

# Psychiatric Morbidity among Subjects with Leprosy and Albinism in South East Nigeria: A Comparative Study

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## Abstract

**Background:** Skin, which is the largest organ in the body, carries immense psychological significance. Disfiguring skin disorders may impact negatively on the mental health of individuals. **Aim:** This study compared the psychiatric morbidity of subjects with leprosy and albinism. **Subjects and Methods:** One hundred subjects with leprosy and 100 with albinism were interviewed. Sociodemographic questionnaire and General Health Questionnaire (GHQ-28) assessed the sociodemographic characteristics and psychiatric morbidity, respectively. GHQ positive cases and 10% of noncases for each group were interviewed with Mini International Neuropsychiatric Inventory for specific ICD-10 diagnoses. **Results:** Fifty-five percent (55/100) subjects with leprosy were GHQ positive cases while 41% (41/100) with albinism were GHQ positive cases. The risk of developing psychiatric morbidity was significantly higher in subjects with leprosy than in subjects with albinism (OR = 1.76, CI = 1.00 – 3.08,  $P = 0.04$ ). The prevalence of specific psychiatric disorders among subjects with leprosy were depression 49% (49/100), generalized anxiety disorder (GAD) 18% (18/100), alcohol/drug abuse 16% (16/100), whereas in albinism depression was 51% (51/100), GAD 27% (27/100), and alcohol/drug abuse 7% (7/100). Male, married and uneducated subjects with leprosy had significantly higher psychiatric morbidity than the male, married and uneducated subjects with albinism, respectively. **Conclusion:** Psychiatric morbidity was higher in subjects with leprosy than in subjects with albinism. Male, married and uneducated subjects with leprosy significantly had higher morbidity than male, married and uneducated subjects with albinism respectively.

**Keywords:** Albinism, Leprosy, Psychiatric morbidity

## Introduction

Disfiguring skin disorders like leprosy and albinism may pose some psychological consequences as they have negative impact on a patient's body image and often lead to stigmatization.<sup>[1,2]</sup> Psychiatric disorders are frequent among patients with skin disorders.<sup>[3]</sup> Epidemiological studies have reported prevalence rates of psychiatric morbidity in dermatological out-patients in India as 25–43%.<sup>[4]</sup> It has also been noted that the psychological

and social aspects of leprosy are important.<sup>[5]</sup> Leprosy, being a chronic infectious disease with profound social stigma, remains associated with high psychological morbidity.<sup>[6]</sup>

Yamaguchi *et al.*<sup>[7]</sup> carried out a cross-sectional study on leprosy in Nepal. They compared the effects of parental leprosy on the well-being of adolescent children. The authors compared 102 adolescents with leprosy-affected parents and those with parents unaffected by leprosy. They found that adolescents with leprosy-affected parents had a higher level of depressive symptoms and lower levels of self-esteem compared with adolescents whose parents were not affected by leprosy. Owoeye *et al.*<sup>[8]</sup> carried out a study on 80 attendees at the dermatology clinic of Lagos University Teaching Hospital, Nigeria, with skin diseases of up to 6 months duration. An equal number of apparently healthy controls matched for age and sex were also evaluated. The results showed that the

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subjects with leprosy had lower self-esteem, increased risk of depression and suicide.

Neely *et al.*<sup>[9]</sup> carried out a comparative study of the psychiatric morbidity of four disfiguring skin diseases (leprosy, psoriasis, chronic urticaria and lichen planus) in 30 new untreated patients aged 18–60 years, using General Health Questionnaire (GHQ-H) (Hindi version). The study was carried out in the Dermatology Department of Sucheta Kriplani Hospital, New Delhi, India. The authors reported that the overall prevalence of psychiatric morbidity was 39%. Depression and Anxiety were 13% and 10.6% respectively.

Verma and Gautam<sup>[10]</sup> also in New Delhi, India, carried out a study to determine the psychiatric morbidity of 100 subjects with leprosy, made up of 46 who were rehabilitated vocationally and 54 who were not rehabilitated and staying in a slum area. He used GHQ-30 and psychiatric interview schedule. He found the psychiatric morbidity to be 85% among the nonrehabilitated patients and 68% among the rehabilitated patients. Depression was 67% in the nonrehabilitated patients and 41% in the rehabilitated patients.

