



# Estimation of mental health and physical health among patients with lymphatic filariasis using phq-9 depression scale and phq-15 somatic symptom scale

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## ABSTRACT

### Introduction

Patients with lymphatic filariasis face considerable psychological and social stress. This study was carried out to estimate the severity of depression and severity of somatic symptoms among patients with lymphatic filariasis.

### Methodology

This cross-sectional study was done on 30 lymphatic filariasis subjects attending a Filariasis Morbidity Control Clinic in Trichy, Tamilnadu. Data was collected using Patient Health Questionnaire (PHQ) - Somatic Symptoms Scale and PHQ- Depression Scale. Patients were categorised into minimal, low, medium and high levels for somatic symptoms (15 questions) and none, mild, moderate, moderately severe and severe levels for depression (15 questions) based on their responses. Data was analyzed using Epi-Info. Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables.

### Results

60% of the subjects were males. The mean age was 47 ( $\pm 10.9$ ) years. 6.7% were smokers. 33.3% had atleast single co-morbidity. 60% had mild depression. 6.7% had moderate depression. About 50% had high level of somatic symptoms while 26.7% had medium level of somatic symptoms, 13.3% had low level of somatic symptoms and remaining 10% had minimal level of somatic symptoms.

### Conclusion

Majority of the study population was depressed. Together with prevention and treatment measures, it is high time to prioritize mental health of subjects with lymphatic filariasis. Active measures have to be taken to investigate the levels of depression among these patients and also to control the same, thereby ensuring good quality of life for them.

**Key-words:** Stress, Lymphatic filariasis, Patient Health Questionnaire-9 (PHQ-9) Depression Scale, PHQ-15 Somatic Symptoms Scale

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## INTRODUCTION

Lymphatic filariasis (LF) is a neglected chronic tropical disease, highly prevalent in tropical and sub-tropical countries.<sup>1</sup> More than 50% of the population suffering from the disease is from South-East Asian region.<sup>1</sup> <sup>2</sup>Patients with lymphatic filariasis face considerable psychological and social stress. The mental stress faced by these patients goes unrecognized because of the physical incapacitation and presentation of the disease. Depression is one of the severe domains affected in patients with lymphatic filariasis. The level of mental stress faced by these patients is high. Somatic symptoms have a strong association with depression.<sup>3</sup> Mental strength is assessed in terms of depression scale and somatic scale in these patients. The various causes of depression in lymphatic filariasis include Physical incapacitation, feeling of embarrassment associated with the deformity, Problems in performing the usual activities, financial instability and dependency on others.<sup>4-6</sup> Due importance must be given to the neglected psychosocial effects of lymphatic filariasis. In Lymphatic Filariasis, there is a considerable psychological and social disability besides the physical disability. The two main pillars for eliminating LF from India are Mass Drug Administration (MDA) using Triple drug therapy and Morbidity Management and Disability Prevention (MMDP).<sup>7</sup> <sup>8</sup>Besides the data on physical morbidity and disability, there is a lack of data on mental morbidity. LF has considerable impact on the physical, mental and social domains of health. There is a paucity of regional studies available in the literature for understanding the level of depression in subjects with lymphatic filariasis. The present study is one of its kind in Tamilnadu, which is more of explorative in nature, thereby creating a hypothesis to bring the attention of healthcare providers to this domain. This study was aimed at estimating the level of depression and somatic symptoms among patients attending a Filariasis Morbidity Control Clinic in Woraiyur, Trichy.

## OBJECTIVES

1. To estimate the severity of depression among patients with lymphatic filariasis attending a morbidity control clinic using Patient Health Questionnaire (PHQ) -9 depression scale

2. To estimate the severity of somatic symptoms according to PHQ-15 somatic symptoms severity scale.

## METHODOLOGY

We conducted an observational hospital based cross sectional study. The entire sampling frame constituted the study population. The sampling frame included all 30 patients with lymphatic filariasis attending the Filariasis Morbidity Control Clinic in Woraiyur, Trichy, Tamilnadu from February 1, 2018 to March 31, 2018. All the adult patients with lymphatic filariasis aged more than 18 years were included in the study. Universal sampling was used. Patients who were not willing to participate were excluded from the study. Informed consent was obtained from the patients after explaining the title, objectives, procedure and benefits from the study. Depressed patients and patients with somatic symptoms were counselled at the end of the interview and were referred to the Psychiatry Department of the nearest Tertiary care institute.

