Journal of Psychiatry
ISSN: 2378-5756

Bakare et al., J Psychiatry 2015, S:1
DOI: 10.4172/2378-5756..S1-004

Research Article Open Access

Anxiety and Depression: A Study of People with Leprosy In Sokoto, North-Western Nigeria

Abdulfatai T Bakare*, Abdulkarim J Yusuf, Zaharadeen G Habib and Ayodele Obembe

Department of Psychiatry Usmanu Danfodiyo University Teaching Hospital, Sokoto, Department of Psychiatry Ahmadu Bello University Zaria, Kaduna State, Federal Neuropsychiatry Hospital Kware, Sokoto, Nigeria

Abstract

Background: This study was prompted by the heightened reports of anxiety and depression among people with skin diseases in clinical settings.

Aim: To determine the prevalence of anxiety and depression among people with leprosy and identify associated socio-demographic and clinical variables.

Materials and Methods: This is a 2-stage cross-sectional study among leprosy patients living in a leprosy camp in Sokoto, North-Western Nigeria. The instruments used are General Health Questionnaire (GHQ-28) and the Composite International Diagnostic Interview (CIDI). Data were analysed using the 15th version of the Statistical Package for Social Sciences (SPSS 15).

Results: All the 235 participants that met the inclusion criteria were interviewed. Female gender, older age at onset of illness, having no spouse, unemployment, longer duration of illness, shorter years of primary/quranic education and non-completion of the full treatment course of Multiple Drug Therapy (MDT) showed significant association with various psychiatric disorders in this study. Thirty-three (14%) had moderate depressive episode, 13 (5.5%) had severe depressive episode, 45 (19.2%) had generalized anxiety disorder and 21 (8.9%) had mixed anxiety and depressive disorder.

Conclusion: Certain socio-demographic and clinical factors strongly associated with depression and anxiety in people with leprosy.Therefore, the need for psychiatric evaluation among people with leprosy cannot be overemphasized as this will provide holistic approach in the management of the patients.

Keywords: Depression; Anxiety; Leprosy; Nigeria

Introduction

Leprosy or Hansen's Disease (HD) is a chronic disease caused by the bacteria; *Mycobacterium leprae* and *Mycobacterium lepromatosis*. Left untreated, leprosy can be progressive, causing permanent damage to the skin, nerves, limbs and eyes [1]. The diagnostic criterion for Generalized Anxiety Disorder (GAD) and Major Depressive

Episode as defined by the Diagnostic and Statistical Manual of Mental Disorders DSM-5 (2013), published by the American Psychiatric Association are as follow:

Generalized anxiety disorder (GAD)

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).

B. The individual finds it difficult to control the worry.

C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms having been present for more than not for 6 months):

1. Restlessness or feeling keyed up or on edge.
2. Being easily fatigued.
3. Difficulty concentrating or mind going blank.
4. Irritability.
5. Muscle tension.
6. Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep).

D. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

E. The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).

F. The disturbance is not better explained by another mental disorder.

Major depressive episode

A. Five (or more) of the following symptoms have been present during the same 2 week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a general

***Corresponding author:** Abdulfatai T Bakare, Department of Psychiatry, Usmanu Danfodiyo University Teaching Hospital, Sokoto, PMB 2370, Sokoto State, Nigeria, Tel: 07036350127, E-mail: bakare1139@gmail.com

Received April 01, 2015; **Accepted** May 30, 2015; **Published** June 06, 2015

Citation: Bakare AT, Yusuf AJ, Habib ZG, Obembe A (2015) Anxiety and Depression: A Study of People with Leprosy In Sokoto, North-Western Nigeria. J Psychiatry S1: 004 doi: 10.4172/2378-5756.S1-004

medical condition, or mood incongruent delusions or hallucinations.

- Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood.
- Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
- Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.
- Insomnia or hypersomnia nearly every day.
- Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
- Fatigue or loss of energy nearly every day.
- Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
- Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
- Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational or other important areas of functioning.

C. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition. Among all psychiatric disorders anxiety and depression are observed more commonly and their recognition is important in the management of skin diseases [2]. As an organ of emotional importance, evidence has shown higher prevalence of psychiatric disorders among dermatology patients compared to general medical population and healthy controls [3]. A study reported depression to be the most common psychiatric disorder among leprosy patients [4-6]. In a Turkish clinical population, Yazici et al. reported a prevalence of 25% for inpatients and 20% for outpatients with leprosy [7]. Leekassa et al. in Ethiopia also studied the prevalence of mental illness in the outpatient clinic of a specialized leprosy hospital. They reported a prevalence of 52.4% among leprosy patients compared with 7.9% in those with other skin conditions [8]. In Nigeria, Erinfolami and Adeyemi in a case control study reported a prevalence of 58% among leprosy patients and 18.2% among control. Factors associated with psychiatric morbidity among leprosy patients were comorbid physical illness, lack of income, and rejection by family members [9]. Whilst there have been studies on both outpatients and inpatients with leprosy using screening instruments, the current study has focused on isolated leprosy patients living in a camp and both screening and diagnostic instruments were used to make a definite diagnosis of psychiatric disorders among the participants.

Our research hypotheses are (i) there will be no association between socio-demographic variables and psychiatric morbidity. (ii) there will be no association between clinical variables and psychiatric morbidity.

The objectives of the study were to: (i) determine the prevalence of anxiety and depression among people with leprosy, (ii) identify assocciated socio-demographic and clinical variables, and (iii) compare prevalence of anxiety and depression among those who have completed the 24 month treatment regimen for leprosy (MDT) and those who have not.

Materials and Methods

This was a 2-staged, cross-sectional descriptive study that was conducted in a leprosy camp located at Amanawa in Dange Shuni Local Government of Sokoto State, Northwestern Nigeria between March and July 2011. The total population of persons with leprosy living in the camp was 284. The inclusion criteria were as follow: age ≥ 18 years, fluent in Hausa or English language and those who gave consent to participate in the study while the exclusion criteria were age below 18 years, withdrawal of consent and those that could not speak Hausa or English. 245 participants met the inclusion criteria and 10 among them were used in the pilot study. Information was obtained from the participants using a pro-forma questionnaire, a screening instrument (General Health Questionnaire-28) in the first stage and a diagnostic instrument (Composite International Diagnostic Interview) in the second stage. The pro-forma questionnaire was designed to elicit socio-demographic data and clinical variables, such as age at onset of illness, duration of illness and whether patient had completed the Multiple Drug Therapy (MDT) treatment regimen or not. General Health Questionnaire (GHQ) was developed in the 1970s. It is a self-administered screening instrument aimed at detecting the risk of developing psychiatric disorders. There are two methods of scoring the GHQ; the GHQ or binary method (0,0,1,1) and the Likert method (0,1,2,3). For this study the GHQ method of scoring was used and the threshold was taken as 4. The 28 item version used in this study has been standardized and used extensively in Nigeria [10,11]. In the 2nd stage of the study participants were interviewed with anxiety and depression modules of the CIDI. The CIDI is a fully structured diagnostic interview and can generate psychiatric diagnoses according to both the ICD-10 and DSM-IV. The instrument has been used and validated in Nigeria including the National Mental Health Survey [12]. Participants who scored ≥ 4 on GHQ-28 were regarded as having psychiatric morbidity (i.e. ghq-28 cases) and those who scored ≤ 3, were regarded has having no morbidity (ghq-28 non-cases). All participants that were ghq-28 cases and a proportion (10%) of non-cases were interviewed at the 2nd stage by anxiety and depression modules of the CIDI and psychiatric diagnoses were ascribed using International Classification of Diseases-10 (ICD-10). Data were analysed using Statistical Package for Social Sciences (SPSS Version 15) with level of significance set at 5%. Descriptive statistics were completed for all variables. For categorical variables, descriptive statistics included frequency distributions tables (number and percentage). The chi square(x^2) or fisher's exact test (in cases with cells of expected value less than 5) and odd ratio were employed to evaluate the associations between variables and psychiatric disorder. For continuous variables, means and standard deviations (SD) were computed. Independent sample t-test was used to compare means of quantitative variables between cases and non-cases generated by CIDI. The dependent variables in this study were presence of anxiety and depressive disorders while the independent variables were the socio-demographic and clinical variables. Kappa statistic was also determined to measure the levels of agreement between the GHQ and CIDI.

Results

All the two hundred and thirty five (235) participants completed the first stage interview representing 100% response rate. Their mean age was 50.9 ± 16.3 (range 20-100 years). Nearly two-thirds (n=153, 65.1%) are females. The socio-demographic details of the respondents were shown in Table 1.

