



**QUALITY OF LIFE OF VITILIGO PATIENTS ATTENDING THE DERMATOLOGY
CLINIC OF THE UNIVERSITY COLLEGE HOSPITAL IBADAN, NIGERIA.**

Ehiaghe L. Anaba^{1*}, Adekunle O. George² and Adebola O. Ogunbiyi²

¹Department of Medicine, Lagos State University Teaching Hospital, Lagos, Nigeria.

²Department of Medicine, University College Hospital, Ibadan, Nigeria.

***Corresponding Author: Anaba L. Ehiaghe**

Department of Medicine, Lagos State University Teaching Hospital, Lagos, Nigeria.

Article Received on 13/12/2019

Article Revised on 03/02/2019

Article Accepted on 24/02/2019

ABSTRACT

Background: In Nigeria, vitiligo is prevalent with a consequent impairment of quality of life. However, studies on quality of life impairment, the clinical and socio-demographic factors which impair this quality of life are few.

Aims and Objectives: To determine quality of life of the adult vitiligo patients, the socio-demographic factors (age, sex, marital status, level of education) and the clinical characteristics (location, severity, class of vitiligo) that could impact on their quality of life. Also, to compare quality of life in newly diagnosed vitiligo patients to patients who were already being treated. **Methodology:** This was a cross-sectional study, over a one year period. The QOL of 57 adult patients (42 newly diagnosed and 15 follow up) was assessed using the Dermatology Life Quality Index (DLQI) and the General Health Questionnaire-12 (GHQ-12). Also, the QOL of 57 controls was assessed using the GHQ-12. These patients were clinically assessed and a study protocol was used. Data was analyzed using SPSS 16.

Results: Quality of Life was found to be impaired, mean DLQI score was 5.7 ± 6.8 . Quality of life comparisons between the newly diagnosed and the follow up respondents did not reveal any statistically significance difference ($P=0.581$). Embarrassment, choice of clothing, problems with work and friendship were the main items of QOL impairment on the DLQI. Significant association was not found between gender, age at presentation, level of education and QOL impairment. Marital status was significantly associated with QOL impairment. **Conclusion:** Vitiligo significantly impairs QOL irrespective of when patients are diagnosed. In each patient's treatment modality, QOL should be taken into consideration.

KEYWORDS: Vitiligo, Quality of Life, Nigeria, Marital Status.

INTRODUCTION

Vitiligo is an important skin disease having a major impact on quality of life (QOL) of patients,^[1,2] many of whom feel distressed and stigmatized by their condition.^[3,4] Vitiligo patients experience various degrees of psychosocial impairment and psychiatric morbidity with resultant altered QOL despite the fact that the condition does not lead to a severe physical illness.^[3,4]

Various factors have been documented in vitiligo to affect QOL; the mere presence of the vitiligo lesions,^[5] vitiligo lesions on visible parts of the body like the face and hands,^[2] age,^[2,4] gender,^[2,6] family history of vitiligo,^[7] marital status,^[2,8] duration of disease.^[7] location^[1] and severity of vitiligo.^[2,8,9-11,12] Vitiligo causes emotional pain, low self-esteem, poor body image, depression, suicidal ideation and self-harm.^[3,9] Difficulty with sexual relationships especially in patients who have their lesions in the genital area is reported by vitiligo patients.^[10-12] Vitiligo patients tend to feel more stigmatized than patients with other skin disorders.^[13,14]

Vitiligo patients are treated regularly in the dermatology clinics in Nigeria.^[15] However, QOL studies in Nigerian vitiligo patients are few. The objective of this study therefore, is to assess the QOL of people living with vitiligo and to determine the clinical (location, severity, class of vitiligo) and socio-demographic factors (age, sex, marital status, level of education) that affect the QOL in the patients in this center using the dermatology life quality index (DLQI) questionnaire and the general health questionnaire (GHQ-12).

MATERIALS AND METHODS

This was a Prospective comparative study conducted over a one year period at the University College Hospital (UCH) Ibadan Dermatology Outpatient Clinic. Ethical clearance was given for the study by the research and ethics committee of the hospital. Permission to use the DLQI was obtained from Finlay AY its developer.

The QOL of 57 vitiligo patients was compared with the QOL of 57 controls (non-skin disease patients) using the GHQ-12. The QOL items on the DLQI of 42 newly diagnosed vitiligo patients was compared with that of 15

vitiligo patients already attending the clinic. Also, the effect of clinical and socio-demographic factors on QOL in the 42 new patients was studied. Sample size was calculated using the formula for comparing means of two samples.¹⁶ Fifty seven age, gender and level of education matched controls who attend the eye clinic for refraction, who did not have vitiligo or other skin lesions and had no recognizable mental illness were recruited into the study.

A detailed history was obtained and physical examination performed on each new vitiligo patient. A proforma which had been developed for this study and has items on sociodemographic characteristics (sex, age, level of education, marital status), clinical history of vitiligo (duration of vitiligo, age at onset of vitiligo, family history of vitiligo, activity/spreading of lesions) and findings on physical examination (clinical type of vitiligo, severity, visibility of lesions) was used for this study.

Classification of vitiligo in this study was based on the Nordlund's classification; vulgaris, segmental, acral, acrofacial and focal.¹⁷ The extent/severity of vitiligo was based on the rule of nine.¹⁸

Two instruments; the Dermatology Life Quality Index (DLQI)¹⁹ and the General Health Questionnaire (GHQ)-12¹⁹ were used in the assessment of QOL.