## PROCEDURE

After obtaining consent from patients, single interviewer collected the data from all 30 patients using a pre-validated interviewer administered questionnaire. Severity of depression was assessed using Patient Health Questionnaire (PHQ) -9 Depression scale.<sup>9-11</sup> There were 9 questions. Each question had 4 responses as shown in Table 1. For each question depending on the response, the patient scored "0" for "Not at all", "1" for "several days", "2" for "more than half the day" and "3" for "nearly every day". The maximum score that could be obtained was 27 and the minimum was 0. Patients were categorized into none (0-4), mild (5-9), moderate (10-14), moderately severe (15-19) and severe levels (20-27) for depression based on their responses. The questionnaire has been already validated by several authors in several countries and is readily available in several local languages.<sup>10-13</sup> We used the Tamil version of the questionnaire.<sup>13,14</sup> This questionnaire is free to use for academic and research purposes, as mentioned in the questionnaire. This questionnaire was developed from the Primary Care Evaluation of Mental Disorders (PRIME-MD) by Spitzer RL, Kroenke K and Williams JB.<sup>12</sup>

**TABLE 1: PHQ-9 DEPRESSION SCALE<sup>9-11</sup>**

**Question:** During the last 2 weeks, how much have you been bothered by any of the following problems?

No.	Symptoms	Not at all	Several days	More than half the day	Nearly every day
1	Little interest in doing things?	0	1	2	3
2	Feeling down depressed or hopeless?	0	1	2	3
3	Trouble in sleep/sleeping too much?	0	1	2	3
4	Feeling tired or having little energy?	0	1	2	3
5	Poor appetite or overeating?	0	1	2	3
6	Feeling bad about yourself/that you are a failure/have let yourself/your family down?	0	1	2	3
7	Trouble concentrating on things such as reading newspaper/ watching tv	0	1	2	3
8	Moving/speaking so slowly that other people could have noticed?/the opposite-being so restless?	0	1	2	3
9	Thoughts that you would be better off dead/of hurting yourself in some way?	0	1	2	3

Another questionnaire developed by them for assessing the severity of somatic symptoms was PHQ-15 Somatic symptom scale.<sup>15</sup> It has also been validated by several authors in several countries.<sup>16, 17</sup> There were 15 questions. Each question had 3 responses as shown in Table 2. For each question depending on the response, the patient scored "0"

for "not bothered at all", "1" for "bothered a little", "2" for "bothered a lot". The maximum score that could be obtained was 30 and the minimum was 0. Patients were categorized into minimal (0-4), low (5-9), medium (10-14) and high (15-30) based on their responses. Single interviewer conducted the interview for all the subjects.

Table 2: phq-15 somatic symptom severity scale<sup>15-17</sup>

Question: During the last 7 days, how much have you been bothered by any of the following problems?

No.	Somatic symptoms	Not bothered at all	Bothered a little	Bothered a lot
1	Stomach pain	0	1	2
2	Back pain	0	1	2
3	Pain in your arms, Legs /joints (hips/knees, etc...)	0	1	2
4	Menstrual cramps/other problems with periods(women only)	0	1	2
5	Headaches	0	1	2
6	Chest pain	0	1	2
7	Dizziness	0	1	2
8	Fainting spells	0	1	2
9	Palpitation	0	1	2
10	Shortness of breath	0	1	2
11	Constipation or diarrhoea	0	1	2
12	Burning sensation during micturition	0	1	2
13	Nausea, gas or indigestion	0	1	2
14	Feeling tired or having low energy	0	1	2
15	Trouble sleeping	0	1	2

### STATISTICAL ANALYSIS

Data was entered in Microsoft excel. Data was double checked after entry and did not require any cleaning. Data was analysed using Epi Info statistical software version 3.0. The normality of the data was checked by comparing against the standard *normal* distribution. Descriptive analysis was carried out for quantitative variables by expressing data in mean with standard deviation. For qualitative variables and variables with a non-normal distribution, frequency and proportion was

used. Bar chart and Pie diagrams were used for representing categorical variables.

### RESULTS

A total of 30 subjects with lymphatic filariasis were included in the study. Table 3 describes the baseline characteristics of the study population. The mean age was  $47 \pm 10.9$  years. The minimum age was 33 years while the maximum age was 66 years. Majority (66.67%) of the population were aged between 46 to 50 years.

