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Relationship between Psychological Problems and Quality of Life among Leprosy Patients

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ABSTRACT

***Context**:* Depression and anxiety are most prevalent in patients with leprosy, which impact the quality of life of patients.
Aims: This study aimed to assess psychological problems and quality of life among leprosy patients, and to investigate the relationship between psychological problems and quality of life among leprosy patients.
Methods: A Descriptive correlational design utilized to fulfill the aim of this study. The study conducted at the Dermatology & Leprosy clinic in Benha City, Kaluobia Governorate, which affiliated to the Ministry of Health. A descriptive study among 100 leprosy patients was recruited consecutively from dermatology and leprosy outpatient. Three tools were used to achieve the aim of this study. A structured Interviewing schedule, the World Health Organization Quality of Life (WHOQOL)-BREF Questionnaire, and Depression Anxiety Stress Scales (DASS).
Results: The majority of the studied patients had a low level of quality of life, Also, two thirds had a moderate level of depression, and about two thirds of them had sever level of anxiety, while the majority of them had a moderate level of stress; also, more than half of them had a severe level of total DASS. Also, a statistically significant negative correlation between the total quality of life and total DASS among the studied patient with leprosy at p-value =<0.05.
Conclusion: leprosy patients have a low level of quality of life and have a high prevalence of psychological problems present with moderate to severe level of total depression, anxiety, and stress, which impact on their quality of life. The study recommended that to continuous counseling and health education for leprosy patients to avoid or minimize the psychological problems and to improve their quality of life. Psycho-educational program to improve psychological well-being and quality of life of the leprosy patients.

Keywords: Psychological problems, Quality of life, Leprosy patients.

1. Introduction

Leprosy is a chronic granulomatous disease that is caused by *Mycobacterium leprae* that predominantly affects the skin and peripheral nerves, resulting in neuropathy and associated long-term consequences, including deformities and disabilities. Leprosy is known to occur at all ages ranging from early infancy to very old age. Leprosy is curable, and early treatment averts most disabilities *(WHO, 2018).* Worldwide, more than 200 thousand new cases of leprosy are added *(Naaz, Mohanty, Bansal, Kumar, & Gupta, 2017)*. In Egypt, Leprosy eliminated as a significant public health problem in 1994, and the WHO target of decreasing the disease prevalence to less than one case per 10,000 populations achieved on the national level. Almost 60% of new cases detected each year in Egypt originate from only six governorates, mainly located in the south of the country *(Amer & Mansour, 2014).*

The current Global Leprosy Strategy, 2016-2020, accelerating towards a leprosy-free world, is innovative as it gives, in addition to a solid medical component, increased visibility and weight to the human and social aspects affecting leprosy control *(World Health Organization "WHO," 2016).* Approximately 6% of new cases reported annually are children under 15 years of age. Thus, leprosy is still a concern in Egypt as well as many countries. However, there are focal points in some governorates where the rate is still high *(World Health Organization "WHO," 2019; & Schreuder, Noto, & Richardus, 2016).*

Leprosy is one of the most stigmatized diseases known today *(Sermrittirong & Van-Brakel, (2014).* Leprosy is striking fear in the society as a mutilating, disfiguring, contagious, and incurable disease. Leprosy has been a highly stigmatizing disease in Egypt for centuries because it causes physical disfigurement *(Sharma, Joshi, & Kumar, 2017).* The stigma surrounding leprosy can be a significant burden and affects many dimensions of a person's quality of life and mental health *(Noordende, Brakel, Banstola, & Dhakal, 2016).*

Leprosy patients sometimes delay seeking proper care until they develop physical deformities. These physical deformities can result in unemployment, comorbidities like depression, anxiety a worsening of their condition, including permanent disability, which can intensify the stigma. Furthermore, the quality of life declines rapidly. The concept of quality of life denotes the impact that an illness or injury has on a person's wellbeing. It includes physical and psychological health, social relationships, and a person's interaction with the environment *(Santos et al., 2016).* Many studies have shown that leprosy and its stigma

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have a prevailing effect on a patient's social life, affecting marriage, employment, mental health, interpersonal relationships, leisure activities and attendance at social and religious functions *(Kumari, Wickramasinghe, & Madhavi, 2017; & Geetha, Dhanalakshmi, & Judie, 2015).*

Most studies found depressive disorders to be the most common psychiatry co-morbidity followed by anxiety disorders. Anxiety disorder the most common psychiatric disorder. Up to 70% of patients were found to have depressive disorders in some studies, while anxiety disorders present in up to 28% of leprosy patients. There is also evidence of schizophrenia and other psychotic disorder in this population *(Eyanoer, 2018; & Mahendra et al., 2018).* Anxiety and depression are increasing among people with leprosy, and it may lead to decreased social participation and impaired the quality of patient's life *(Ramasamy, Panneerselvam, Govindharaj, Kumar, & Nayak, 2018).*

The disease can affect a patient's manners for the rest of their life. The high rate of suicidal attempts highlights the patients' concept of psychological disorder as a result of leprosy. Grief appears to be the first and most general reaction that leprosy sufferers show after a diagnosis of leprosy. In some cases, the morbidity becomes chronic, and the incidence of psychiatric disorders, therefore, indicated *(Sharma et al., 2017).* Segregation and deprivation of the usual privileges of home environments lead to anxiety. They seem to have weak egos and lack independence in feeling, thinking, and action. Problems which leprosy patients feel include shame, lowering their self-esteem, dependency, and even aggressiveness. These difficulties could also extend to their families and caregivers who will need more support *(Dako-Gyeke, 2018; & Lee, Lee, & Ko, 2015).*

Despite significant improvements in leprosy treatment since the introduction of multidrug therapy (MDT) 3 decades ago, the global incidence remains high, and patients often have long-term complications *(White & Franco-Paredes, 2015).* When giving holistic care, nurses view the patients as one unit, as a biological, psychological, social, and spiritual being. To see the human as a unique individual and continually considering the person as one unit is not always easy to put into practice. Practical and medical skills one learns by experience but learning to see patients in other dimensions, psychological, social, and spiritual, requires experience and closer contact with the patient. The nurse has the role of health educator and deals with education regarding health promotion, prevention, treatment, and rehabilitation for leprosy patients. Nursing leprosy patients require professional mental, physical, and psychological care, as well as disease treatment for improving the quality of care, which impact on the quality of their life *(Love & Asabea, 2014).*