Table 2 showed the clinical characteristics of the respondents. The mean age at onset of illness was 28.8 ± 16.4 (range 2-76 years). The mean duration of illness was 22.4 ± 11.62 (range 1-55 years). Nearly two-thirds (n=154, 65.5%) of the respondents had completed the full course of 24 month treatment regimen of Multiple Drug Therapy (MDT) for leprosy.

Prevalence of Psychiatry Morbidity

The mean GHQ score was 10.8 ± 7.9 (range 0-28). One hundred and sixty-three (69.4%) of the respondents had GHQ score of 4 and above (ghq-28 cases) while 72 (30.6%) scored below 4 (ghq-28 non cases).

The overall prevalence of psychiatric disorders generated by CIDI was 47.7%. The prevalence of various disorders were shown in Table 3.

Factors Associated with Depression and Anxiety Disorders

The prevalence of CIDI generated psychiatric disorders among the female respondents was 63.4% and 18.3% among the males. The observed difference was statistically significant (x^2=43.54, p<0.001) as more female patients were likely to have psychiatric morbidity.

Table 4 showed that having no spouse was significantly associated with depressive episode (x^2=5.06, p=0.025) as well as mixed anxiety and depressive disorder (x^2=11.30, p<0.001).

Table 5 showed that unemployment was significantly associated with moderate depressive episode (x^2=8.16, p=0.043). Older age at onset of illness was significantly associated with generalized anxiety disorder (x^2=10.74, p=0.013).

Table 6 showed that longer duration of illness was significantly associated with moderate depression (x^2=23.65, p<0.001) and generalized anxiety disorder (x^2=22.92, p<0.001).

Table 7 showed that there was a significant association between treatment status and having diagnosis of psychiatric disorder (p<0.001, OR=0.35, 95% CI 0.19-0.63). Cases of psychiatric morbidity were

Parameters	Frequency (%)
Age	
20-24	12 (5.1)
25-34	31 (13.2)
35-44	37 (15.7)
45-54	47 (20.0)
55-64	50 (21.3)
65 and above	58 (24.7)
Total	235 (100)
Gender	
Male	82 (34.9)
Female	153 (65.1)
Total	235 (100)
Marital status	
Never Married	19 (8.1)
Married	133 (56.6)
Divorced Widowed	33 (14.0) 50 (21.3)
Total	235 (100)
Fertility Status	
Having children	202 (86.0)
Not having children	33 (14.0)
Total	235 (100)
Educational level	
No schooling	11 (4.7)
Primary/Quranic	224 (95.3)
Total	235 (100)
Years of quranic education	
No education	11 (4.7)
1-10	183 (77.9)
11-20	24 (10.2)
21-30	12 (5.1)
31-40	3 (1.3)
41-50	1 (0.4)
51 and above	1 (0.4)
Total	235 (100)
Occupation	
Unemployed	93 (39.6)
Skilled agriculture, forestry and fishery workers	32 (13.6)
Craft and related trade workers	79 (33.6)
Elementary occupations (cleaners, refuse workers, food preparation assistants)	31 (13.2)
Total	235 (100)

Table 1: Sociodemographic characteristics of the respondents.

Clinical Variables	Frequency (%)
Estimated age at onset of illness	
1-10	36 (15.3)
11-20	55 (23.4)
21-30	53 (22.6)
31-40	48 (20.4)
41-50	16 (6.8)
51-60	14 (6.0)
61 and above	13 (5.5)
Total	235 (100)
Duration of illness	
1-10	41 (17.4)
11-20	78 (33.2)
21-30	67 (28.5)
31-40	43 (18.3)
41and above	6 (2.6)
Total	235 (100)
Treatment status*	
Completed	154 (65.5)
Still on treatment	81 (34.5)
Total	235 (100)

Table 2: Clinical characteristics of the respondents.

CIDI Diagnosis	Frequency (%)
Not administered CIDI	65 (27.7)
Non cases	58 (24.7)
Moderate depressive episode	33 (14.0)
Severe depressive episode	13 (5.5)
Generalized anxiety disorder	45 (19.2)
Mixed anxiety and depressive disorder	21 (8.9)
Total	235 (100)

Table 3: Prevalence of specific diagnosis using CIDI.