The DLQI an instrument for the measurement of QOL in skin disease patients has ten questions covering symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment over the previous one week. Each question has four possible responses: "not at all," "a little," "a lot," or "very much," with scores of 0, 1, 2, and 3, respectively. "Not relevant" is also scored as 0, giving a maximum score of 30 and a minimum of 0. The higher the score, the greater the level of impairment of QOL.^{19,21} The DLQI scores are interpreted as follows; scores of 0-1 mean no effect on the patient's life, 2-6 mean a small effect, 7-12, moderate effect, 13-18 very large effect and 19- 30 extremely large effect on patient's QOL.²²

The GHQ-12 is an instrument of well-being measurement.²⁰ The GHQ measures common mental health problems of depression, anxiety, somatic symptoms and social withdrawal.²⁰ The GHQ allows simple comparison between studies of assessment of wellbeing and detects minor non-psychotic psychiatric disorders.

The GHQ-12 which has twelve questions was chosen for this study due to its brevity, ease of use and time consideration. Each question has four possible answers ranging from, not at all to much more than usual with scores of 0,1,2,3 respectively. Scores range from 0 to 36. Scores greater than fifteen (15) shows evidence of stress and greater than twenty (20) suggests severe problems and psychological stress. A score of above 3 is usually

used as the cut off score implying psychological impairment.²⁰

Vitiligo patients filled out both the DLQI and GHQ-12 while controls filled out only the GHQ-12 questionnaire. Socio-demographic characteristics (age, sex, level of education) of controls were obtained using a proforma.

Data was analysed using SPSS version 16.²⁰ Quantitative variables were summarized using means, median, standard deviation and range while frequencies and proportions were used for categorical variables. The agreement between two scales for assessment of quality of life, the DLQI and GHQ-12 was assessed using Cronbach's alpha. The relationship between two quantitative variables was tested using the Pearson's correlation coefficient when data was normally distributed and the Spearman's correlation analysis when not normally distributed. Comparison of mean quality of life scores was done using t-test and analysis of variance for comparing 2 or 3 groups respectively. When not normally distributed the Mann Whitney U test and Kruskal Wallis tests were used respectively. Associations between qualitative variables were tested using the chi square test. The level of significance was at 5%.

TESTING VALIDITY AND RELIABILITY OF INSTRUMENTS

The DLQI and GHQ-12 questionnaires were validated by studying a sub sample of each group (12 patients with vitiligo and 12 of the control group). The instrument was re-administered after about two weeks of initial interview. Internal consistency and reliability (to assess extent to which items comprising each scale measures the same construct) was assessed by the Cronbach's alpha statistics.¹⁶ and item-total correlations. A value of >0.70 for the former and >0.30 for the latter were conventionally considered acceptable.

Test-retest reliability was determined by an intra-class correlation coefficient (ICC) of individual patient scores 2 week apart. Construct validity was examined by means of correlations of scales for DLQI with relevant scales of the GHQ-12.

RESULTS

A total of 42 new vitiligo patients were attended to during the study period, 21 males and 21 females. The mean age of the patients was 43.1 ± 18.8 years. An equal number of respondents had their age at onset between 18 – 29 years and 30 – 39 years. The commonest area of onset was the face/scalp. Vitiligo was active in 48.7% of the patients. Level of education was tertiary in 64.3%, secondary in 19%, primary in 9.5% and no formal education in 7.1%. Majority of the respondents (63.4%) presented after their 1st year of onset. Only 2.4% had a family history of vitiligo, 33.3% reported self-medication, 42.9% had hospital treatment and 73.8% of respondents were asymptomatic. Treatment for other medical conditions was reported in 40.5%; hypertension

in 52.9%, diabetes mellitus in 11.8%, respiratory diseases in 17.7%. The distribution of the socio-demographic variables is shown in table 1.

Table 1: Distribution Of Socio-Demographic Variables.

	Male (21)	Female(21)	Total (n=42)
Age at presentation (years)			
18 – 29	8(38.1)	4(19.2)	12(28.5)
30 – 39	6(28.6)	4(19.0)	10(23.8)
40 – 49	2(9.5)	4(19.0)	6(14.3)
50 – 59	2(9.5)	3(14.3)	5(11.9)
≥60	3(14.3)	6(28.6)	9(21.4)
Marital status			
Single never married	12(57.1)	5(23.8)	17(40.5)
Currently married	9(42.9)	10(47.6)	19(45.2)
Divorced	0(0.0)	0(0.0)	0(0.0)
Widowed	0(0.00)	6(28.6)	6(14.3)
Age at onset of vitiligo (years)			
0 – 9	1(4.8)	1(4.8)	2(4.8)
10 – 17	4(19.0)	1(4.8)	5(11.9)
18 – 29	6(28.6)	4(19.2)	10(23.8)
30 – 39	5(23.8)	5(24.0)	10(23.8)
≥40	4(19.0)	10(48)	14(33.3)
Area of onset			
Anterior trunk	4(19.0)	0(0.0)	4(9.5)
Face/scalp	10(47.6)	14(66.7)	24(57.1)
Gluteal	0(0.0)	1(4.8)	1(2.4)
Lower limb	2(9.5)	1(4.8)	3(7.1)
Neck	0(0.0)	1(4.8)	1(2.4)
Upper limb	5(23.8)	4(19.0)	9(21.4)

Clinical characteristics are shown in table 2. Using the “rule of nine”, 71.4% of respondents had a vitiligo severity of <9%. Leukotrichia was absent in all the respondents. Majority had their vitiligo in a

visible/exposed part of the body. Re-pigmentation was reported in 54.5% of patients. Half of the adults had acrofacial vitiligo.