Generally, despite efforts by the Egyptian government to decrease the incidence of leprosy and increase treatment accessibility, the psychological and social rehabilitation of leprosy patients living in communities have not been adequately addressed. The psychological status and QOL of leprosy patients living in community tend to be lower than in the general population due to prevailing poor attitudes of society towards leprosy and aggravated by disability caused by leprosy *(Adhikari, Shrestha, Kaehler, Raut, & Chapman, 2013; Kaehler, Adhikari, Raut, Marahatta, & Chapman 2015; & Marahatta et al., 2018).* Leprosy negatively impacts the physical and social functioning of patients, which may, in turn, influence their psychological status *(Savassi, Bogutchi, Lima, & Modena, 2014; & Leite, & Caldeira, 2015).* The psychological health of patient affected with leprosy is affected by several economic and social factors and intimately connected with QOL *(Stevelink, Van-Brakel, & Augustine, 2011).*

Leprosy continues to be a serious public health problem in the developing world as in Egypt. This is primarily because leprosy is a medical problem with grave social overtones since permanent and progressive disability and consequent psychological problems as depression and anxiety is a recognized sequela of untreated leprosy. Hence, leprosy does not affect the patient alone but also their families and the community at large. So, this study was conducted to assess psychological problems and quality of life among leprosy patients.

2. Significant of the study

Leprosy is a medico-social problem with a declining in its medical form due to the presence of effective treatment (MDT). However, its social aspect in term of stigmatization, disability, deformities, loss of self-respect, loss of self-esteem, ostracizing of affected ones and misconception of the disease by the community have well identified as a significant threat which effect on psychological status and quality of life among leprosy patients.

The actual causes for choosing this topic confined to a social one: The Egyptian people know about this disease is very infectious leading to people are afraid of lepers approaching them, shaking their hands, sitting behind them, and eating from their food which impact on psychological status and quality of life. So, leprosy patient isolating in the leprosy colony Abu Zaabal in Qalyoubiya, 40 km north of Cairo. So, the researchers wanted to shed light on this problem.

3. Aim of the Study

This study aimed to assess psychological problems and quality of life among leprosy patients, and to investigate the relationship between psychological problems and quality of life among leprosy patients.

This aim achieved through the following research questions:

- What are the levels of psychological problems among leprosy patients?
- What is the level of quality of life among leprosy patients?
- What is the relationship between psychological problems and quality of life among leprosy patients?

4. Subject and Methods

4.1. Research Design

A descriptive correlational design was employed in this study to describe the levels of psychological problems and quality of life among leprosy patients, and also to measure the relationship between those variables.

4.2. Research Setting

The study conducted at the Dermatology & Leprosy clinic in Benha City, Kaluobia Governorate, which affiliated to the Ministry of Health. This setting mainly was chosen because the flow rate of patients with leprosy is satisfactory for the study.

4.3. Study Subject

Based on the confidence interval (CI) 95%, and at power analysis 80%, the sample size ranged from 80-100, so that the sample size was 100 patients based on the number of the recurring patient on last year. A convenience sample of 100 leprosy patients was recruited consecutively from dermatology and leprosy outpatient according to the following: *Inclusion criteria:* Patient`s diagnosis with leprosy, and patients willing to participate in the study. *Exclusion criteria:* Patients suffered from psychiatric, neurological, and organic diseases also excluded as they may directly affect the mental status of an individual.

4.4. Tools of Data Collection

Three tools utilized for collecting data.

4.4.1. Structured Interviewing Questionnaire Sheet

It designed by the researchers after reviewing related literature consisted of two parts:

The first part: Socio-demographic data which includes (Age, sex, marital status, educational level, occupation, residence, cohabitation, and income).

The second part: Clinical data which includes (Duration of illness, number of injuries, have you any problems associated as deformity, site and time of developing appearance deformity, chronic illness, the family supported, and family history of disease).

4.4.2. The World Health Organization Quality of Life (WHOQOL)-BREF Questionnaire

Quality of life assessed by using WHOQOL-BREF tool. This scale developed by *Skevington Lotfy, O'Connell, & WHOQOL Group, (2004)*. WHOQOL-BRIEF is a self-report questionnaire that contains 26 items and classifies four domains:

The physical domain contains seven items for Q (3, 4, 10, 15, 16, 17, 18), like the statement" Do you have enough energy for everyday life?"

The psychological domain contains six items for Q (5, 6, 7, 11, 19, 26), like the statement "Are you able to accept your bodily appearance?"

Social relations domain contains three items for Q (2o, 21, 22), like the statement "How satisfied are you with your personal relationships?"

The environmental domain contains eight items for Q (8, 9, 12, 13, 14, 23, 24, 25) like the statement "How safe do you feel in your daily life?" Also, items one and two measure overall quality of life and general health" How would you rate your quality of life?"

It is a five-point Likert scale from one to five. Reverse three negatively phrased items (Q3, Q4, and Q26) (1=5) (2=4) (3=3) (4=2) (5=1). This reverse transform negatively framed questions to positively framed questions. The responses were analyzed from a Likert scale, distributed an intensity scale (nothing extremely), capacity (nothing completely), frequency (never-always) and evaluation (very satisfied, very bad or very good).

Scoring system:

- More than 75% was considered high QOL.
- 50-75% was considered moderate QOL.
- Less than 50% was considered low QOL.

4.4.3. Depression Anxiety Stress Scales (DASS)

Depression, Anxiety, and Stress Scales developed *Lovibond & Lovibond, (1995).* The DASS consists of 21 items, is a self-report screening tool which measures the frequency of behaviors or intensity of feelings based on three subscales of anxiety (DASS-A), depression (DASS-D) and stress (DASS-S). A DASS total score computed from the three subscale scores of items rated on a four-point scale (i.e., from 0 = ‘‘Did not apply to me’’ to 3 = ‘‘Applied to me very much or most of the time’’). The total equal 63 points. The higher the score the worst the DASS.

