

# A Study on Morbidity Management among Lymphatic Filariasis Patients in Udupi district, Karnataka, India

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## ABSTRACT

**Context:** Morbidity management is one of the key aspects in the life of Lymphatic Filariasis (LF) patients. National Vector Borne Disease Control Programme (NVBDCP) is giving more emphasis by conducting morbidity management training camps every year since 2004 to help LF patients to manage and cope-up with the existing morbidity. **Aim:** To study the morbidity management among LF patients in Udupi district, Karnataka. **Study Setting and Design:** The study was conducted in Udupi district, Karnataka, India in 2013. The design was stratified random sampling with proportional allocation method. **Materials and Methods:** Community based cross sectional study, 178 subjects suffering from LF were selected using stratified random sampling with proportional allocation method. An interview based method was used to collect the data. Lymphoedema Morbidity Management Questionnaire were designed based on the guidelines provided by National Vector Borne Disease Control Programme (NVBDCP). **Results:** Among 178 LF patients only about 34% had knowledge about the disease causation. About 98.3% had good hygiene practice towards affected area but only 30% of them regularly practiced one or the other exercise as recommended. **Conclusion:** The study clearly indicates the outreach focus on LF patients needs to be enhanced by grass root level health workers. The program has to ensure that all the LF patients will undergo morbidity management training and know how to take care of lymphoedema.

**Key words:** Morbidity Management, Lymphatic Filariasis, Mass Drug Administration.

## INTRODUCTION

Lymphatic filariasis (LF), a mosquito-borne disease, is caused by the parasitic filarial nematodes (roundworms) *Wuchereria bancrofti* (*W. bancrofti*), *Brugia malayi* (*B. malayi*), or *Brugia timori* (*B. timori*). Because the burden of the disease is determined by the intensity and the duration of the infection, the greatest impact of LF is on older age groups.<sup>1</sup> LF is one of the Neglected Tropical Diseases (NTDs). In 1997 World Health Organisation (WHO) declared LF as eradicable or potentially eradicable and in 2000 the Global Programme to Eliminate LF was launched.<sup>2</sup> Mass Drug Administration as one of the key strategy to eliminate LF and disability management is the other key component. The programme has a coverage of more than 500 million implemented in 27 countries.<sup>3</sup> According to World Health Organization (2011) an estimated 120 million people in 73 countries are currently infected with filariasis. It is one of the second leading cause of disability worldwide.<sup>4</sup> About 15 million people are having lymphoedema (Elephantiasis) and 25 million with urogenital swelling especially the scrotal hydrocele. Around 65% of those at risk reside in WHO's South East Asia Region. India, Indonesia,

Nigeria, and Bangladesh contribute about 70% of infection worldwide.<sup>5</sup>

LF is a disfiguring and disabling disease which is usually acquired in childhood and manifestations are usually seen in adulthood. Lymphoedema is common with frequent attacks of infection causing swollen limbs, severe pain and fever. The disease is mainly transmitted by mosquito species *Culex quinquefasciatus*, *Aedes aegypti* and *Mansonia annulifera*/*M. uniformis*.<sup>4,5,6</sup> *Culex* species is main vector for *W. Bancrofti* and *Mansonia* is the vector for *B. Malayi*. Most of the time the disease is asymptomatic and the individual may carry millions of larval parasites called microfilariae in the blood and adult worms mainly in the lymphatic system.<sup>7</sup> These adult worms get blocked in lymphatic system causing lymphoedema like lymphoedema of legs, scrotum, breasts and arms.<sup>8</sup> In India about 600 million people are considered at risk of developing the disease like LF. Indigenous LF is reported from 20 states including the union territories. An average of 250 districts have been identified to be endemic for filariasis. In India the filariasis is mainly caused by two species *Wuchereria bancrofti* and *Brugia malayi*. It is estimated

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that 99.4% of the cases are caused by *Wuchereria bancrofti* and 0.6% by *Brugia malayi*.<sup>9</sup> In Karnataka there are 8 endemic districts for filariasis and Udupi is one among them. The main aim was to study the morbidity management among LF patients and the objective was to know the knowledge and practices for morbidity management of lymphoedema.