Table 2: Distribution Of Clinical Variables.

	Male	Female	Total (n=42)
Re-Pigmentation			
Yes	5(45.5)	7(63.6)	12(54.5)
No	6(54.5)	4(36.4)	10(45.5)
Actual severity score			
<1	7(33.6)	7(33.6)	14(33.3)
1 – 3	5(24.0)	4(19.2)	9(21.4)
4 – 9	7(33.6)	3(14.4)	10(23.8)
>9	2(9.6)	7(33.6)	9(21.4)
Visibility (lesion in exposed parts)			
Yes	18(85.7)	19(90.5)	37(88.1)
No	3(14.3)	2(9.5)	5(11.9)
Classification of vitiligo			
Segmental	1(4.8)	1(4.8)	2(4.8)
Vulgaris	7(33.3)	5(23.8)	12(28.6)
Focal	2(9.5)	1(4.8)	3(7.1)
Acrofacial	8(38.1)	13(61.9)	21(50.0)
Acral	3(14.3)	1(4.8)	4(9.5)

CONTROL GROUP ANALYSIS

Analysis of the control group is shown in table 3. The mean age of the control group was 40.5 ± 16.5 with a range of 18-80 years. Males constituted 56.1% of the respondents in this group. Most persons (57.9%) were

currently married, 38.6% were single and 3.5% were widowed. Level of education was tertiary in 68.4%, secondary in 15.8%, primary in 10.5% and no formal education in 5.3%.

Table 3: Demographic Distribution of Control Respondents.

Variable	Frequency	Percentage
Age (years)		
18 – 19	4	7
20 – 29	12	21
30 – 39	15	26.3
40 – 49	7	12.3
50 – 59	9	15.8
≥60	10	17.5
GHQ-12 score		
No impairment	1	1.8
impairment	56	98.2

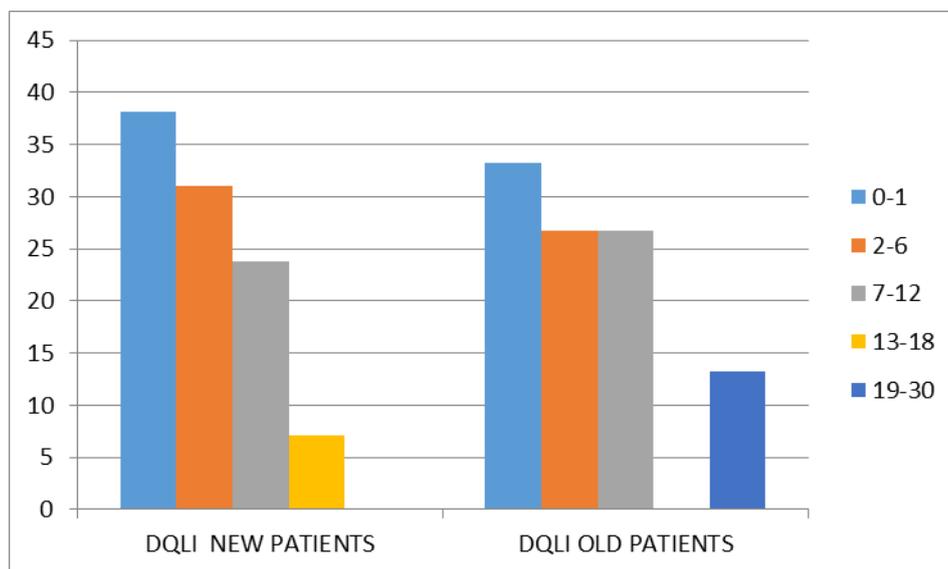
The DLQI and GHQ-12 scales were validated by assessment of their internal consistency using the Cronbach's alpha. The Cronbach's alpha for the dermatology scale (10 items) was 0.79 and for the GHQ-12 scale (12 items) 0.89. The correlation coefficient for the test-retest reliability analysis of the GHQ-12 instrument was high at 0.805 while that for the DLQI was fair at 0.511.

There was no impairment of QOL in 98.2% of the control group while QOL was impaired in 61.9% of the newly diagnosed and in 66.7% of the old vitiligo patients.

In the new patients; the mean GHQ-12 score was 10.6 ± 6.2 , with the highest and lowest scores being 30 and 1 respectively and the mean DLQI score was 4.2 ± 4.6 , with the highest and lowest scores being 16 and 0 respectively. For the old patients; mean GHQ-12 score was 12.3 ± 7.5 with the highest and lowest scores being 30 and 7 respectively. The mean DLQI score was 5.7 ± 6.8 with the highest and lowest scores being 21 and 0 respectively.

The quality of life comparisons between control and new patients showed a statistically significant difference. The median GHQ-12 score for control respondents was 7, while that for the new vitiligo patients was 9. This was significant at $P=0.001$. Quality of life comparisons between the new and the old vitiligo patients did not reveal any statistically significance difference, $P=0.581$ (median DLQI score was 2 in both groups).

A mild effect on QOL was observed in 26.7% of old patients and in 31.0% of new patients. Moderate affectation of QOL was reported in 26.7% of old patients and in 23.8% of new patients. Large to extremely large effects was seen in 13.3% of old patients and in 30.9% of new patients. See figure 1.