In South Africa, a study reported that responses to the leprosy diagnosis included feelings of rejection, worthlessness, guilt, confusion, fear, grief and anger, with 11 of 30 patients interviewed reporting suicidal thoughts. One third of the black subjects with leprosy he studied were found to have contemplated suicide after the diagnosis.<sup>[11]</sup> Another study reported the response to diagnosis of leprosy to include fear, disgust, loneliness, grief, aggressiveness, anger, family and social rejection. The author equally documented that major depression was the most frequent diagnosis.<sup>[12]</sup> In another study from the Hansen's disease Centre in Carville Louisiana (USA) by Noordeen,<sup>[13]</sup> depression and anxiety were emphasized, attributing them to some irritating lesions of the nervous system brought in by toxin. Jamison,<sup>[14]</sup> working at the same center a decade later also favored an organic explanation suggesting that the psychopathology noticed resulted from bacterial invasion of central nervous system.

In a study in India, Bharatt *et al.*<sup>[15]</sup> compared the psychiatric morbidity in leprosy with psoriasis in a clinic setting and found that the prevalence of psychiatric morbidity was less in subjects with leprosy (12.25%) than those with psoriasis (47.6%). In another study done in a clinic in Ethiopia by Leekassa *et al.*,<sup>[16]</sup> it was found that the psychiatric morbidity among people with leprosy was 52.4%, compared to 7.9% in those with other skin diseases. Tsutsumi *et al.*<sup>[17]</sup> in Bangladesh carried out a study to determine the general mental health of subjects with leprosy compared with the general population. The authors also evaluated contributing factors such as socioeconomic characteristics and perceived stigma. A total of 189 patients and 200 controls without leprosy or other chronic diseases were selected. The authors reported that the general mental health scores of subjects with leprosy were lower than those of

the controls. In Rome Italy, Angelo *et al.*<sup>[3]</sup> carried out a cross sectional study to identify factors associated with psychiatric morbidity in the dermatological out patients' clinic involving 389 patients, using GHQ-12. The prevalence of psychiatric morbidity was 20.6%. They also found higher probability of psychiatric disorders in women. In women, but not in men, the prevalence of psychiatric morbidity was higher in patients with lesions on the face or hands.

Erinfolami and Adeyemi,<sup>[18]</sup> in a study of psychosocial correlates of subjects with leprosy in Lagos, Nigeria reported a prevalent rate of psychiatric morbidity of subjects with leprosy to be 36.7% as against 16.7% in the general population and 13.5% in patients with tinea versicolor. The psychiatric disorders found in the study were mainly depressive disorder (35.5%), anxiety disorder (20.8%) and schizophrenia (1%).

It is conceivable that a condition like albinism may be associated with enormous mental distress, given the stance in Africa where virtually all illnesses are attributed to supernatural causes. Albinism affects mental health and social functioning mainly due to the social discrimination and stigmatization directed towards the subjects with albinism.<sup>[19]</sup> In Israel, Gavron *et al.*,<sup>[20]</sup> in a study of 43 students with albinism and 43 students without albinism, using the Tennessee Self-Concept Scale and the State-Trait Anxiety Inventory reported no significant difference in self-concept scores between the 43 students with albinism and the matched controls. However, differences were reported within the group of those with albinism, in which boys were identified as having lower self-concept scores than girls. Also, the authors reported that boys with albinism, especially young boys, presented higher levels of trait anxiety than girls with albinism.

There have been descriptions of some psychiatric conditions associated with albinism. Case reports include two boys with tyrosinase-positive oculocutaneous albinism who also had moderate mental retardation and autism.<sup>[21]</sup> Baron<sup>[22]</sup> reported about 22 members of a family of Yemenite-Jewish origin. Five members had both oculocutaneous albinism and schizophreniform psychosis, one albino member had schizophrenia, and other members had neither albinism nor a history of psychotic illness. Pollack and Manschreck<sup>[23]</sup> have reported that both albinism and schizophrenia might be expected to coexist in about 80 people per 370 million of the general population. The co-existence of albinism and schizophreniform disorders has been presumed to be rare, although single cases have been reported.<sup>[24-26]</sup> In Enugu, South East Nigeria, Bakare and Ikegwuonu<sup>[27]</sup> reported a case of autism in a 13-year-old boy with oculocutaneous albinism. The observation in this case report and in the previous reports which documented association between oculocutaneous albinism and childhood autism both in the affected individuals and families of individuals with childhood autism, raises the question of a possible genetic and clinical association between oculocutaneous albinism and childhood autism. In another case

report, Kelly<sup>[28]</sup> reported the co-existence of a yellow mutant albinism and anorexia nervosa in an adolescent woman.