CIDI Diagnosis	Cases *f*(%)	Non Cases *f*(%)	Total *f*(%)	Significance Test
Moderate depressive episode				
Having spouse	16 (11.3)	126 (88.7)	142 (60.4)	x^2=1.74 df=1 p=0.19
No spouse	17 (18.3)	76 (81.7)	93 (39.6)	
Total	33 (14.0)	202 (86.0)	235 (100)	
Severe depressive episode				
Having spouse	4 (2.8)	138 (97.2)	142 (60.4)	x^2=5.06 df=1 p=0.025
No spouse	9 (9.7)	84 (90.3)	93 (39.6)	
Total	13 (5.5)	222 (94.5)	235 (100)	
Mixed anxiety and depressive Disorder				
Having spouse	5 (3.5)	137 (96.5)	142 (60.4)	x^2=11.30 df=1 p<0.001
No spouse	16 (17.2)	77 (82.8)	93 (39.6)	
Total	21 (8.9)	214 (91.1)	235 (100)	

Table 4: Prevalence of different disorders by marital status.

CIDI Diagnosis	Cases *f*(%)	Non Cases *f*(%)	Total *f*(%)	Significance Test
Moderate depressive episode				
Employed	12 (8.5)	130 (91.5)	142 (60.4)	x^2=8.16
Unemployed	21 (22.6)	72 (77.4)	93 (39.6)	df=1
Total	33 (14)	202 (86.0)	235 (100)	p=0.042
Severe depressive episode				
Employed	4 (2.8)	138 (97.2)	142 (60.4)	x^2=3.83
Unemployed	9 (9.7)	84 (90.3)	93 (39.6)	df=1
Total	13 (5.5)	222 (94.5)	235 (100)	p=0.05
Generalized anxiety disorder				
Employed	26 (18.3)	116 (81.7)	142 (60.4)	x^2=0.05
Unemployed	19 (20.4)	74 (79.2)	93 (39.6)	df=1
Total	45 (19.2)	190 (80.8)	235 (100)	p=0.82
Mixed anxiety and depressive disorder				
Employed	10 (7.0)	132 (93.0)	142 (60.4)	x^2=1.05
Unemployed	11 (11.8)	82 (88.2)	93 (39.6)	df=1
Total	21 (8.9)	214 (91.1)	235 (100)	p=0.31

Table 5: Association between Psychiatric disorders and occupational status.

CIDI Diagnosis	Cases *f*(%)	Non Cases *f*(%)	Total *f*(%)	Significance Test
Moderate depressive episode				
1-10	2 (4.9)	39 (95.1)	41 (17.5)	x^2=23.65 df=3 p<0.001
11-20	3 (3.8)	75 (96.2)	78 (33.2)	
21-30	20 (29.9)	47 (70.1)	67 (28.5)	
31 and above	8 (16.3)	41 (83.7)	49 (20.8)	
Total	33 (14.1)	202 (85.9)	235 (100)	
Severe depressive episode				
1-10	2 (4.9)	39 (95.1)	41 (17.5)	x^2=4.64 df=3 p=0.19
11-20	2 (2.6)	76 (97.4)	78 (33.2)	
21-30	7 (10.4)	60 (89.6)	67 (28.5)	
31 and above	2 (4.1)	47 (95.9)	49 (20.8)	
Total	13 (5.5)	222 (94.5)	235 (100)	
Generalized anxiety disorder				
1-10	4 (9.8)	37 (90.2)	41 (17.5)	x^2=22.92
11-20	10 (12.8)	68 (87.2)	78 (33.2)	df=3
21-30	10 (14.9)	57 (85.1)	67 (28.5)	p<0.001
31 and above	21 (42.9)	28 (57.1)	49 (20.8)	
Total	45 (19.2)	190 (80.8)	235 (100)	
CIDI Diagnosis	**Cases *f*(%)**	**Non Cases *f*(%)**	**Total *f*(%)**	**Significance Test**
Mixed anxiety and depressive disorder				
1-10	4 (9.8)	37 (90.2)	41 (17.5)	x^2=2.26
11-20	4 (5.1)	74 (94.9)	78 (33.2)	df=3
21-30	8 (11.9)	59 (88.1)	67 (28.5)	P=0.52
31 and above	5 (10.2)	44 (89.8)	49 (20.8)	
Total	21 (8.9)	214 (91.1)	235 (100)	

Table 6: Prevalence of different disorders by duration of illness.