Scoring system for DASS:

- 0-21 normal level of DAS.
- 22- 30 mild level of DAS.
- 31-47 moderate level of DAS.
- 48-63 sever level of DAS.

4.5. Operational Definitions

Psychological problems: Psychological problems operationally defined as scores on Depression Anxiety Stress Scales, based on three subscales of anxiety (DASS-A), depression (DASS-D) and stress (DASS-S), developed by *Lovibond & Lovibond, (1995)*.

Quality of life: Quality of life is operationally defined as scores on World Health Organization Quality of Life (WHOQOL)-BREF Questionnaire, classifies four domains, developed and validated by *Skevington et al., (2004).*

4.6. Procedures

The operational design for this study included preparatory phase, validity, and reliability of the tools, ethical considerations, pilot study, and field work. The preparatory phase included reviewing the relevant literature to develop and validate data collection instruments. Content validity was done to assure that the utilized tools measure what it was supposed to measure. Tools developed by the researchers were examined by a panel of five experts of psychiatric nursing to determine whether the included items clearly and adequately cover the domain of content addressed. Test-retest was repeated to the same sample of leprosy patients on two occasions and then compares the scores. The Cronbach's coefficient alpha of Quality of Life (WHOQOL)-BREF Questionnaire is 0.92 for the total score, while Depression Anxiety Stress Scales is 0.94.

Official permission was obtained from the hospital authorities in the identified setting to collect the necessary data, and patient consent was obtained to participate in the study. Approvals of patients were obtained before data collection and after explaining the purpose of the study. Anonymity was assured as the filled questionnaire sheets were given a code number (not by names). The leprosy patients ensured that the questionnaire sheet will be used only for the study and will discard at the end of the study. The study maneuvers do not entail any harmful effects on participation. The patients who participated in the study were informed about having the right to withdraw at any time without giving any reason.

A pilot study conducted on10% of the studied subjects, (10) leprosy patients who added to the whole studied sample. The purpose of the pilot study was to ascertain the clarity, applicability relevance and content validity of the tools, testing the feasibility of the study process, estimate the time needed to complete the sheet, and the necessary changes were undertaken. After conducting the pilot study, it found that (1) The tools were clear and applicable (2) Tools were relevant and valid. (3) No problem to interfere with the process of data collection. (4) The tools were made ready for use.

The actual field work was carried out from the beginning of August 2018 to the end of November 2018. The study setting was visited two times/week, starting from 9 Am to 12 Pm. At the beginning of the interview the researcher greeted the patients, introduced herself to each patient, explained the purpose of the study, took oral consent to participate in the study, filled structured interviewing questionnaire sheet, and then each patient was asked to fill (WHOQOL)-BREF Questionnaire, and Depression Anxiety Stress Scales DASS.

4.7. Data Analysis

The results statistically analyzed by using SPSS version 22. Numerical data expressed as mean ± SD, and range. Qualitative data expressed as frequency and percentage. Relations between different variables were tested using Friedman test, t-student. Pearson's Correlation analysis was used to show the strength and direction of the association between two quantitative variables. P value < 0.05 is considered significant.

5. Results

Table (1) shows that the frequency distribution of study patients regarding socio-demographic characteristics. It saw that less than half (43.0%) of the sample were in the age group of 40 < 50 years old with mean age 40.24±9.82, and more than half of the sample (59.0%) were females. Also, more than three quarters (79.0%) were married. This table also shows that more than one third (35.0%) of the sample had can't read and write, and more than half (51.0%) were unemployment, more than half (72.0%) their residence in urban, while the majority of the sample (48.0%) their monthly income enough, and the majority of the sample (84.0%) cohabitation with the family.

Table (2) displays the clinical data of the studied patients. It shows that more than one third (37.0%) of the sample had less than five years of duration of illness. Also, about two thirds (63.0%) and less than one third (28.0%) of the sample had one injury to two injuries from the disease, respectively. This table also shows that near to three quarters (71.0%) of the sample have problems associated as physical disability (deformity), while more than half (59.2%) and more than one third (39.4%) of the sample their deformity in his legs and his arms respectively. Also, near to half (49.3%) develop the appearance of deformity during treatment, and the majority (91.0%) have no chronic illness, while the majority of the sample (72.0%) have family support. Also, the majority of the sample (90.0%) have no family history of the disease.

Figure (1) shows that the frequency distribution of studied patients regarding the level of quality of life. More than half of the studied patients (59.0 %) had a moderate level of the physical domain. Also, about two thirds (64.0) of them had a low level of psychological domain, also nearly to half of the studied patients (46.0%) had a moderate level of social domain, and the majority (85.0%) had a low level of environmental domain, while the majority of the studied sample had low level of quality of life (72.0%).

Figure (2) illustrates that the frequency distribution of studied patients regarding total of depression, anxiety and stress There are two thirds of the studied patients (65.0%) had a moderate level of depression, and about two thirds of them (65.0%) had a severe level of anxiety, while the majority of the studied patients (73.0%) had a moderate level of stress.

Figure (3) portrayed that the frequency distribution of studied patients regarding the total level of DASS. There is more than half of the studied patients (59.0%) had a severe level of total depression, anxiety and stress.

Table (3) shows that correlation between the total quality of life and total depression, anxiety, and stress of the studied patients. The result shows that there is no statistically significant correlation between the total quality of life and total depression among leprosy patients. The present study also shows negative correlation but not statistically significant between the total quality of life and total anxiety (as p =.531 which exceed 0.05), and negative correlation but not statistically significant between the total quality of life and total stress (as p =0.352 which exceed 0.05) that could not reach the significant level.

Figure (4) illustrates that correlation between the total quality of life and total DASS scale of the studied patients. This figure reveals that statistically significant negative correlation between the total quality of life and total DASS among the studied patient with leprosy at p-value =<0.05.

Table (4) reveals that correlation between the total quality of life and clinical data of the studied patients. There is a statistically significant negative correlation between the total quality of life and duration of illness of the studied patients, also statistically significant negative correlation between the total quality of life and number of injuries of the studied patients at p-value =<0.05.