Beatie and Lewis-Jones<sup>[29]</sup> had posited that recognizing the link between the physical and psychological health allows us to develop a more holistic approach to patient care. By determining the psychiatric morbidity of subjects with leprosy or albinism and in corroboration, dermatologists and psychiatrists can develop a comprehensive care for them. Therefore, this study was designed to investigate the psychiatric morbidity of the subjects with leprosy and subjects with albinism and ascertain the sociodemographic correlates.

## Subjects and Methods

### Study setting

The study was conducted at Mile Four Specialist Hospital (Leprosarium), Abakaliki, Ebonyi State, and The Albino Foundation (TAF) Centre, Enugu, Enugu State, both in the South East Nigeria.

### Mile Four Specialist Hospital (Leprosarium), Abakaliki

This is located at the fourth mile along the old Abakaliki-Enugu Road in Abakaliki, Ebonyi State in South East Nigeria. It was established in 1946 by the Medical Missionaries of Mary. There are about 800 patients with leprosy receiving treatment there, made up of 200 inpatients and 600 out patients. The clinic days are on Monday, Wednesday and Friday. The hospital was expanded to treat pregnant women and children, both within and outside the leprosy village as the wives of patients with leprosy were becoming pregnant. The hospital also treats tuberculosis and HIV patients. Treatment for leprosy, HIV and tuberculosis is free.

### The albino foundation

This is a Non-Governmental Organization, committed to addressing the plight of subjects with albinism and to change negative mind-sets and sociocultural stereotypes about albinism in Nigeria and the world. It was founded in Nigeria by Mr. Jakes Epelle in the year 2006. It has its national headquarter in Abuja and branches in 26 States of the Federation. Enugu is the zonal headquarter of the South East Zone. It has a liaison office at the Dermatology Clinic, Enugu State University Teaching Hospital. It is supervised by a consultant dermatologist. The Enugu State branch has about 200 registered subjects with albinism as members. It holds a monthly meeting in Enugu and is also visited every Wednesday by a consultant dermatologist and an optometrist.

### Ethical issues

Ethical clearance was obtained from the ethical committees of Mile Four Specialist Hospital Abakaliki in Ebonyi State and TAF, Enugu State respectively. Written informed consent was also obtained from every participant in this study.

### Participants

Two hundred participants were interviewed, 100 subjects with leprosy and 100 with albinism respectively. Subjects diagnosed of leprosy by a dermatologist and were receiving treatment at the Mile Four Specialist Hospital, Abakaliki, in Ebonyi State were the first group. Subjects with albinism and were registered members of TAF in Enugu State were the second group. Furthermore, only subjects aged 18-years and above were interviewed. Individuals with co-morbid albinism and leprosy, patients with severe cognitive impairment, those who were too ill and participants who objected to giving informed consent were excluded from the study.

### Instruments for the study

Sociodemographic Questionnaire, GHQ-28 and Mini-International Neuropsychiatric Interview (MINI) were used.

#### *The sociodemographic questionnaire*

This was designed to provide information about the respondent's age, gender, marital status, occupation, the highest level of formal education, ethnic background and religion.

#### *The General Health Questionnaire-28*

Goldberg devised this instrument in 1972 as a self-administered screening instrument to aid detection of nonpsychotic illness, particularly in general practice. The GHQ enjoys worldwide appeal in the screening of psychiatric morbidity, and the psychometric attributes of the version are well-known.<sup>[30]</sup> The original version had 60 items, but successively shorter versions of 30, 28 and 12 items are available. The 28-item version was derived from the 60-item version by factor analysis. It has four subscales, each with 7-items. The subscales are A for somatic symptoms, B for anxiety and insomnia symptoms, C for social dysfunctions and D for severe depression. The subject is evaluated in 4-point response scales. The scale points are described as follows; less than usual, no more than usual, rather more than usual, much more than usual. The standard scoring method recommended by Goldberg for the need of case identification is called GHQ method. Scores for the first two types of answers are 0 and for the two others 1 (i.e. 0 to 0–1 to 1). Later the scores were summed up for each subject. The cut off score was 5. A total score of 5 and above identified the subject as a case while a total score of below 5 identified the subject as a noncase. The 28-item GHQ version was used in this study.