CIDI Diagnosis	Cases *f*(%)	Non Cases *f*(%)	Total *f*(%)	Statistics
Completed Treatment	59 (38.3)	95 (61.7)	153 (65.5)	x^2=14.27 df=1 p<0.001 O.R=0.35 95% CI(0.19-0.63)
Still on Treatment	52 (64.2)	29 (35.8)	81 (34.5)	
Total	111 (47.2)	124 (52.8)	235 (100)	

Table 7: Association between treatment status and psychiatric disorder.

Variables	CIDI Diagnosis	Mean	Statistics
Age	Cases	54.14 (5.22)	t=2.909
	Non cases	48.01 (16.81)	p=0.004
Years of education	Cases	5.74 (5.69)	t=5.191
	Non cases	11.35 (9.94)	p<0.001
Estimated age at onset of illness	Cases	27.15 (15.70)	t=1.44
	Non cases	30.26 (17.00)	p=0.150
Duration of Illness	Cases	27.53 (10.10)	t=6.893
	Non cases	17.90 (11.15)	p<0.001

Table 8: Comparison of means of quantitative variables between cases and non-cases generated by CIDI.

less likely (38.3%) among patients who had completed their leprosy treatment compared to 64.2% cases among those that were still on treatment.

The independent sample t-test showed that the mean age was significantly higher among participants with psychiatric diagnosis (t=2.909, p=0.004). The mean years of primary/quranic education was significantly higher among non-cases 11.35 ± 9.94 compared with cases with average years of 5.74 ± 5.69 (t=5.19, p<0.001). There was no significant difference in mean estimated age at onset of illness between the two groups (t=1.44, P=0.150). The mean duration of illness among cases was significantly higher (27.43 ± 10.10) compared with non-cases 17.90 ± 11.146 (t=6.89, p<0.001) as shown in Table 8.

In the measurement of agreement between GHQ and CIDI diagnosis, the kappa statistic value is 0.57 and it is significant (p<0.001).