**Figure 1: Specific Level of Qol Impairment Using The Dqlqi.**

The responses to the individual items on the DLQI scale are shown in figure 2 for newly diagnosed and old cases. Amongst the newly diagnosed; on the 1st item, 16.7% of persons reported varying degrees of itchininess, pain or stinging sensation over the last one week. Embarrassment or self-consciousness was reported in 61.9% of respondents. Interference with going to the market or farm was reported in 38.1% of persons. Of all respondents, 47.6% reported influence on the choice of clothes worn due to the vitiligo and the same percentage reported effects on social or leisure activities. Interference with sports was reported in 38.0%. The

proportion of persons that reported interference with work or study by the vitiligo was 95.2%. Affectation of relationship with friends, partner or relatives was seen in 47.6%. Sexual difficulties due to vitiligo were seen in 26.2%. Problems with treatment were reported in 26.2%.

Amongst the old patients; on the first item, 80% of the respondents said their skin had not been itchy at all. On the second item on embarrassment or self-consciousness, 73.3% of the patients had various degrees of affectation. On the third item, interference with going to the market and on the fourth item, influence on the type of clothes

worn 40% gave a positive response. Interference with social or leisure activities was reported in 33.3% of respondents. On the aspect of sports, to varying degrees, the life of 26.7% of respondents was affected by vitiligo. On the seventh item, affectation of work or study, the quality of life in 93.3% of respondents was not affected. Relationship with friends, partner or relatives was affected in 40%. Sexual difficulties was reported by 20%. On the tenth item, 26.7% reported impairment of QOL by treatment of vitiligo.

The relationship between the DLQI and variables is shown in tables 4a and 4b. Amongst the newly diagnosed cases, significant associations were found for age, history of spreading, marital status, and visibility of vitiligo. At

$P=0.008$, the age was significantly associated with the DLQI with a spearman's coefficient of -0.404 . All other variables were not significantly associated (level of education, severity, gender, re-pigmentation, class of vitiligo).

Amongst the old cases, no significant associations were found with the socio-demographic and vitiligo related variables. The socio-demographic variables tested included age, gender, marital status, tribe and educational status. The vitiligo related variables tested include the age at onset, duration before presentation, family history, a history of re-pigmentation, history of spreading, visibility of lesion, class of vitiligo and severity of vitiligo.

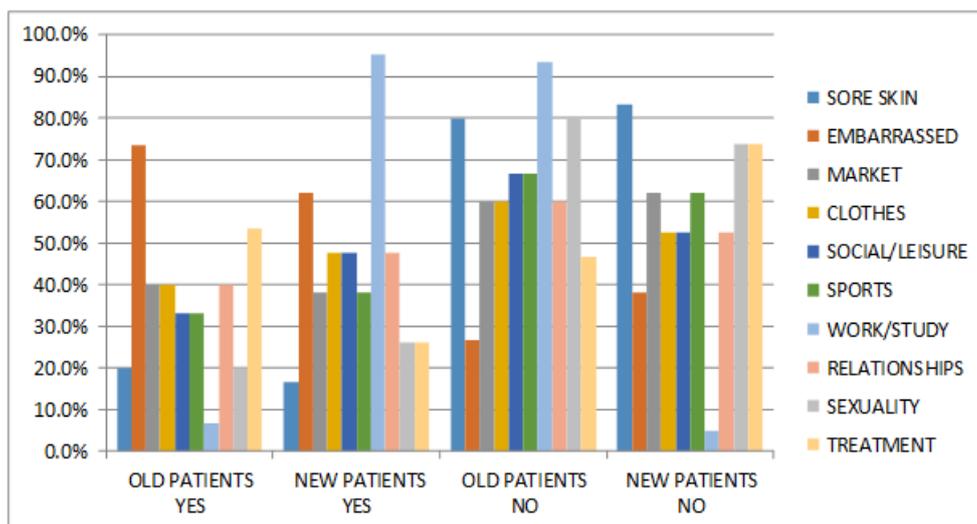


Figure 2: Distribution of Responses To The Individual Items on The Dlqi Scale.

DISCUSSION

This study revealed an impairment of quality of life in majority of the vitiligo patients compared to controls. Also, median QOL score was significantly different between the vitiligo patients and the controls. The presence of lesions on the skin which had a great colour difference from the normal skin, uncertainty about the nature of the lesions with queries from friends, family and passersby may have been responsible for this impairment in QOL. In India, Sangma *et al* found a similar difference QOL between vitiligo patients and controls.^[24]

However, there was no difference in median QOL scores between the newly diagnosed and the old vitiligo patients. This result shows that, the duration of the presence of vitiligo lesions have no effect on QOL impairment. Rather it is the presence of the vitiligo lesions which impaired QOL. This result of lack of influence of duration of lesion on QOL is in keeping with the report from Holland²⁵ but at variance with the report from Korea, where a long duration of vitiligo lesions negatively impacted on QOL.^[7] Other studies have also shown QOL of vitiligo patients to be negatively impaired by the mere presence of vitiligo.^[5,26]

The highest score on the DLQI questionnaire was 16 out of a possible maximum score of 30 in these vitiligo patients. This high score may have been as a result of the long time it takes for lesions to re-pigment, frequent clinic attendance or problems of drug procurement. A similar high score was reported by Sangma *et al* their study of vitiligo and QOL impairment.^[24]

Looking at the level of impairment of QOL of patients as classified by Hongbo *et al*,^[22] >60% of both old and newly diagnosed patients had impaired QOL. This study shows that QOL is impaired in a lot of vitiligo patients though the level of impairment was mostly mild/moderate. This mild/moderate level of QOL impairment was an unexpected finding in this study; more so, as majority of the patients in this study had their lesions in exposed areas of the body. Vitiligo patients tend to be self-conscious and embarrassed by their lesions especially when the de-pigmented lesions contrast with dark coloured skin as in this study. This study is in consonance with studies from Korea and India, where a similar mild QOL impairment in vitiligo patients was observed.^[2,24,27]

All items on the DLQI were negatively affected by vitiligo and there were also differences in QOL impairment between newly diagnosed and old cases.