#### *The mini-international neuropsychiatric interview how was the questionnaire validated ?? The questionnaire has been used severally in this environment and needed n validation*

The MINI is a short, structured, standardized diagnostic interview, developed jointly by psychiatrists and clinicians in USA and Europe for DSM-IV and ICD-10 psychiatric disorders, with administration time of about 15 minutes. It was

designed to meet the need for a short but accurate structured psychiatric interview. It was also designed for multi-center clinical trials and epidemiology studies and to be used as a first step in outcome tracking in nonresearch clinical settings. MINI is short, inexpensive, simple, clear, easy to use, highly sensitive and specific, compatible with ICD 10 and DSM-4, useful in clinical as well as research settings.<sup>[31]</sup> It has modules A to P. This questionnaire has been used by many researchers in South East Nigeria (including Enugu and Ebonyi States where this research was carried out.)

### Sample selection and procedure

The sample size for this study was calculated using the Statistical Package for Epidemiological Information, EPI-INFO version 5.1b (Centers for Disease Control and Prevention, Atlanta Georgia, USA). Systematic random sampling was used to select subjects for this study. The data collection was done between May and August 2011. All subjects recruited for the study were administered with the sociodemographic questionnaire and the GHQ-28. The GHQ positive cases (a score of 5 and above) and 10% of the GHQ non cases (a score of <5) were subjected to the MINI interview, to determine the prevalence of specific ICD-10 disorders among the subjects with leprosy as well as the subjects with albinism. The 10% of GHQ non cases were selected by systematic random sampling. The questions were read out to each selected subject and his or her responses recorded.

### Data analysis

Analysis of data was performed with the Statistical Package for Social Sciences (SPSS) version 16.0 (Chicago, USA). Variables such as age, sex, marital status, occupation, level of education, etc., were computed. Student's *t*-test, odds ratio (OR) and Chi-square test were also used where applicable. All statistical values were at 5% level of significance ( $P < 0.05$ ).

## Results all OR or RR must be Accompanied by the 95% CI

### Sociodemographic characteristics

A total of 200 participants were recruited, 100 each for leprosy and albinism respectively. The subjects with albinism had mean age of 36.6 (12.7) years while the subjects with leprosy had mean age of 43.2 (16.9) years ( $t = 3.08$ ,  $P = 0.02$ ). All the subjects with leprosy were of Igbo ethnic group. Ninety-nine (99%) subjects with albinism were of Igbo ethnic group while only 1 (1%) was of Yoruba ethnic group. Female subjects with albinism were 63 (63%) whereas among the subjects with leprosy 43 (43%) were female ( $\chi^2 = 8.03$ ,  $P = 0.04$ ). Married subjects with leprosy were 66 (66%) compared with 28 (28%) of subjects with albinism ( $\chi^2 = 35.71$ ,  $P < 0.001$ ). Educated subjects with albinism were 86 (86%) while 58 (58%) of subjects with leprosy were educated ( $\chi^2 = 96.68$ ,  $P < 0.001$ ). All the subjects

with albinism were Christians, while 89 (89%) subjects with leprosy were Christians. Eleven (11%) of the subjects with leprosy practiced African traditional religion ( $\chi^2 = 11.64$ ,  $P = 0.03$ ). The subjects with albinism had more professionals, or those in semi-skilled occupation than the subjects with leprosy ( $P < 0.001$ ). Subjects with leprosy had more farmers than the subjects with albinism ( $P < 0.001$ ). Table 1 shows the sociodemographic characteristics of the subjects with leprosy and subjects with albinism.

### The General Health Questionnaire scores of the subjects with leprosy and subjects with albinism

The cut-off mark for the GHQ-28 was 5. Fifty-five percent (55%) of the subjects with leprosy scored  $\geq 5$  on the GHQ, as against 41% of the subjects with albinism ( $\chi^2 = 3.93$ ,  $df = 1$ ,  $P = 0.04$ ) ( $df = 1$ ). Table 2 shows the GHQ scores of the subjects with leprosy and subjects with albinism.