Discussion

The higher prevalence of psychiatric morbidity measure by GHQ-28 is comparable to the findings of Owoeye et al. in a study of psychological distress among attendees of a dermatological clinic using the subscale of Symptom Checklist-90-Revised (SCL-90-R) [13]. Erinfolami and Adeyemi reported a lower prevalence rate (58%) among leprosy patients [9]. Aktan et al. also reported a lower prevalence rate of 33.4% in contrast to the finding in this study using GHQ-12 questionnaire [14]. The higher prevalence in this study compared with other studies could be as a result of the difference in the population. In this study, the subjects live in an isolated environment, a leprosy camp, compared to other studies that used outpatients attending dermatology clinic. Leprosy patients living in camp are more likely to be emotionally disturbed, because most of them have no access to their immediate family for a long period of time as a result of rejection. The CIDI confirmed that 47.7% of the total respondents had psychiatric disorder compared to 69.4% using the GHQ-28. This is expected because GHQ is a screening instrument. This is consistent with the findings of Verma and Gautam where they reported prevalence of 84% using GHQ and a lower rate of 76% of patients were reported to be suffering from psychiatric illness when a diagnostic instrument (Indian Psychiatric Interview Schedule) was used for patients that scored 12 and above in GHQ [15]. Psychiatric disorder among leprosy patients may arise as a complication or a consequence of a primary skin disease, in reaction to disfigurement, perceived social stigma or undesirable changes in life-style and living conditions, divorce, high rates of unemployment and displacement from their areas of residence [8]. In our study, depression was the commonest disorder among the participants. This is consistent with the findings of Owoeye et al. where depression and suicide were the most common comorbidities among attendees of a dermatological clinic [13]. Siagian et al. also reported similar finding [16-18]. Contrary to the findings in this study, Aslam et al. reported higher rate of anxiety symptoms (28%) compared with depressive symptoms which was 20% using Hospital Anxiety and Depression Scale (HADS). Though, the samples used in their study comprise patients with various skin conditions like leprosy, psoriasis, acne, eczema all tending to be extensive, chronic, and disfiguring [19]. Chronic neuropathic pain which occur in leprosy has a strong association with depression and quality of life comorbidities, including circadian rhythm disturbances [20]. Leprosy patients living in isolated camp are at greater risk of depression because they have been displaced from place of abode as a result of desire to stay away from people/kingship because of the embarrassment they experience or due to outright rejection by those they normally live with because of the perceived infectivity of the illness. In some societies in Nigeria, leprosy patients are completely banished from the community. A typical example is Igbo community. The finding of higher prevalence of psychiatric morbidity in women compare to men is consistent with previous studies [21,22]. This is also in agreement with the finding that in general population depressive disorder and anxiety disorders are more frequent in women than in men [23]. The finding in this study contradicts the finding of Arbabi et al., they reported no correlation between psychiatric morbidity and the patients' sex [24]. Owoeye et al. also reported a contradictory finding using Index of Self-Esteem (ISE) and subscales C, D, and J of Symptom Checklist-90 Revised (SCL-90-R) to assess emotional distress among patients with chronic dermatological problems [13]. The increased psychological vulnerability among the female patients might be related to higher impact on self-esteem on changes in body image among women compared to men. This interpretation is corroborated by recent studies pointing out that women are more interested in appearance and less satisfied with their body image compared to men [25]. Several factors may increase a woman's risk of depression; some of these are; coping with menstrual cycles, pregnancy, menopause, the prevalence of victimization of women and the tendency of women to ruminate over their problems [26,27]. This study revealed that age of the patients (young or old) was not significantly associated with both depressive and anxiety disorder. This contradicts the findings of Leekasa et al. who reported a 3-fold increased risk of mental distress among older (60 years and above) leprosy patients compared to patients with lower age group (15-25 years) [9]. Having no spouse was significantly associated with severe depressive episode and mixed anxiety and depressive disorder. This agrees with the finding of Verma et al. Our finding is also consistent with the what was reported by Horwath and Weissman in which female sex, having no spouse, unemployment were significantly associated with anxiety disorders [23].In contrast to the finding of this study, Arbabi et al. [17,28] reported that comorbid mental disorder in leprosy patients was higher among married subjects in comparison to single subject. Marital, fertility and occupation status had no significant association with diagnosis of generalized anxiety disorder among leprosy patients in the study. Picardi et al. also reported no significant association between, age, marital status or educational level and psychiatric morbidity [22]. With the understanding that mental health is created within a bio-psycho-social context, marriage may have a wide range of benefits, including improvements in individuals' mental, physical health and general the well-being. The relative disadvantage of women in a patriarchal society such as in Nigeria puts women at higher