Table (5) illustrates the relationship between total quality of life and deformity among the studied patients. There is a statistically significant relationship between total quality of life and the studied patients with and without deformity at p-value = <0.05.

Table (6) shows the relationship between the total DAS scale and deformity among the studied patients. There is no statistically significant relationship between total DASS and the studied patients with and without deformity at p-value = >0.05.

Table (7) reveals the relationship between total quality of life and socio-demographic characteristics of the studied patients. There is no statistically significant relationship between total quality of life and socio-demographic characteristics of the studied patients at p-value = >0.05.

Table (1): Frequency distribution of studied patients regarding their socio-demographic characteristics (n=100).

Socio-demographic characteristics	no.	%
Age (years).		
20 < 30	17	17.0
30 < 40	23	23.0
40 < 50	43	43.0
≥ 50	17	17.0
Mean ± SD	40.24±9.82	
Gender		
Male	41	41.0
Female	59	59.0
Marital status.		
Single	9	9.0
Married	79	79.0
Divorced	2	2.0
Widow	10	10.0
Educational level.		
Cannot read and write	35	35.0
Basic learning	32	32.0
Secondary learning	28	28.0
University learning	5	5.0
Occupation.		
Employment	19	19.0
Free work	30	30.0
Unemployment	51	51.0
Residence.		
Urban	72	72.0
Rural	28	28.0
Income.		
Not enough	40	40.0
Enough	48	48.0
Enough and save	12	12.0
Cohabitation.		
Alone	4	4.0
With family	84	84.0
With relatives	12	12.0

6. Discussion

Interestingly, Egypt is one of the most ancient places where leprosy observed *(El Meniawy, Essam, & Khaled, 2018)*; the oldest recorded leprous case was from Dakhleh Oasis *(El-Gendy, El-Gohary, Shohdy, & Ragab, 2016)*. Leprosy is a chronic infectious disease caused by Mycobacterium leprae. Worldwide, more than 200 thousand new cases of leprosy added although the World Health Organization set a goal to stop this disease by 2020 *(World Health Organization "WHO" 2018)*. Leprosy patients are forced to be segregated from or to leave their families and are therefore considered exiles from their societies. With lack of knowledge about leprosy and its disability in the society, causes patients to experience negative stigma which also makes them hesitated to go to the treatment that eventually can lead to vicious circle *(Asampong, Dako–Gyeke, & Oduro, 2018).*

Both the debilitating effects and disfigurements of leprosy, society tends to stigmatize negatively those suffering from leprosy. The impact of negative stigma on society causes depression, anxiety, social isolation, and problems in the workplace cause difficulty in a patient's daily life. Leprosy is not merely a physical disease; it also produces psychological and social problems and physical disabilities. Leprosy and leprosy-related disabilities may predispose people to develop psychological, economic, and social problems which might adversely affect the quality of life *(Naaz et al., 2017).*

The present study illustrates that the socio-demographic profile of the leprosy patients, less than half of the sample were in the age group of 40 < 50 years old with mean age 40.24±9.82. This result is in agreement with a study carried out by *Onyeonoro et al., (2016)* who found that the average mean age of study patients was 40.2±19.6 years. This result disagreement with *(Leite & Caldeira, 2015)* who founded that the age group of his studied patients between 66-75 years. Also, this result in the same line with *(Govindharaj et al., 2018)* his result showed that the studied patients were in the age group of 20 to 40 years.

Table (2): Frequency distribution of the studied patients regarding clinical data (n=100).

Clinical data	no.	%
Duration of illness (years).		
less than 5years	37	37.0
5- less than10 years	32	32.0
10 years to more	31	31.0
The number of injuries.		
One injury	63	63.0
Two injuries	28	28.0
3 injuries	9	9.0
Have you any problems associated as physical disability (deformity).		
Yes	71	71.0
No	29	29.0
If yes where the site (n=71).		
Arms	28	39.4
Legs	42	59.2
Ears	1	1.4
Time of developing appearance deformity (n=71).		
Before the first visit to the hospital	33	46.5
During treatment	35	49.3
After treatment	3	4.2
Chronic illness.		
Yes	9	9.0
No	91	91.0
Family supported.		
Yes	72	72.0
No	28	28.0
Family history of the disease.		
Yes	10	10.0
No	90	90.0

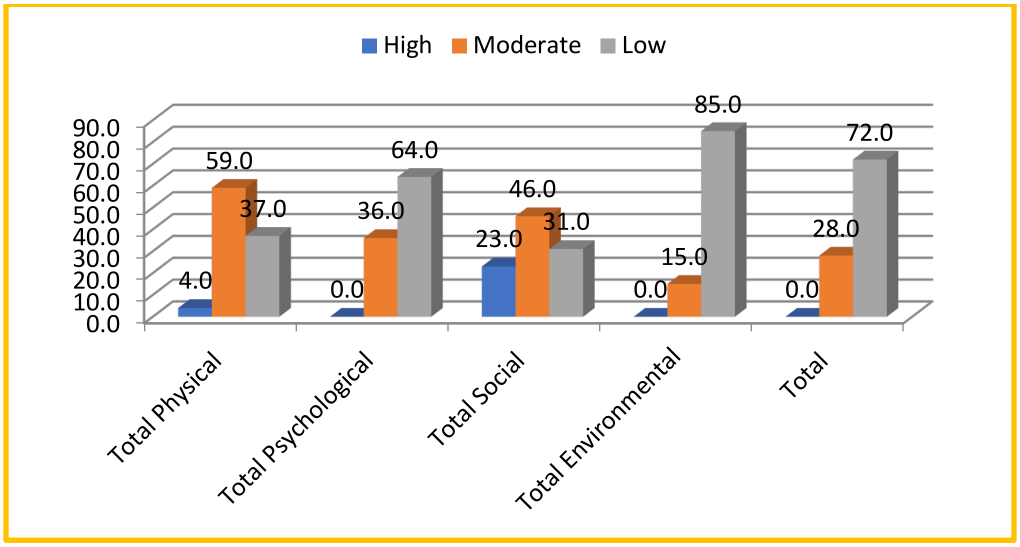


Figure (1): Frequency distribution of studied patients regarding total level of quality of life (n=100).