**TABLE 3: Baseline characteristics of the study population (n=30)**

BASELINE CHARACTERISTICS	FREQUENCY(%)
1. Age group in years	
I. 31 to 35 years	1 (3.33%)
II. 36 to 40 years	2 (6.66%)
III. 41 to 45 years	1 (3.33%)
IV. 46 to 50 years	20 (66.66%)
V. 51 to 55 years	1 (3.33%)
VI. 56 to 60 years	2 (6.66%)
VII. > 60 years	3 (10%)
2. Mean age ( $\pm$ S.D.) in years	47 $\pm$ 10.9
3. Gender	
I. Male	18 (60%)
II. Female	12 (40%)
4. Type of family	
I. Nuclear family	22 (73.3%)
II. Joint family	4 (13.3%)
III. Three generation family	4 (13.3%)
5. Religion	
I. Hindu	22 (73.3%)
II. Muslim	6 (20%)
III. Christian	2 (6.7%)
6. Current smoker	
I. Yes	2 (6.7%)
II. No	28 (93.3%)
7. History of at least one co-morbidity	
I. Yes	10 (33.3%)
II. No	20 (66.7%)

Table 4 describes the severity of depression among the study participants as measured by PHQ-9 scale.

**TABLE 4: Depression in the study population (n=30)**

Severity of depressive symptoms	Frequency (n)	Percentage (%)
None(0-4)	10	33.3
Mild(5-9)	18	60
Moderate depression(10-14)	2	6.7
Moderately severe depression(15-19)	0	0
Severe depression(20-27)	0	0
Total	30	100

Table 5 describes the severity of somatic symptoms among the study participants as measured by PHQ-15 somatic symptom scale. Majority had somatic symptoms. 50% had high

level of somatic symptoms while 26.7% had medium level of somatic symptoms. 13.3% had

low level of somatic symptoms while 10% had minimal somatic symptoms.

**TABLE 5: Severity of somatic symptoms in the study population (n=30)**

Level of somatic symptom severity	Frequency (n)	Percentage (%)
Minimal(0-4)	3	10.0
Low(5-9)	4	13.3
Medium(10-14)	8	26.7
High(15-30)	15	50.0
Total	30	100.0

## DISCUSSION

There is a considerable physical, psychological and social stress among patients suffering from lymphatic filariasis. In the present study, 66.7% of the study population was depressed. 60% had mild depression while 6.7% had moderate depression. Majority had somatic symptoms. 50% had high level of somatic symptoms while 26.7% had medium level of somatic symptoms. According to the National Mental Health Survey (NMHS) of India, conducted during 2015 to 2016, the prevalence of lifetime Depressive Disorder was 5.25% with 95% Confidence Interval of 5.21% to 5.29%. The prevalence of depression in our study population was very high compared to the general population.<sup>18</sup>

Ton TG et al<sup>19</sup> in their study observed that there was a higher burden of depressive illness at 5.09 million disability-adjusted life years (DALYs) in patients with LF. The government of India launched the Accelerated Plan for Elimination of Lymphatic Filariasis with the goal of eliminating Lymphatic Filariasis from the country by 2021. Twin pillar strategies of Mass Drug Administration (MDA) for interruption of transmission i.e. no new case and Morbidity Management and Disability Prevention (MMDP) for catering the disease afflicted patients were adopted for elimination.<sup>8</sup> Although morbidity control is one of the main goals of the Global Programme for Elimination of Filariasis, the psychosocial stress associated with such morbidity also need to be addressed. Recognition of the serious impact of stigma is necessary to support disease control. Males (60%) contributed to

