this study is similar to findings in Southern Asia [25]. Anxiety disorders in caregivers may arise from worries as regards outcome of the illness of their wards. Caregivers of care recipients with greater illness severity may express anxiety over challenging behaviour associated with the illness of their wards.

Causative factors that may play a role in the development of psychiatric disorders among this population are both biological (genetic predisposition) and environmental (burden of care). We found that being a parent was significantly associated with the occurrence of psychiatric morbidity in the caregivers. First-degree relatives of schizophrenic probands are biologically/genetically similar to their corresponding schizophrenic probands. Thus they are more vulnerable compared to the general population to developing psychiatric disorders [11]. This vulnerability may account for the reported prevalence of psychiatric disorders among them. In addition, environmental factors in form of chronic stressors may also play a causative role. Negative caregiving experiences have been considered a chronic stressor 666 which impacts negatively on the mental health of caregivers [29]. Psychiatric disorders among caregivers have negative impact on the wellbeing of the care recipient and the caregivers. Caregivers may neglect their health needs to the detriment of their health and that of the care recipients. The quality of care rendered may be suboptimal resulting in increased hospitalization, increased cost of care and poor illness outcome in the care recipients.

Table 3: Sensitivity, specificity, Negative predictive value, positive predictive value and likelihood ratio of the GHQ – 12

GHQ Cut Off Points	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	LR
2	77.42 (65.03 - 87.07)	70.47 (63.49 – 76.80)	45.71 (35.95 – 55.72)	90.67 (84.84 – 94.80)	2.62
3	66.13 (52.99 – 77.67)	89.12 (83.85-93.14)	66.13 (52.9 - 77.67)	89.12 (83.85 - 93.14)	6.08
4	58.06 (44.85 - 70.49)	94.3 (90.03 – 97.12)	76.6 (61.97 - 87.70)	87.5 (82.22 - 91.67)	10.19

NPV-Negative Predictive Value; PPV - Positive Predictive Value; LR - Likelihood Ratio

Table 4: Comparison of socio-demographic and clinical characteristics between FDRs with psychiatric disorders and those without psychiatric disorders

Caregiver's variables	P value
Age	0.01
Gender	0.54
Level of education	0.09
Employment status	0.24
Relationship with patient (Parent)	0.002
Currently living with the patient	0.77
Who pays for patient's treatment (caregiver alone)	0.01
Total monthly income spent on care Duration of time spent in caregiving per day	0.78
Patient's variables	
Age	0.02
Gender	0.47
Level of education	0.22
Employment status	0.48
BPRS scores	0.0007
GAF scores	0.0001

gave the best diagnostic accuracy for screening psychiatric morbidity and increased the probability of finding a psychiatric disorder in caregivers by 45 %. Therefore, routine screening of caregivers will aid early diagnosis of psychiatric disorders and enable timely psychological intervention.

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Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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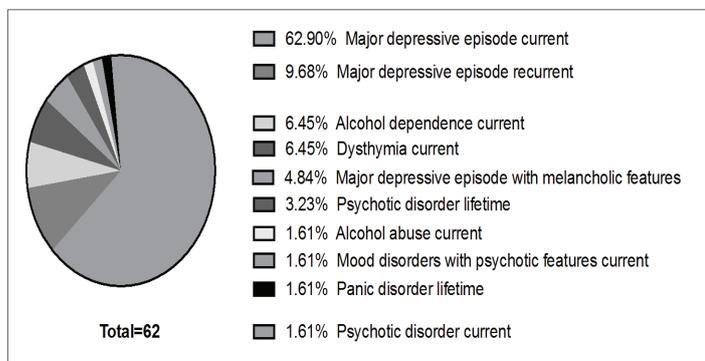


Figure 1: Pattern of Psychiatric Morbidity among Caregivers (First Degree Relatives) of patients with schizophrenia

This study also reported an above average level of functioning (median GAF score of 60) amongst the patients. It will be expected that these individuals will require little or no care. A possible explanation is the fact that mental illness, especially schizophrenia, is a highly stigmatized illness. Individuals experience negative attitudes due to their illnesses leading to job losses and eviction from their homes. Hence their dependence on their relatives for support. Furthermore, the aetiological belief that mental illnesses are of spiritual origin or ancestral curses may contribute to poor treatment adherence. Caregivers, thus have to play a supervisory role of ensuring adherence to treatment.

Conclusion

Psychiatric disorders were prevalent amongst caregivers who are first-degree relatives of schizophrenic probands. GHQ-12 cut-off point of 4

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