### The psychiatric disorders of the subjects with leprosy and subjects with albinism

Among the subjects with leprosy with positive GHQ scores, 49% had depression, 18% had generalized anxiety disorder (GAD), 16% had drug/alcohol abuse and 11% had no psychopathology. Among the subjects with albinism with positive GHQ scores, 51% had depression, 27% had GAD, and 7% had drug/alcohol abuse, 11% had nonspecific symptoms and 6% had no psychopathology. Table 3 shows the psychiatric disorders of the subjects with leprosy and subjects with albinism as identified with the MINI.

**Table 1: Socio demographic characteristics of the subjects with leprosy and subjects with albinism**

Variable	Subjects with leprosy n (%)	Subjects with albinism n (%)	Statistics
Sex			
Female	43 (43)	63 (63)	$\chi^2=8.03$ , $P=0.04$ , $df=1$
Male	57 (57)	37 (37)	
Age			
Mean (SD)	43.2 (16.9)	36.7 (12.7)	$t=3.08$ , $P=0.02$ , $df=6$
Marital status			
Married	67 (67)	28 (28)	$\chi^2=35.71$ , $P=0.01$ , $df=1$
Unmarried	33 (33)	72 (72)	
Educational level			
No formal education	42 (42)	14 (14)	$\chi^2=96.68$ , $P<0.001$ , $df=3$
Formal education	58 (58)	86 (86)	
Employment status			
Unemployed	24 (24)	39 (39)	$\chi^2=37.62$ , $P<0.001$ , $df=1$
Employed	76 (76)	61 (61)	
Occupation			
Professionals	11 (11)	57 (57)	$P<0.001$ , $df=7$
Clerical/sales workers	23 (23)	32 (32)	
Agricultural/craftsmen/others	69 (69)	11 (11)	

SD: Standard deviation



## The association between sociodemographic variables and psychiatric morbidity among the subjects with leprosy and subjects with albinism

### Gender

Male subjects with leprosy had more psychiatric morbidity compared with the male subjects with albinism (32% vs. 14%,  $\chi^2 = 4.4$ ,  $P = 0.04$ ).

### Marital status

Marital status was dichotomized into married and unmarried. The married subjects with leprosy had higher psychiatric morbidity than the married subjects with albinism ( $P < 0.05$ ). The unmarried subjects with albinism had higher rate of psychiatric morbidity than the unmarried subjects with leprosy ( $P < 0.001$ ).

### Educational level

The subjects with leprosy who had no formal education and those who attended only primary level of education had higher rates of psychiatric morbidity than the subjects with albinism that had no formal education and those who attended only primary level of education ( $P < 0.001$ ).

### Occupation

The subjects with leprosy involved in sales/services or agricultural works had more psychiatric morbidity than the subjects with albinism in sales/service and agricultural workers respectively ( $P < 0.001$ ).

### Employment status

The self-employed subjects with leprosy had more psychiatric morbidity than the self-employed subjects with albinism ( $P < 0.001$ ).

Table 4 shows the association between socio-demographic variables and psychiatric morbidity among the subjects with leprosy and subjects with albinism.

## Discussion

### Sociodemographic characteristics of the subjects

All the subjects with leprosy were of Igbo extraction while 99 (99%) of the subjects with albinism were Igbo and 1 (1%) was of Yoruba origin. Among the subjects with leprosy, 66 (66%) of them were married, whereas among the subjects with albinism, only (28) 28% were married. This agrees with the finding by Kaufman *et al.*,<sup>[32]</sup> who reported that very many persons with leprosy find an understanding romance and get married despite their worries, fears and anxieties about the status of their marriages. This disagrees with another study which reported that many subjects with leprosy were not married.<sup>[33]</sup> This difference may be due to the varied environments from where the studies were done. The current finding that many subjects with albinism were unmarried agrees with a previous work done in the same study area (South East Nigeria).<sup>[2]</sup>