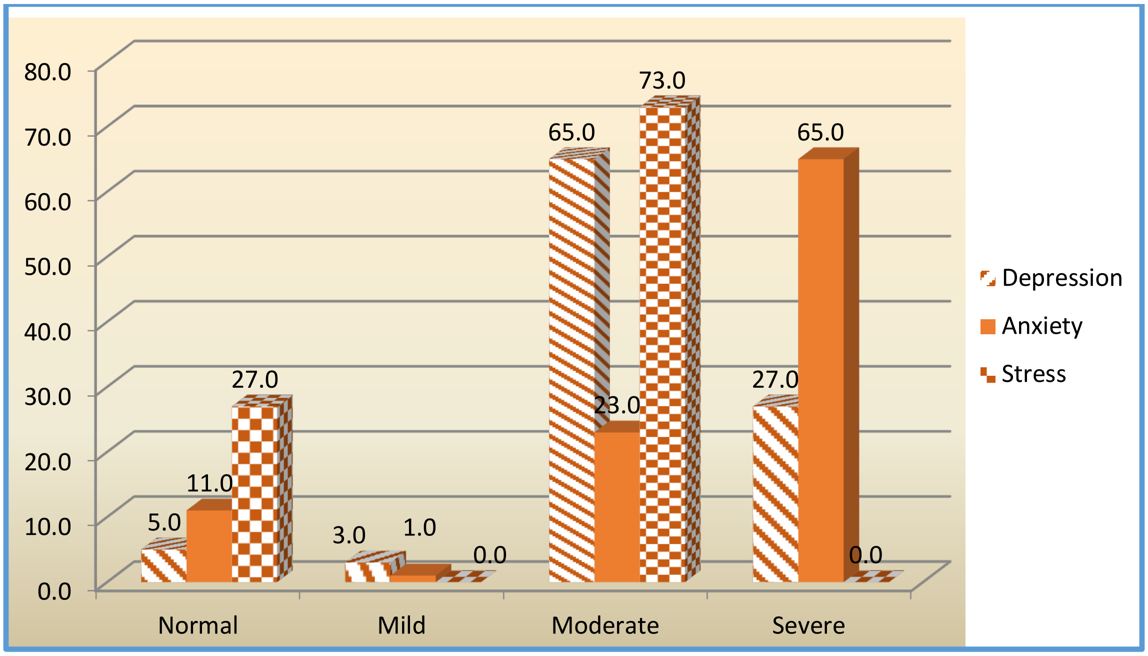


Figure (2): Frequency distribution of studied patients regarding total levels of depression, anxiety, and stress subscales (n=100).

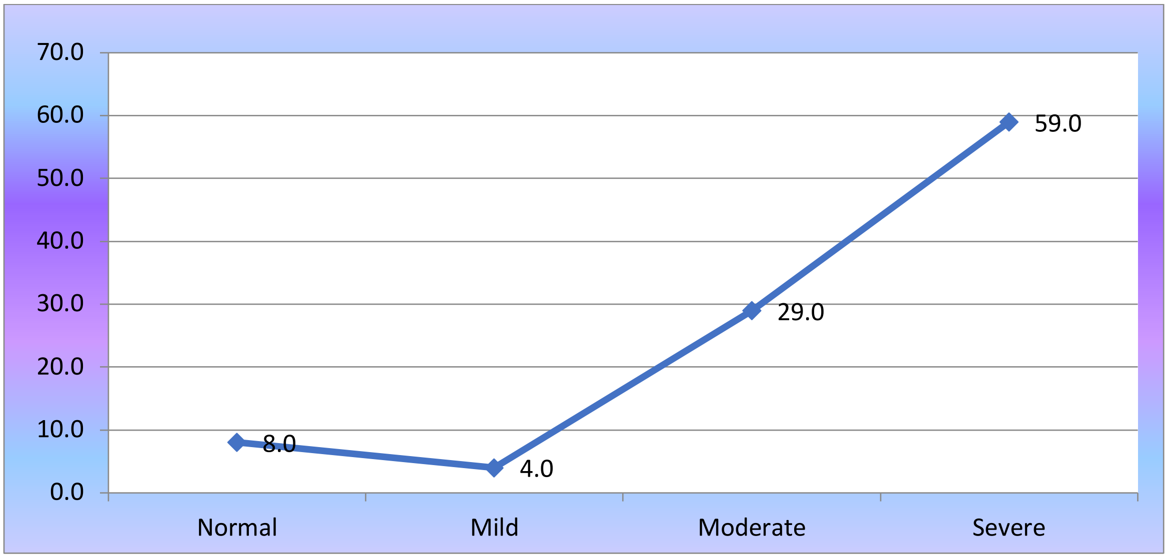
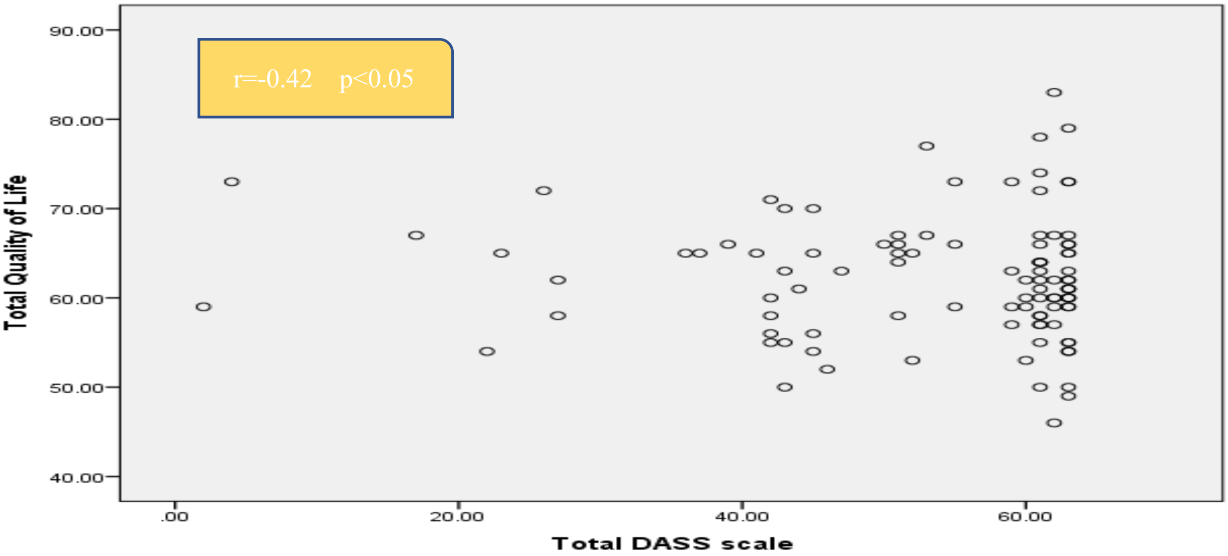


Figure (3): Frequency distribution of studied patients regarding total levels of DASS (n=100).