Itchiness/soreness of the skin was not a major item of impairment of QOL in this study because most of the patients were asymptomatic. Vitiligo is mainly an asymptomatic skin lesion with occasional itch or soreness from sun burn.^[28]

Embarrassment or self-consciousness as a result of having vitiligo was a major item that impacted negatively on QOL. The old patients were even more embarrassed than the new patients. Vitiligo lesions are very striking against the background of a dark coloured skin. Most patients would have been stared at and asked questions by friends and relations about the colour change of their skin with resultant embarrassment and self-consciousness. Similar reports of embarrassment as a result of having vitiligo have been documented by other authors.^[2,13,14] Patients in these studies were found to be embarrassed because they were stared at and frequently asked questions regarding their skin lesions.

On the item on interference with going to the market, about 40% of both old and new patients reported an interference with market attendance. One lady, a shop owner had actually closed her shop because she had vitiligo and refused to be seen outside her house. This interference with market attendance is due to lesions being present on exposed parts of the body with its attendant comments and questions. Also, patients may fear stigmatization since the spotted lesions are similar to that of leprosy. The old patients seem to also be worse off in this item. Stigmatization and avoidance of public places like the market has also been documented by other authors.^[3,4,14] Patients in these studies reported being subjected to rude remarks and stared at.

On the item of influence of vitiligo on choice of clothes worn, more than 40% of both old and new patients reported an influence on choice of clothes worn and this influence was worse in the old old patients. Patients would have had to wear clothes which cover their lesions to prevent comments being passed on their lesions or being stared at. These patients were specifically asked if they would wear clothes which reveal their body parts and they were not willing to. Lesions on exposed skin would be quite striking against the background dark coloured skin. A similar influence of vitiligo on choice of clothing was reported in Belgium, though they did not compare their new patients with old patients.^[25] Also, the Belgian patients had to choose clothes which would protect them from UV rays because their depigmented lesions were susceptible to sunburn and this was inconveniencing to the patients.

Social or leisure activities item was affected by vitiligo in both new patients and old patients although the effect is little. Only a minority had a severe affectation and they were mainly old patients. Social or leisure activities may

have been little affected because, these activities are carried out with friends and relations who usually are the support group of patients. Also, these friends and relations usually show more understanding of the disease process and will not probably stigmatize the patient.

Other reports on the influence of vitiligo on social or leisure activities have the same conclusions as in this study. In Belgium, where the DLQI was used as in this study, social or leisure activities was slightly negatively affected by the presence of vitiligo.^[25] A previous study from this center using a self-designed questionnaire, reported interference of vitiligo with social life.^[29] The authors of this study came to the conclusion that, this affectation of social life was due to unkind remarks from strangers and being stared at.^[29]

Participation at sporting activities does not appear to be much affected by having vitiligo from this study as it was observed in about one third of the patients. This study did not specifically look out for how many people participate in sporting activities. It is not known if this low report of influence of vitiligo on sporting activities is due to a low participation in sporting activities. Sporting activities usually involved dressings which expose the extremities leading to exposure of lesions. Exposure of lesions leads to embarrassment which would impair QOL. Participation at sporting activities was similarly, minimally affected by having vitiligo in Belgium.^[25] This study did not however report how many of the patients participated in sporting activities.

On the item on "if having vitiligo has prevented them from working or studying" almost all the newly diagnosed patients had problems with going to work because of having vitiligo while this was a problem in a negligible proportion of old patients. Problems with going to work as a result of having vitiligo seems to be dependent on how long patients have had their lesions. The old patients don't appear to have a problem with going to work, probably because they and their colleagues over time had become used to their lesions. The new patients appear to be severely affected by having vitiligo. This may be because of being questioned by colleagues about the sudden appearance of depigmented lesions. This is especially as the vitiligo lesions would be quite striking against their dark skin.

A study on the effect of vitiligo on willingness to go to work by other authors revealed a minimal effect similar to that of the old patients in this study.^[25] This study was in Caucasians in whom vitiligo lesions are not so striking. It is not known if this contributed to the minimal effect on these Caucasians. In a Nigerian study of psychosocial problems in patients with vitiligo, patients were found to be unwilling to go to work because their relationship with fellow workers was impaired by vitiligo.^[29] The colleagues of these patients may have avoided them due to fear of developing the lesions following physical contact with the patients.

When asked if having vitiligo had affected their relationship with their friends and relations; about one third of the old and new patients reported some affectation of their relationships. Two young men reported losing their partners because they had vitiligo and were not willing to start any other relationships until their lesions were gone.