**Table 2: The GHQ scores of the subjects with leprosy and subjects with albinism**

Variables	Subjects with leprosy n (%)	Subjects with albinism n (%)	Statistics
Cases	55 (55)	41 (41)	$\chi^2=3.93$
Noncases	45 (45)	59 (59)	df=1
Total	100	100	$P=0.04$ , OR=1.76, CI=1.00-3.08

GHQ: General Health Questionnaire

**Table 3: The prevalence of psychiatric disorders among the subjects with albinism and subjects with leprosy**

Psychiatric disorders	Subjects with leprosy n (%)	Subject with albinism n (%)	Statistics
Depression	27 (49)	21 (51)	$\chi^2=1.9$
GAD*	10 (18)	11 (27)	df=3
Drugs/alcohol abuse	9 (16)	3 (7)	$P=0.8$
Nonspecific symptoms	6 (11)	4 (11)	
No psychopathology	2 (5)	3 (6)	

\*GAD: Generalized anxiety disorder

**Table 4: The association between socio demographic variables and psychiatric morbidity among the subjects with leprosy and subjects with albinism**

Socio demographic variables	Group status		Statistics $\chi^2$	P
	Subject with leprosy (n=46)	Subject with albinism (n=35)		
Gender				
Male	32	14	4.4	0.04
Female	14	21		
Marital status				
Currently unmarried	11	23	22.2	<0.001
Currently married	35	12		
Educational status				
No formal education	20	6	40.9	<0.001
Primary school	16	6		
Secondary school	5	8		
Tertiary school	5	15		
Occupational status				
Professionals	6	6	49.4	<0.001
Clerical workers	5	7		
Sales/services	12	6		
Agricultural workers	10	5		
Craft	8	6		
Elementary workers	5	5		
Employment status				
Unemployed	7	8	37.5	<0.001
Self employed	21	10		
Civil servants	7	6		
Retired	5	6		
Students	6	5		

Among the subjects with leprosy, 57 (57%) were farmers as against 2 (2%) who were farmers among the albinism group. Among the subjects with albinism, 57 (57%) were

professionals as against 11 (11%) professionals in the leprosy group. The differences in occupation between the two groups may be partly due to the difference in the environment from where each group was recruited. For example, the subjects with leprosy were recruited from Ebonyi State while the subjects with albinism were recruited from Enugu state. Ebonyi state is an agrarian society well known for rice production and other varieties of crops. In a clinical and social study of albinism in the South East Nigeria, farmers were also few (8%). The author attributed this to the fact that the participants were recruited from the urban areas.<sup>[2]</sup>

Eighty-six (86%) subjects with albinism had formal education out of which 56 (56%) had tertiary education. Among the subjects with leprosy 58 (58%) had formal education, within which 1 (1%) had tertiary education. A total of 42 (42%) of the subjects with leprosy had no formal education as against 14 (14%) of the subjects with albinism. The finding in this study agrees with a previous study.<sup>[34]</sup> The authors reported that majority of the subjects with leprosy had low educational status. In this study, the subjects with albinism were more educated than the subjects with leprosy. A study of the mental health of subjects with leprosy in Bangladesh had previously reported that the subjects with leprosy had lower years of education than the control.<sup>[17]</sup> The authors attributed it to the fact that leprosy is a social disease that continues to deprive afflicted individuals with the opportunity of education.

### General Health questionnaire scores of the subjects with leprosy and subjects with albinism

The prevalence of GHQ caseness among subjects with leprosy, using a cut off score of 5 was 55% while in albinism group it was 41%. These are much higher than in the general population. A previous study had reported that the rate of psychiatric morbidity in the general population was 20%.<sup>[35]</sup> Erinfolami and Adeyemi,<sup>[18]</sup> in a study of psychosocial correlates of subjects with leprosy in Lagos Nigeria had reported a prevalence of 36.7%. This study has higher morbidity figure. It is not clear why this difference will be, more so when both studies used standard screening instruments. One was done in the south west while one was done in the south east Nigeria. Lekassa *et al.*<sup>[16]</sup> carried out a study to determine the prevalence of psychiatric morbidity in a dermatology clinic in Ethiopia and reported that the prevalence of cases among subjects with leprosy was 52.4%. This is close to the psychiatric morbidity among the subjects with leprosy as found in this study. Bharath *et al.*<sup>[15]</sup> carried out a study on the correlates of psychiatric morbidity among subjects with leprosy in India. The authors used GHQ-12. It was a cross sectional and clinic-based study. They reported that psychiatric morbidity correlated significantly positively with disability among the subjects with leprosy. Some participants (11.1% in leprosy and 10.5% in albinism) had nonspecific symptoms that could not meet the criteria for diagnosis in ICD-10 or DSM-4. Psychiatric disorder at the moment is still at the syndromal level, in which all

characteristic group of symptoms aggregate to define a specific disorder. Sometimes it can be difficult to make a meaning out of one or even two symptoms. Such single symptoms may have no significance or perhaps may be prodromal of future mental disorder or may be attenuated.