Table (3): Correlation between total quality of life and total depression, anxiety, and stress of the studied patients (n=100).

Scales		Total quality of life
Total depression	r	.009
	p-value	.926
Total anxiety	r	-.063
	p-value	.531
Total stress	r	-.094
	p-value	.352

**<0.001 a highly statistically significant



<0.05 statistically significant

Figure (4): Correlation between total quality of life and total DASS scale of the studied patients (n=100).

Table (4): Correlation between total quality of life and clinical data of the studied patients (n=100).

Clinical data	Total quality of life r	Total quality of life p-value
Duration of illness	-0.21	0.03*
Number of injuries	-0.26	0.009*

<0.05 statistically significant

Table (5): Relationship between the total quality of life and deformity among the studied patients (n=100).

Total quality of life	Patients with deformity (n=71)		Patients without deformity (n=29)		X^2	p-value
	n	%	n	%		
Low	56	78.9	16	55.2	5.73	0.017*
Moderate	15	21.1	13	44.8		

<0.05 statistically significant

Table (6): Relationship between total DASS and deformity among the studied patients (n=100).

Total DASS	Patients with deformity (n=71)		Patients without deformity (n=29)		X^2	p-value
	n	%	n	%		
Normal	8	11.3	0	0.0	5.64	0.13
Mild	4	5.6	0	0.0		
Moderate	20	28.2	9	31.0		
Sever	39	54.9	20	69.0		

>0.05 no statistically significant.

Table (7): Relationship between the total quality of life and socio-demographic characteristics of the studied patients (n=100).

Socio-demographic characteristics	Total quality of life With deformity (n=72) no	%	No deformity (n=28) no	%	X^2	p-value
Age (years).						
20 < 30	9	12.5	8	28.6	4.51	0.21
30 < 40	16	22.2	7	25.0		
40 < 50	33	45.8	10	35.7		
≥ 50	14	19.4	3	10.7		
Gender						
Male	27	37.5	14	50.0	1.3	0.25
Female	45	62.5	14	50.0		
Marital status.						
Single	5	6.9	4	14.3	2.08	0.55
Married	58	80.6	21	75.0		
Divorced	1	1.4	1	3.6		
Widow	8	11.1	2	7.1		
Educational level.						
Cannot read and write	24	33.3	11	39.3	0.82	0.84
Basic learning	24	33.3	8	28.6		
Secondary learning	21	29.2	7	25.0		
University learning	3	4.2	2	7.1		
Occupation.						
Employment	13	18.1	6	21.4	0.15	0.92
Free work	22	30.6	8	28.6		
unemployment	37	51.4	14	50.0		
Residence.						
Urban	55	76.4	17	60.7	2.45	0.11
Rural	17	23.6	11	39.3		
Income.						
Not enough	25	34.7	15	53.6	3.06	0.21
Enough	38	52.8	10	35.7		
Enough and save	9	12.5	3	10.7		

>0.05 no statistically significant

Concerning to gender of the studied patients, it found that more than half were females, suggestive of a higher incidence among females than males. This study agrees with a study carried by *Kumari et al. (2017),* who founded that more than half of the patients were females. In the other hand. This result disagrees with a study carried with *Geetha et al., 2015; & Shumet, Demissie, & Bekele, (2015)* his result shows that the majority of the sample were males.

Concerning to marital status, the present study reveals that more than three quarters were married. This finding may be due to the Egyptian culture of early marriage female. The result comes agreed with *Lee et al., (2015)& Girma, Bobosha, Hailu, & Negera (2018),* who founded that less than half of the samples were married patients. In the other side, this result disagrees with *Shokre, & Souilm, (2018)* who stated that the majority of the sample were unmarried. The difference between the two studies might be a cultural difference.

As regards to the educational level, the present study showed that about more than one-third of the studied patients could not read and write. This result agrees with *Xiong et al. (2019),* who stated that the majority of participants could not read and write. This result disagreement with *Govindharaj et al., (2018)* his result showed that more than half of his sample were literate. The result of the present study disagreement with Pérez-*Hernández, et al., (2017)* his result illustrated that the most frequent level of education of the sample was a primary school. The result in the same side with *Peters et al., (2017)* who founded that most of the sample finished at least elementary school.

Regarding occupation, the results of the present study proved that more than half of the sample was unemployment. This result agrees with *Shokre & Souilm, (2018),* who stated that more than half were unemployment. In the same line, the results consistent with *Eyanoer, (2018),* who founded that more than three-quarters of the sample was unemployed. In the other hand, the result disagreed with *Leite & Caldeira, (2015),* who stated that the majority of the sample were retired or pensioners. Also, *Ramasamy et al., (2018),* who showed that nearly to one-third of the study sample were farmers.

Regarding residence, nearly to three- quarters of the sample residing in an urban area. The result of the present study agreement with *Hemavathy, & Nagarathnamma, (2018)* who founded that majority of the subjects from an urban locality. This result disagreement with a study carried by *Mahendra et al., (2018)* who founded that most patients belong to rural. The present study also shows that nearly to half of the sample their monthly income enough. This finding may be due to community support for these patients. This result disagreed with *Reis et al., (2013) & Azad-uz-zaman, Hossain, Boiragee & Parvin, (2016);* who founded that income lower or equal to the minimum wage among the studied patients.