risks of experiencing stress and depression. Women with leprosy encountered more problems in daily life, mainly due to stigma. It is difficult for women affected with leprosy to find a partner, except in cases where the partner is also affected by leprosy. The main reason is that people consider leprosy a hereditary disease, so healthy people are afraid of a descendent with leprosy [29]. Leprosy can disturb sexual intimacy and cause negative consequences in the family. This may lead to a breakdown of the family and social relationships. Reports of marital stress caused by leprosy varied according to gender roles. For women, leprosy may result in decreased interest in sex, either because of their own lack of interest or because of self-rejection. The sporadic refusal of women to engage in sexual intimacy may be due to physical exhaustion of excessive work, coupled with fatigue, and often led men to divorce their wives [30]. Moderate depressive episode was significantly associated with unemployment. This agrees with the finding in a study by Verma et al. where they reported a significant association between psychiatric symptoms and unemployment [17]. Most of the patients had only quranic education. The finding in this study was corroborated by the studies of Tsutsumi et al. and Withington et al. which showed that majority of leprosy patients do not have western education [31,32]. When the means of years of quranic education were compared, shorter duration of years of quranic education was significantly associated with having a psychiatric disorder among leprosy patients. In a study of patients with severe mental illness, it was reported that 47% of these patients indicated that spirituality/religion had helped "a great deal" in coping with their illness [33]. The probable increased in religious observances and spirituality like devotional scripture reading, worship and prayer in leprosy patients with longer years of quranic education could explain why psychiatric morbidity are less likely. Older age at onset of illness and longer duration of illness showed significant association with generalized anxiety disorder. In contrast, Bhatia et al. reported no significant association between longer duration of illness and psychiatric morbidity [16] Ginsberg and Link also reported that patients with older age at onset of skin disease have lower sensitivity to other's opinions, anticipated rejection, and feelings of guilt and shame with lower risk of developing psychiatric disorders. Literature findings so far have been controversial regarding the relationship between the duration of leprosy and psychiatric morbidity. Kumar et al. found that patients who were sick for a longer duration and those who developed physical deformities were found to be more prone to psychiatric disturbances. Erinfolami et al. in Nigeria also reported that longer duration of illness was significantly related to the presence of psychiatric morbidity [14]. These controversial findings in various studies could be due to the fact that the duration of illness is usually determined by inquiring from the patients and their families, in which there is possibility of recall bias [9]. In this study, respondents that were yet to complete the full course of leprosy treatment (MDT, which usually last for average duration of two years) were more likely to have psychiatric morbidity. The odd ratio showed that diagnosis of psychiatric disorder is less likely among subjects that have completed their full course of leprosy treatment. This could be due to the fact that, patients that have completed their treatment noticed a positive change in the progression of the disease which gave them some assurance that leprosy is actually curable. Those patients that are still on treatment could have considered leprosy as a constant threat due to uncertain outcome of treatment. The kappa statistic value in this study is 0.57 with $p<0.001$. This measure of agreement, while statistically significant, the value indicates a moderate agreement between the GHQ and CIDI. This level of agreement is expected since GHQ is a screening instrument while the CIDI is a diagnostic instrument. Some limitations should be noted in this study. This study was conducted among leprosy patients living in leprosarium camp and therefore, may not be representative of individuals with leprosy in northern Nigeria. The cross-sectional design of this study does not allow causal inferences to be drawn. However, it is adequate for detecting associations, and some easily noticeable variables associated with an increased frequency of psychiatric disorders in leprosy patients have been identified. Further prospective studies are needed to examine the direction of any causal link. The information provided by participants might be fraught with recall bias, for examples, the age of respondents and duration of illness. This study has drawn further attention to the presence of depression and anxiety disorder among patients with leprosy. In this study, the occurrence of these disorders were significantly associated with female gender, older age, having no spouse, longer duration of illness, shorter years of primary/quranic education, and younger age at onset of illness. Completion of the 24-month treatment regimen for leprosy with probable better outcome of treatment seems to be a protective factor in this study. Identification and appropriate management of psychiatric comorbidity is therefore particularly important. Dermatologists should be alert to the possibility of a comorbid psychiatric disorder among leprosy patients. Increased understanding of biopsychosocial approaches and liaison among primary care physicians, psychiatrists, and dermatologists could be very useful and highly beneficial.

References

1. Kenneth J, Ryan C, George R (2004) Sherris Medical Microbiology (4th edition) McGraw Hill 451-453.
2. Gupta MA, Gupta AK (2003) Psychiatric and psychological comorbidity in patients with dermatological disorders. Am J Clin Dermatol 4: 833-42.
3. Hughes JE, Barraclough BM, Hamblin LG, White JE (1983) Psychiatric symptoms in dermatology patients. Br J Psychiatry 143: 51-54.
4. Senturk Y, Sagduyu A (2004) Psychiatric disorders and disability among leprosy patients: A review. Turk Psikiyatri Derg 15: 236-243.
5. Kisivuli AJ, Othieno CI, Mburu JM, Kathuku DM, Obondo A (2005) Psychiatric morbidity among leprosy patients in Teso and Busia districts of western Kenya. East Afr Med J 82: 452-456.
6. Cotteril JA, Cunliffe WJ (1997) Suicide in dermatological patients. Br J Dermatol 137: 246-250.
7. Yazici O, Satir F, Oto R (1984) An investigation on mental disorders in leprosy patients. Indian Dermatol Online J 11: 131-139.
8. Leekassa R, Elizabeth B (2004) Prevalence of mental distress in outpatient clinic of a specialized leprosy hospital. Lepra Rev 75: 365-375.
9. Erinfolami AR, Adeyemi JD (2009) A case control study of psychiatric morbidity among subjects with leprosy in Lagos, Nigeria. Int J Psychiatry Med 39: 89-99.
10. Aderibigbe YA, Gureje O (1992) The validity of the 28-item general health questionnaire in a Nigeria antenatal clinic. Soc Psychiatry Psychiatr Epidemiol 27280-283.
11. Aderibigbe YA, Riley W, Lewin T, Gureje O (1996) Factor structure of the 28-item general health questionnaire in a sample of antenatal woman. International Journal of Psychiatry in Medicine 26: 263-269.
12. Villasenor Y, Waitzkin H (1999) Limitation of a Structured Psychiatric Diagnostic Instrument in assessing somatization among Latino Patients in primary care. Med Care 37: 637-646.
13. Owoeye OA, Aina OF, Omoluabi PF, Olumide YM (2009) Self-esteem and Suicidal Risk among Subjects with Dermatological Disorders in a West African Teaching Hospital. JIMA 41: 64.
14. Aktan S, Ozmen E, Sanli B (1998) Psychiatric disorders in patients attending a dermatology outpatient clinic. Dermatology 197: 230-4.
15. Verma KK, Gautam S (1994) Effect of rehabilitation on the prevalence of psychiatric morbidity among leprosy patients. Indian J. Psychiat 36: 183-186.