Majority of the vitiligo patients in this study had no relationship problems because of having vitiligo. In the few patients who had relationship problems, it seems to be a major problem. Problems with relationships may not have been a major problem in this study because Nigeria is a closely knit society where friends and relations serve as support group of patients. A similar minimal negative effect of vitiligo on social relationships has previously been documented in Belgium and Nigeria.^[25,29]

Vitiligo from this study does not seem to cause sexual difficulty in the majority of patients and this is independent of how long patients have had the lesions. Majority of the patients may not have had difficulties in their sexual relationships, as the lesion in most patients in this study was not extensive and mostly extragenital.

In the few patients who have sexual difficulty as a result of having vitiligo, this was not a major problem. This study shows that embarrassment is major item affecting QOL of these vitiligo patients. This may be the reason for the sexual difficulty in the few patients affected. Also it is hypothesized, that, with the long duration of lesions, patients may begin to lose self-confidence and feel unappealing.

Vitiligo has been noted in other studies to have a variable effect on the sexual life of patients.^[1,10,29] A previous study from Nigeria reported no effect of vitiligo on patient's sexual life.^[29] Morales-Sanchez et al following their study, concluded that, vitiligo does affect the sexual life of patients especially if the lesions are located in the genital area.^[1] A study specifically comparing QOL impairment in women who had vitiligo with no genital lesions to women who had no vitiligo revealed impaired sexual satisfaction especially with increasing body surface area involvement.^[10] These different studies point out the sexual difficulties that vitiligo patients encounter irrespective of the location of the vitiligo lesions.

On the question of "how messy treatment was or how much time is taken up by treatment", the newly diagnosed patients in this study were not yet on treatment, this may be the reason for the minimal report of problems with treatment. However, the old patients reported impairment on this item. The main modality of treatment in this center is PUVASOL (topical meladinine and sunlight exposure). The process of this treatment modality could be inconveniencing. This may be the reason for this high report of problems with treatment

amongst the old patients, most of who were on treatment. Problems with treatment regimens for vitiligo has been documented as in this study to affect QOL and this effect was not in a lot of patients.^[25]

There was a significant association between age and QOL impairment, with QOL worse with increasing age. Older age is usually associated with more self-consciousness and a need to look good. This is the age that needs to go out to work and interact with colleagues; this may be the reason for the worse QOL with increasing age. This study was also a dermatology clinic based study, with patients concerned enough about their skin to seek specialist treatment. The result of this study is at variance with that in other studies. In some studies age had no influence on QOL impairment in vitiligo^[8,27] and in others a younger age was associated with QOL impairment^[2,4]

The males in this study had a worse QOL compared to the females though it was not statistically significant. This was an unexpected finding. The reason for the worse QOL in the males is not known as the general opinion with no documentary evidence in Nigeria is that, males are usually not as self-conscious as females. Both males and females had lesions in exposed parts. This result is at variance with other studies on QOL impairment and gender in vitiligo patients, where QOL in females is reported to be worse.^[4,6,24,30,31] In Iran where pigmentary changes could be obvious as in Nigeria, more females had QOL impairment.^[4] This is despite this country being a country where the dress code of females involves being all covered up. In India, gender had no impact on QOL impairment.^[27]

Single patients in this study had a significantly worse QOL of life compared to the married patients. The single patients may have had a worse QOL because of embarrassment from having vitiligo with consequent social inhibition and embarrassment. Also, patients in the age range 18-39 years made up more than half of the study population; this is the age range for marriage and starting relationships. It is difficult to explain why the QOL impairment in married people was not as low as that of the single patients. We hypothesize that, it may be because they already had their spouses and did not need to start new relationships.

Studies on QOL, marital status and vitiligo have different results. A similar report of a worse QOL in single patients has been reported following a study of the effect of vitiligo on sexual relationships.^[2] In Iran, they found the married women to have a worse QOL compared to the single females.^[8] The authors of the Iranian study gave a cultural reason for their study result. In Iran, the single females are all covered up and nobody sees their lesions unlike the married females who have to expose their lesions to their husbands. Also, these women face the threat of divorce from their husbands unlike the married men.

Level of education was not found to significantly affect QOL of patients in this study. This study shows that QOL impairment by vitiligo is independent of level of education. This is probably due to the fact that, people's emotions and feelings have nothing to do with their level of education. These patients will still be stared at, questioned about their lesions and embarrassed irrespective of their level of education. In Iran and India, a similar lack of influence of level of education on QOL impairment was reported.^[8,27] However, in Korea, a higher level of education was associated with a worse QOL.^[2]

History of re-pigmentation following treatment was not found to be significantly associated with QOL impairment. The extent of the lesions, number of lesions and degree of depigmentation (hypopigmentation or complete depigmentation) may have been responsible for this insignificant difference in QOL impairment. Also, these were all new patients, majority of them not yet on treatment. Those on treatment had only just started. A study comparing patients whose lesions have completely re-pigmented with newly diagnosed patients is needed, to ascertain the true impact of re-pigmentation on QOL.

With increasing severity of lesions, there was an increasing worsening of QOL although; this association was not statistically significant. Increased severity of lesion may have been associated with a worsening of QOL because increased area of body involvement would influence the clothes worn with attendant problems of how to cover the lesions, affect social life and cause more embarrassment of the patients. Also, patients with a large body area involvement are more likely to be stared at and stigmatized. A similar report a similar worsening of QOL with increasing severity of lesions has been documented in other studies.^[2,6,10,11] However Narahari et al in India and Hedayat et al in Iran in their studies reported no influence of the severity of vitiligo on QOL impairment in their cohort of patients.^[4,27] They opined that, the DLQI did not reflect the true QOL impairment in their patients.^[27]

Visibility of lesions meaning lesions on exposed parts of the body, was significantly associated with QOL impairment. Visible lesions are likely to attract comments from people and also these lesions will not be easy to cover up with clothes. The consequent embarrassment and limitation in the type of clothes worn would have led to more QOL impairment. A similar impairment of QOL due to the visibility of lesions of vitiligo especially in patients whose lesions were in visible parts e.g the face, hands has been reported.^[2,3] In Iran however, visibility of lesions was not associated with QOL impairment.^[8] Iran is a country where the mode of dressing involves complete coverage of body parts especially in females. This may be the reason for this lack of effect of visibility of lesions on QOL impairment.