The present study illustrated the clinical data of the studied patients, concerning the duration of illness, the result illustrated that less than half of the studied patients had less than five years. This finding may be due to most patients delayed visiting a doctor that leads to prolong their duration of illness and may be related to the incubation period of leprosy is long. The result agrees with a study carried by *Govindharaj et al., (2018)* who showed that more than half of their study sample their disease duration was more than three years. This result disagreement with *Arora, (2016)* who founded that more than two- thirds of the patients have leprosy related disability for more than ten years.

The result of the present study shows that more than two-thirds of the studied patients have problems associated with physical disabilities (deformity). This finding may be due to delayed seeking treatment that leads to visible deformity among leprosy patients. *Nayak, Satheesh, & Shashidhar, (2017)* explained that the nerve damage is the most characteristic feature of the disease and is also the cause of most of the disability that is suffered by the patient. This result agrees with *Arora, (2016)* who stated that more than two-thirds of the sample suffering from a leprosy-related disability. Also, this result agreed with *Dessoki, Soltan, & Ezzat, (2018)* who founded that physical deformity was present of the patients.

Concerning to site of deformity among the patients. More than half and more than one-third of the studied patients their deformity in their legs and arms, respectively. This result supported with *Sarkar, Dasgupta, & Dutt, (2012)* found that feet were the commonly involved site of disability, followed by hands. In the other side, the result disagreed with studies done in North India found a claw hand to be the most common deformity *(Chhabra, Grover, Singal, Bhattacharya, & Kaur, 2015).*

The result of the present study showed that about half of the studied patients develop the appearance of deformity during treatment. This finding may be due to delay in diagnosis and delay in the provision of proper care for the disease. This result consistent with *Patil & Sherkhane, (2016)* who founded that nearly half of patients had already developed disability by the time of diagnosis. This result disagreement with a study carried by *Arora, (2016),* who founded that about two-thirds of the sample found to have leprosy related disability before the first visit to the hospital.

Concerning to presence of family support or not, the present study showed that the majority of the sample have family support. This finding may be due to the Egypt culture about supporting family member during disease period. This result disagreement with a study by *Damte, Berhe, & Hiwot, (2011)* who stated that from the total leprosy patients, there is not supported by family.

The present study showed that the majority of the studied patients has no family history of the disease. This result disagreed with *Dessoki et al., (2018),* who stated that the majority of the studied patients has a family history of leprosy disease. The result also not come with the result by *Yamaguchi, Poudel, & Jimba, (2013)* who founded that more than half of the adolescents had one parent with a history of leprosy and less than half of them had two parents with a history of leprosy. Leprosy occurring in families is a well-established fact because the spread of leprosy is predominantly through nasal droplets and close contact among family members living in the same environment, which is conducive for the spread of leprosy, especially if one member is borderline lepromatous or lepromatous leprosy type, smear-positive “open case."

The present study illustrated that the frequency distribution of studied patients regarding the total level of quality of life. The majority of the studied patients had a low level of total (QoL). This finding may be due to factors that potentially contribute to the deteriorated QoL in leprosy patients. This finding may be due to late diagnosis, reactions, disability, prejudice, and stigma. The quality of life of such persons declines rapidly. Other causes listed by *Lusli et al., (2015)* stigma toward persons affected by leprosy and their families has also adversely affected their quality of life due to its impact on their mobility, interpersonal relationships, marriage, employment, leisure, and social activities.

This result consistent with *El-Refaei, Daifalla, Kasem, & Bayomy, (2018); Brouwers, Van Brakel, & Cornielje, (2011); Umoh & Effiong, (2015); & Geetha et al., (2015),* who stated that the leprosy patients showed lower QoL scores in all domains physical, psychological, social and environmental domain of life of the victims than the general population. Also, the result consistent with *Yap, Kiung, & Yap, (2016); & Dinesh & Logaraj, (2016)* who observed that the person affected with leprosy disability have a poor quality of life. The result was inconsistent with *Eyanoer, (2018),* who founded that fifty-seven percent of leprosy patients does not have a disruption in their quality of life.

In the current study, it observed that the physical domain had moderate level regarding their QOL. This finding may be due to patients with leprosy reactions tending to have more severe physical impairment in the physical domain. This domain consists of pain and discomfort, dependency on medication or treatment, energy and fatigue, sleep and rest, mobility, daily activities, and work capacity. Professional activities and leisure were the worst affected. Those with a physical disability tend to have more impairment in their quality of life *(Costa et al., 2012; & Santo et al., 2015).* The presence of pain affects physical and emotional wellbeing; leads to social isolation, relationship and psychological problems, and an inability to work *(Reis et al., 2013).* This result also agreed with a study that shows that individuals affected by leprosy had a low quality of life scores in the physical health domain *(Savassi et al. 2014).*

In the current study, the result reveals that a low level of psychological domain regarding their QoL. This finding may be due to physical disabilities that are caused by the disease may result in enormous psychological consequences and more possibility of worsening QoL. Low scores in psychological domains may be because neurological pain affects specific items of these domains. Presence of pain was associated with anxiety, depression, poor quality of sleep, and a reduced capacity to perform daily and occupational activities, and it also impairs participation in social activities. Leprosy and leprosy-related disabilities may predispose people to develop psychological, economic, and social problems which adversely affect QoL *(Proto, Machado –Filho, Rehder, Paixão, & Angelucci, 2010).* This result consistent with a study by *Mankar, Joshi, Velankar, Mhatre, & Nalgundwar, (2011)* the study revealed that the overall the QoL of leprosy patients was lower in the psychological domain.

The present study also showed that nearly to half of the studied patients had a moderate level of social domain regarding their QoL. This finding may be due to attributed to the presence of community support adopted there for leprosy patients' rehabilitation and presence of family support for these patients. This result disagreement with *Savassi et al., (2014)* who founded that higher score was in the social domain.

The result shows that the majority of the studied patients had a low level of environmental domain regarding their QoL. This finding may be due to social stigma and discrimination, financial resources, dissatisfaction with accessibility to health services and dissatisfaction with transport'' participation in and opportunities for recreation were the most affected in the environmental domain among leprosy patients *(Peters et al., 2013).* People affected by leprosy sometimes become isolated because of a fear of infecting others or because of internalized feelings of being less worthy. As a result, people affected by leprosy might lose their job or their customers or may decide to resign or close their business *(Peters et al., 2014).* This result disagreement with the results by *El-Refaei et al., (2018)* his finding of the study shows better score in the environmental domain.