majority of our study population. This could be due to the stigma associated with females to even come out of their homes for treatment. Men affected are also financially affected due to locally relevant practices and the stigma associated with their physical disability.<sup>20</sup> Gender-specific psychosocial support is needed to address the gender gap between men and women in seeking treatment.<sup>21</sup> Without psychosocial support, they may ultimately end up depressed. Somatic symptoms are also strongly associated with symptoms of depression.<sup>16</sup> Medically unexplained somatic symptoms can have a negative influence on the patients. It affects their quality of life, and treatment outcome. Majority (66.67%) of our study participants were in the age group of 46 to 50 years. This could be due to the presentation of disease at relatively older ages and also younger people may lack the morbidity associated with the disease to visit the hospital. In the study by Obindo J et al<sup>22</sup>, majority (41.5%) were >60 years old. Nearly 25% of their population had the illness for >30 years. This could be due to the endemic nature of the disease in their population for decades compared to our population. AbdulmalikJ et al<sup>23</sup> in their study had observed that subjects with lymphatic filariasis perceived it as a spiritual illness. In our study, majority (73.3%) were Hindus. The relationship between religious ideas and depression needs further exploration. Obindo J et al<sup>22</sup> in their study had observed that majority (76.6%) of their subjects were Christians. Every study population has been majorly contributed by a single religion according to the country and their

culture. This could be used to the advantage of policymakers by also involving religious leaders in counseling against the stigma, depression and anxiety related with the disease. There are also studies reporting the restricted prospects of marriage women with lymphedema.<sup>24</sup> Patients with LF are more prone for depression as the psychological stresses of exclusion from their families and stigma towards them in their own community, particularly in South Asian countries. They tend to lose their purpose in life. Obindo J et al<sup>22</sup> in their study had observed that in Nigeria, the prevalence of depression was 20% using PHQ-9 questionnaire. Among them 26.3% had severe depression, 31.6% had moderate depression and 42.1% had mild depression. Abdulmalik J et al<sup>23</sup> also observed a similar prevalence of 20% in their study conducted as a part of their qualitative study. But in our study, 66.7% of the participants were depressed. 60% had mild depression. 6.7% had moderate depression. Similar to our study, Richard SA et al<sup>25</sup> in their study in Togo observed that more than 70% of subjects were at high risk of depression using Duke anxiety-depression scale. This difference across studies could be due to the sampling frame and socio-demographic characteristics. Our study population was from a single centre, while other studies included participants from multiple centres. This could also be due to patient factors like their understanding of the questions or bias due to the interviewer across various studies. Somatic symptoms have a strong association with depression.<sup>3</sup> In the present study, 90% had somatic symptoms. Somatic symptoms are omnipresent in every clinic. 50% of our subjects had high level of somatic symptoms while 26.7% had medium level of somatic symptoms. There was a lack of studies in the literature for comparing the somatic symptoms in LF. Krishna Kumari A et al<sup>4</sup> assessed the quality of life in people with LF and observed that higher grades of lymphoedema and hydrocele were associated with more severe psychosocial problems compared to physical ones. They also observed that medical experts perceived their severity as lesser compared to the patients. Hence Morbidity management programmes should be broadened to include counseling, rehabilitation

and health education to manage the psychosocial problems caused by LF.

### LIMITATIONS

The prevalence of depression was assessed by a screening questionnaire for use in primary care settings and it need not be the final diagnosis. Hence there is a need for further confirmation of results by a psychiatrist. Our study was more of explorative in nature in bringing up a hypothesis, that the prevalence of depression is high in this population. The present study was a single centre hospital based study of a small sample size. The cross-sectional nature of this study also limits us from understanding the causality of depression and somatic symptoms in LF. The validity and generalizability of our results is questionable because of the sampling frame and sampling technique. Therefore results of our study may not be applicable to other areas. But the hypothesis generated can help in paving the way for policy makers and clinicians to further conduct studies on multi-centre community based samples.

### CONCLUSION

To conclude, the present study has explored beneath the tip of the iceberg of depression in lymphatic filariasis. There is evidence of depression in a small sample of lymphatic filariasis patients attending a morbidity clinic using PHQ-9 questionnaire. Active measures have to be taken to investigate the levels of depression among Filariasis patients and also to control the same thereby ensuring good quality of life for those patients. Our study was one of its kind throwing light into this neglected topic for decades. There is a huge burden of psychosocial stress besides the stigma among all people living with LF. It is the need of the hour to focus on their mental health and to initiate interventions to promote their psychosocial well-being and to include them as a part of morbidity management programs.

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**AUTHORS' CONTRIBUTIONS**

Contributions	Author 1	Author 2	Author 3
Concepts	√		
Design	√		
Definition of intellectual content	√		
Literature search	√	√	
Data acquisition	√	√	
Data analysis	√	√	
Statistical analysis	√	√	
Manuscript preparation	√	√	√
Manuscript editing	√	√	√
Manuscript review	√	√	√
Guarantor	√		



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