There was no significant association between type of vitiligo and QOL impairment. However, looking at the different classes of vitiligo, acral and segmental vitiligo impaired QOL more than vulgaris or focal vitiligo. Acral vitiligo occurs in only visible parts of the body unlike vulgaris which can occur in body parts that a patient can cover. This may be the reason for this difference in QOL impairment between the different types of vitiligo. This study shows that there can be intra class variation in QOL impairment in vitiligo and that patients with acral vitiligo are especially affected. There were no other studies comparing QOL between different classes of vitiligo. In Holland, however, patients with universal vitiligo were found to have a worse QOL compared to other severities of vitiligo.^[32]

History of spread of lesions of vitiligo at presentation to the clinic, was significantly associated with QOL impairment. Spread of lesion results in increased body surface involvement with consequent more embarrassment and social inhibition. Also, choice of clothes becomes limited as patients need to wear clothes that do not reveal their lesions. Patients live in fear of how extensive their lesions will be and this is usually not predictable. There was no study specifically correlating a history of spread of vitiligo with QOL impairment to compare this study with.

Duration of vitiligo was not significantly associated with impairment of QOL in both old and new patients. Duration of lesions and the number of times patients attended clinic was not a problem to the patients in this study. The reason for this is not known but may have been because patients felt that they were in a specialist clinic where their lesions would be cured. This study result is similar to that reported in Holland where a study of 119 vitiligo patients revealed no relationship between disease duration and QOL in vitiligo patients.^[25] A study in Korea of QOL of one hundred and thirty three vitiligo patients came to a contrary conclusion.^[7] They found that long duration of disease and frequent visits to the clinic negatively impacts on QOL.^[7] The authors thought that it was the chronicity of the disease which led to the poor QOL.

There was no significant association between age at onset and QOL impairment. It did not matter at what age vitiligo started, rather what was important to these patients was that they had vitiligo. There was no study to compare the influence of age at onset of vitiligo on QOL with.

CONCLUSION

Vitiligo significantly impairs QOL and this QOL impairment is irrespective of whether patients are newly diagnosed or not. Level of QOL impairment was mostly mild to moderate. All items on the DLQI were affected by vitiligo with differences in level of impairment between newly diagnosed and old patients.

Embarrassment or self-consciousness, choice of clothing, social interactions, problems with work and friendship were the main items that impaired QOL. Significant association was not found between gender, level of education, history of re-pigmentation, class of vitiligo, age at onset, duration of disease, number of visits to clinic and QOL impairment. Marital status, age at presentation, severity of lesions, visibility of lesions, and history of spread of lesion were significantly associated with QOL impairment.

LIMITATIONS TO THE STUDY.

The number of patients to study were few.