### Risk of developing psychiatric morbidity

The risk of developing psychiatric morbidity was significantly higher among the patients with leprosy than in those with albinism (OR = 1.76, CI, 1.00 – 3.08,  $P = 0.04$ ). It may be that the physical deformities that are more prevalent in leprosy than in albinism account for this higher morbidity.

### Specific psychiatric disorders on Mini International Neuropsychiatric Inventory interview

Among the 55 subjects with leprosy who were GHQ cases, 49% had depression, 18.2% had GAD, 16.4% had alcohol/drugs abuse 11.1 had nonspecific symptoms and 5.6 had no psychopathology. The subjects with albinism had specific psychiatric morbidity as depression 51.2%, GAD 26.8%, drugs/alcohol abuse 7.3%, nonspecific symptoms 10.5% and 5.3% had no psychopathology. Erinfolami and Adeyemi<sup>[18]</sup> reported the prevalence rate of depression to be 35.7% among subjects with leprosy. This is higher than the rate in the general population. In a study to assess rate of depression among adults in Oyo state, Nigeria, Amoran *et al.*<sup>[36]</sup> reported a prevalence of depression in the general population as 5.2%. The higher prevalence of depression among the subjects with leprosy than the general population may be partly due to the deformities associated with leprosy.<sup>[17]</sup>

The finding of high rate of depression among subjects with leprosy is in agreement with previous work by Olivier.<sup>[12]</sup> The author found the rate of depression to be 46%. In India Verma and Gautam<sup>[37]</sup> reported the rate of depression among the subjects with leprosy to be 55% and anxiety 21%. The authors suggested that depression and anxiety may be related to some irritating lesions of the nervous system brought by the mycobacterium toxin. Erinfolami and Adeyemi<sup>[18]</sup> reported the rate of anxiety disorder to be 20.8% among subjects with leprosy. Scott<sup>[11]</sup> reported that all subjects with leprosy he studied who were suffering from psychiatric illness had depression.

Subjects with leprosy were more likely to have psychiatric morbidity than the subjects with albinism in this study. This is in line with the work done by Scott.<sup>[11]</sup> He had previously reported that subjects with leprosy had high prevalence of psychiatric problems compared to the general population. Furthermore, Tsutsumi *et al.*<sup>[17]</sup> reported that the psychiatric morbidity of subjects with leprosy was higher than the control and this was attributed to greater deformity associated with leprosy.

The association between socio-demographic variables and psychiatric morbidity among the subjects with leprosy and subjects with albinism.

In the present study, among those with leprosy, being a male, being in agricultural work, having attended only primary or no formal education were associated with increased psychiatric morbidity, whereas among the subjects with albinism, being a female, single, having attended tertiary form of education were associated with increased psychiatric morbidity. This finding among the subjects with leprosy showing increased psychiatric morbidity among the males and individuals with lower years of education is consistent with a previous study by Tsutsumi *et al.*<sup>[17]</sup> The authors reported that males and lower years of education were associated with increased psychiatric morbidity. Angelo *et al.*<sup>[3]</sup> in Rome also reported higher probability of psychiatric disorders in female outpatients with skin lesions on visible parts of the body.

### Limitations of the Study

The study samples were drawn from a clinic population and an organization. It was not every individual with albinism that belonged to the organization. This limits the generalization of the findings to the leprosy or albinism population as a whole in the community. The study covered only two out of the five states in the study area due to logistic reasons.

### Conclusion

Psychiatric morbidity is more in subjects with leprosy than in subjects with albinism. Male, married and uneducated subjects with leprosy significantly had higher morbidity than male, married and uneducated subjects with albinism.

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