16. Siagian JM, Carla R (2009) Marchira, Agnes, S Siswati. The influence of stigma and depression on quality of life of leprosy patients. Maret 41: 33-40.

17. Aslam R, Altaf Q, Faria A (2007) Psychiatric morbidity in dermatological outpatients: an issue to be recognized. Br J Dermatol 17: 235-23.

18. Nuhu FT, Odejide OA, Adebayo KO, Adejumo O (2009) Severity and socio-demographic correlates of depression among cancer patients admitted in a Nigerian Teaching Hospital. Nigerian Journal of Psychiatry 7: 26-30.

19. Picardi A, Abeni D, Melchi CF, Puddu P, Pasquini P (2000) Psychiatric morbidity in dermatological outpatients: an issue to be recognized. Br J Dermatol 143: 983-991.

20. Picardi A, Damiano A, Cristina R, Braga M (2001) Increased Psychiatric Morbidity in Female Outpatients with Skin Lesions on Visible Parts of the Body. Acta DermVenereol 81: 410-414.

21. Horwath E, Weissman MM (1995) Epidemiology of depression and anxiety disorders In: Tsuang MT, Tohen M, Zahner GEP, editors. Textbook in psychiatric epidemiology. New York: John Wiley & Sons 313-344.

22. Picardi A, Damiano A, Cristina R, Braga M (2001) Increased Psychiatric Morbidity in Female Outpatients with Skin Lesions on Visible Parts of the Body. Acta Derm Venereol 81: 410-414.

23. Smith DE, Thompson JK, Raczynski JM, Hilner JE (1999) Body image among men and women in a biracial cohort: the CARDIA Study. Int J Eating Disord 25: 71-82.

24. Roesler TA, McKenzie N (1994) "Effects of childhood trauma on psychological functioning in adults sexually abused as children. J Nerv Ment Dis 182: 145-150.

25. Nolen-Hoeksema S (1990) Sex Differences in Depression. Stanford, CA: Stanford University Press.

26. Arbabi M, Naista Z.,Zahra S (2009) Psychiatric Comorbidity and Quality of Life in Patients with Dermatological Diseases. Iran J Psychiatry 4: 102-106.

27. Raju MS, Kopparty SNM (2009) Impact of knowledge of leprosy on the attitude towards leprosy patients: a community study. Indian J Lepr X 57: 620-623.

28. Mirowsky J, Ross CE (1992) Age and depression. J Health Soc Behav 33: 187-205.

29. Tsutsumi A, Izutsu T, Islam MDA (2004) Depressive status of leprosy patients in Bangladesh: Association with self perception of stigma. Lepr Rev 75: 57-66.

30. Winthington SG, Joha S, Brink M, Brink J (2003) Assessing socio-economic factors in relation to stigmatization, impairment status, and selection for socio-economic rehabilitation; a 1-year cohort of new leprosy cases in Northern Bangladish. Lepr Rev 74: 120-32.

31. Lindgren KN, Coursey RD (1995) Spirituality and serious mental illness: a two-part study. Psychosocial Rehabilitation Journal 8: 93-111.

32. Ginsburg IH, Link BG (1989) Feelings of Stigmatization in Patients with Psoriasis. J Am Acad Dermatol 20: 53-63.

33. Kumar JH, Verghese A (1980) Psychiatric disturbance among leprosy patients, an epidemiological study. Int J Lepr Other Mycobact Dis 48: 431-434.