REFERENCES

- Morales-Sánchez MA, Vargas-Salinas M, Peralta-Pedrero ML, Olguín-García MG, Jurado-Santa CF. Impact of Vitiligo on Quality of Life. *Actas Dermosifiliogr*, 2017; 108: 637-642.
- Bae JM, Lee SC, Kim TH, Yeom SD, Shin JH, Lee WJ, Lee MH, Lee AY, Kim KH, Kim MB, Park CJ, Lee SH, Kim DH, Lee HJ, Lee DY, Choi CW, Kim YC, Kang HY, Haw S, Lee YB, Yun SJ, Yun SK, Hong SP, Lee Y, Kim HJ, Choi GS. Factors Affecting Quality of Life in Patients with Vitiligo: a Nationwide Study. *Br J Dermatol*, 2018; 178: 238-244.
- Florez-Pollack S, Jia G, Zapata L Jr, Rodgers C, Hernandez K, Hynan LS, Pandya AG. Association of Quality of Life and Location of Lesions in Patients with Vitiligo. *JAMA Dermatol*, 2017; 153: 341-342.
- Hedayat K, Karbakhsh M, Ghiasi M, Goodarzi A, Fakour Y, Akbari Z, Ghayoumi A, Ghandi N. Quality of Life in Patients with Vitiligo: a Cross-sectional Study Based on Vitiligo Quality of Life index (VitiQoL). *Health and Quality of Life Outcomes*, 2016; 14: 86.
- Quandt SA, Schulz MR, Vallejos QM, Feldman SR, Verma A, Fleischer AB et al. The Association of Dermatologist-Diagnosed and Self-Reported Skin Diseases with Skin-Related Quality Of Life in Latino Migrant Workers. *Int J Dermatol*, 2008; 47: 236-241.
- Kiprono S, Chaula B, Makwaya C, Naafs B, Masenga J. Quality of Life of Patients with Vitiligo Attending the Regional Dermatology Training Center in Northern Tanzania. *Int. J. Dermatol*, 2013; 52: 191-194.
- Kim DY, Lee JW, Whang SH, Park YK, Hann S, Shin YJ. Quality Of Life For Korean Patients With Vitiligo: Skindex-29 And Its Correlates With Clinical Profiles. *J Dermatol*, 2009; 36: 317-322.
- Dolatshahi M, Ghazi P, Feizy V, Hemami MR. Life Quality Assessment Among Patients With Vitiligo: Comparism Of Married And Single Patients In Iran. *Indian J Dermatol Venereol Leprol*, 2008; 74: 700.
- Choi S, Kim D-Y, Whang S-H, Lee J-H, Hann S-K, Shin Y-J. Quality Of Life and Psychological Adaptation of Korean Adolescents With Vitiligo. *J. European Acad. Dermatol. and Venereol*, 2010; 24: 524-529.
- Sarhan D, Mohammed GF, Gomaa AH, Eyada MM. Female Genital Dialogues: Female Genital Self-Image, Sexual Dysfunction, and Quality of Life in Patients with Vitiligo with and without Genital Affection. *J Sex Marital Ther*, 2016; 42: 267-76
- Silverberg J, Silverberg N. Vitiligo extent and distribution are associated with significant quality of life impairment, 2013; *AB190: P6224*.
- Nogueira LSC, Zancanaro PCQ, Azambuja RD. Vitiligo and Emotions. *An. Bras. Dermatol*. 2009; 84: 39-43.
- Walker C, Papadopoulos L. Psychodermatology: The Psychological Impact of Skin Disorders. *J. Canadian Acad.Child Adolescent Psychiatry*, 2008; 17: 169-171.
- Schmid-Ott G, Kunsebeck H-W, Jecht E, Shimshom R, Lazaroff I, Schallmayer S et al. Stigmatization Experience, Coping and Sense Coherence in Vitiligo Patients. *J. Euro. Acad. Dermatol. Venereol*, 2009; 21: 456- 461.
- Henshaw EB, Olosode OA. Skin diseases in Nigeria: the Calabar Experience *Int. J. Dermatol*, 2015; 54: 319-326
- Kirkwood BR, Sterne AC. *Essential Medical Statistics* 2nd ed. Blackwell Publishing 2006. Massachusetts USA, 420-421.
- Nordlund JJ, Lerner AB. Vitiligo: It Is Important. *Arch. Dermatol*, 1982; 118: 5-8.
- Taieb A, Picardo M. The Definition And Assessment Of Vitiligo: A Consensus Report Of The Vitiligo European Task Force. *Pigment Cell Res*, 2008; 20: 27-35.
- Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) – A Simple Practical Measure For Routine Clinical Use. *Clinical And Experimental Dermatol*, 1994; 19: 210-216.
- Jackson C. The General Health Questionnaire. *Occupational Medicine*, 2007; 57: 79.
- Basra MKA, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994-2007: a comprehensive review of validation data and clinical results. *Br J Dermatol*, 2008; 159: 997-1035.
- Hongbo Y, Thomas CL, Harrison MA, Salek MS, Finlay AY. Translating The Science of Quality of Life Into Practice: What do DLQI Scores Mean?. *J. Invest. Dermatol*, 2005; 125: 659-664.
- Statistical Package For Social Sciences (SPSS) Version 15.0 For Windows; Released 2006. Chicago: SPSS Inc.
- Sangma LN, Nath J, Bhagabati D. Quality of Life and Psychological Morbidity in Vitiligo Patients: A Study in a Teaching Hospital from North-East India. *Indian J Dermatol*, 2015; 60: 142-146.
- Ongenaes K, Van Geel N, De Schepper S, Naeyaert JM. Effect Of Vitiligo On Self-Reported Health Related Quality Of Life. *Br. J. Dermatol*, 2005; 152: 1165-1172.

26. Al Robaee AA. Assessment Of Quality Of Life In Saudia Patients With Vitiligo In A Medical School In Quassim Province; Saudi Arabia. *Saudi Medical Journal*, 2007; 28: 1414-1417.
27. Narahari SR, Prasanna KS, Aggithaya MG, Bose KS, Praseeda TR. Dermatology Life Quality Index does not Reflect Quality of Life Status of Indian Vitiligo Patients. *Indian J Dermatol*, 2016; 61: 99-100.
28. Sehgal VN, Srivastava G. Vitiligo: Compendum of Clinico-Epidemiological Features. *Indian J Dermatol Venereol Leprol*, 2007; 73: 149-156.
29. Olasode OA, George AO. Psychosocial Problems In Patients With Vitiligo In Nigeria. *Sudanese J Dermatol*, 2007; 5: 51-58.
30. Ingordo V, Cazzaniga S, Medri M, Raone B, Diguseppe MD, Musumeci ML, Romano I, Fai D, Pellegrino M, Pezzarossa E, Di Lernia V, Peccerillo F, Battarra VC, Sirna R, Patrizi A, Naldi L. To What Extent is Quality of Life Impaired in Vitiligo? A Multicenter Study on Italian Patients Using the Dermatology Life Quality Index. *Dermatology*, 2014; 229: 240-7.
31. Boza JC, Giongo N, Machado P, Horn R, Fabbrin A, Cestari T. Quality of Life Impairment in Children and Adults with Vitiligo: A Cross-Sectional Study Based on Dermatology-Specific and Disease-Specific Quality of Life Instruments. *Dermatology*, 2016; 232: 619-625.
32. Linthorst Homan MWL, Sprangers MAG, de Korte J, os JD, Van der Veen JPW. Characteristics of Patients with Universal Vitiligo and Health Related Quality of Life. *Arch Dermatol*, 2008; 1062-1064.