The result of the present study illustrated that two-thirds of the studied patients had a moderate level of depression. This finding may be related to that leprosy patients may arise as a complication or a consequence of primary skin disease, in reaction to disfigurement, perceived social stigma or undesirable changes in lifestyle and living conditions, divorce, high rates of unemployment and displacement from their areas of residence. The present study findings evidence this finding that more than half of the studied patients were unemployed.

This result consistent with *Lepra, (2017)* his studies showed that more than half the people affected by leprosy would face depression. The result agreed with *Ibikunle, Onwuakagba, Okongwu, & Madu, (2019)* his results showed that majority of the participants were severely depressed. The result was inconsistent with *Dessoki et al., (2018),* who founded that less than half of the studied patients had a low level of depressive symptoms.

The present study showed that about two-thirds of the studied patients had a severe level of anxiety. This finding may be due to common reactions after knowing their diseases was anxiety and hopelessness. Also, the visibility of skin lesions causes embarrassment, sadness, shame, and anxiety. Leprosy patients often suffer from painful physical and mental symptoms. This suffering reflected on their reluctance and delay in seeking hospitalization and also it generates great anxiety. This result consistent with *Shoar et al., (2016),* who stated that anxiety symptoms among leprosy patients increased from the time of admission toward more extended hospital stay. In the same side, the result consistent with *Dessoki et al., (2018)* who stated that about half of the patients had anxiety symptoms.

The result of the present study reveals that the majority of the studied patients had a moderate level of stress. This finding may be due to the assumption of leprosy that it is incurable, hereditary, cursed, and impure disease causes the patients angry, disappointed even being introvert and leads them to treatment adherence, this factor can cause patients to suffer from psychological problems such as depression, anxiety, and stress. The result was consistent with *Noordende, Brakel, Banstola, & Dhakal, (2016),* who stated that leprosy patient suffers from emotional problems as emotional stress.

The result of the present study portrayed that more than half of the studied patients had a severe level of total depression, anxiety, and stress. This result may be due to the impact of negative stigma on society causes psychological problems that like depression, anxiety, and stress. This result concurs with the result of a study in India, which revealed that less than half of the patients exhibited psychological distress like depression, anxiety, and stress. This result consistent with previous literature by *Eyanoer, (2018)* who stated that the leprosy patients are facing problems in many aspects such as social, economic, cultural, and national security. Both the debilitating effects and disfigurements of leprosy, society tends to stigmatize negatively those suffering from leprosy.

The result shows that there is no statistically significant correlation between the total quality of life and total depression among leprosy patients. This result consistent with *Ibikunle et al., (2019),* who stated that there was no statistically significant correlation between the total level of depression and total quality of life. The present study shows negative but not statistically significant between total quality of life and total anxiety at p =.531 which exceed 0.05), and statistically negative correlation but not statistically significant at p=0.352 which exceed 0.05) between total quality of life and total stress at p-value =<0.05 that could not reach the significant level.

The present study reveals that a statistically significant negative correlation between the total quality of life and total DASS among the studied patient with leprosy. This finding may be due to psychological distress, including depression, stress, and other anxiety-related states, has been related to lower QoL. This result consistent with *Bektas & Demir, (2016)* who found that increase anxiety and depression, leading to decreased quality of life.

The result reveals that a statistically significant negative relationship between total quality of life and duration of illness of the studied patients. The result also shows a statistically significant negative relationship between total quality of life and number of injuries of the studied patients. This result consistent with a study by *Dessoki et al., (2018)* who founded that there was a statistically significant negative correlation between the total quality of life and duration of illness and number of injuries of the studied patients.

The present study illustrated a statistically significant relationship between total quality of life and the studied patients with and without deformity. This finding may be due to disability and leprosy are the two most stigmatized terms instilled in the mind of people and the society in a more significant way. When these two strikes someone together, will fetch a very series impact on their quality of life and lowers the morale of the affected person. The result is consistent with *Govindharaj et al., (2018)* who founded that, there was a highly significant difference seen among leprosy affected persons with a disability and without a disability in all the four domains. The persons with disability had a lower quality of life than persons without disability. In the same line, *Dinesh, & Logaraj, (2016)* observed that the person affected with leprosy disability have a poor quality of life.

The study finding showed that there is no statistically significant relationship between total DAS and the studied patients with and without deformity. This result supported by the result by *Dessoki et al., (2018)* his finding showed that there was no statistically significant difference between deformity and both Beck Anxiety and Depression Inventory scores. In the other side result inconsistent with *Reis et al., (2014)* his results showed a higher prevalence of psychological distress in leprosy patients with higher disability levels, further patients with psychological distress had the lowest quality of life.

The present study shows that there is no statistically significant relationship between total quality of life and socio-demographic characteristics among leprosy affected persons with disability and without disability at p-value = >0.05. This result consistent with *Geetha et al., (2015)* who founded that there is no significant relationship between the total quality of life of leprosy patients and their socio-demographic variable.

7. Conclusion

Hence it could conclude that patients with leprosy disease have a low level of quality of life, low level of the psychological, and environmental domain and a moderate level of the psychological and physical domain. There is a significantly high prevalence of psychological problems present with a severe level of total depression, anxiety, and stress, which have much impact on the quality of life of leprosy patients. A statistically significant negative correlation between the total quality of life and total DASS among the studied patient with leprosy at p-value =<0.05.

8. Recommendations

The present study emphasizes the need for:

- Continuous counseling and health education for persons affected with leprosy to avoid or minimize the psychological problems and improving their quality of life.
- Psycho-educational program to improve psychological well-being and quality of life of the leprosy patients.
- Promote community integration of leprosy patients by addressing all forms of discrimination and stigma.
- Psychological rehabilitation of people with leprosy deficits to improve quality of life.
- Development of a strategy for leprosy patients aimed at increasing the number of skilled specialists and the work of development programs for them and highlights the importance of research in leprosy to reduce its complications.

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