**MATERIALS AND METHODS**

A community based cross-sectional study was conducted in Udupi district which is administratively divided into three taluks, namely Udupi, Kundapur, and Karkala, between the months February and July 2013. All the subjects confirmed positive for LF were included in the study and who are bedridden and unable to speak were excluded from the study. Among the total 800 LF patients (District Vector Borne Disease Control (DVBDC), Udupi, 2012) in Udupi district, a sample of 224 patients was included in the study and out of which 178 agreed to participate in the study. A stratified random sampling with proportional allocation technique was used as sampling technique. Number of patients needed for the study, were selected according to urban and rural setting. Then proportionally allocated to all the three talukas (Udupi, Karkala and Kundapur) by randomizing the list of participants from the line list of LF patients given in the Udupi District (DVBDC, Udupi, 2012) in which name and addresses of the patients are mentioned. The randomly selected patients were included in the study. The sample size of 224 for the study was calculated based on the prevalence study which was found in the literature review and calculated using Prevalence (P) = 30%, Confidence Interval of 95%, Relative precision (ε) = 20% of p. SPSS version 15 (SPSS Inc., Chicago, IL) was used to analyse the data. Statistical analysis was done with categorical variables expressed as frequencies and percentages. Continuous variables were measured using mean and standard deviation.

**Ethical approval**

The ethical clearance was obtained from the Institutional Ethics Committee of Kasturba Hospital, Manipal Univesity; and measures were un-

dertaken to maintain patient confidentiality throughout the study and during analysis of data. Written informed consent was obtained from each participant.

**Tools**

Included the socio-demographic details followed by lymphotoedema morbidity management questionnaire<sup>10</sup> which was designed based on the guidelines provided by NVBDCP for morbidity management among lymphatic filariasis patients. This tool included knowledge about nail hygiene, washing of the affected part, exercises as recommended.

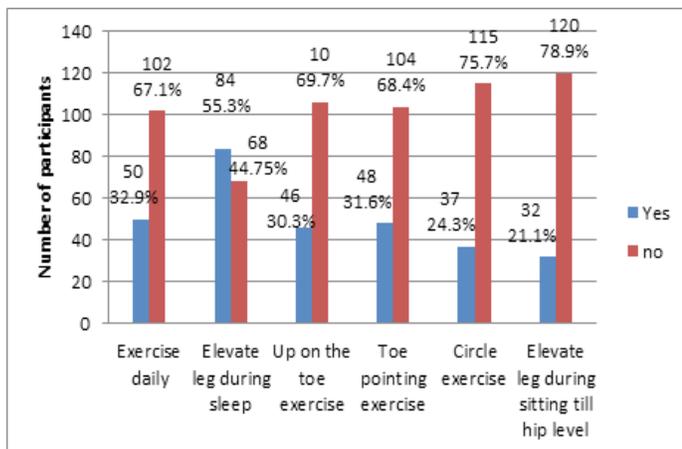
**RESULTS**

A total of 178 participants were covered in the study. Majority of the participants were from Udupi taluk (67.4%) and among the three talukas, maximum participants were from rural (78%) (Table 1). In this study majority of the participants were females patients (66.3%), 88.8% were Hindu and close to 61% were above 56 years, 75% male and 52% female respondents were married. About 30% of male and 31% of female respondents were educated up to primary and 15% of male and 34% of female were illiterate. Regarding occupation 73% female were housewives and among men 28% were unskilled workers (Table 2).

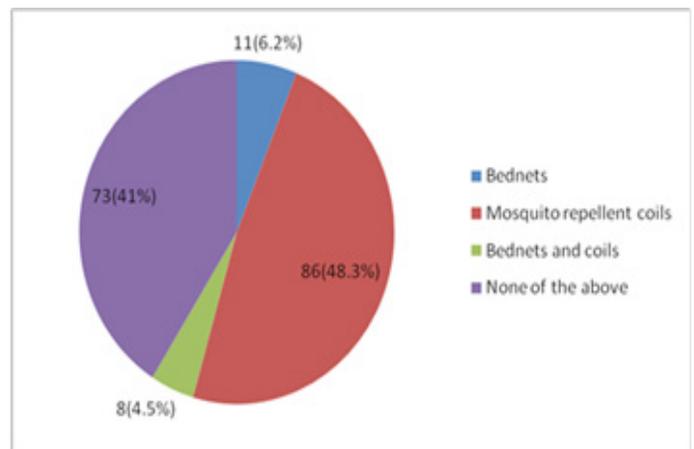
Grading of lymphoedema showed that 52.2% had grade I staging, 31% had grade II staging and 13% had grade III (elephantiasis) staging. Single leg morbidity was high among the respondents, 33% men had lymphoedema of left leg, and 25% had on right leg. Among women 44.07% had lymphoedema of left leg and 37.29% of right leg. In men 33% had scrotal swelling (Hydrocele). Knowledge of how the disease is caused was responded by 34%. Women (32%) were more aware about the disease than men (22%). For morbidity management, 58% were aware about nail hygiene and 94.4% had the knowledge of Mass Drug Administration (MDA). Regarding recommended practices for morbidity management, 98% patients said they wash the affected body part daily with soap. Regarding frequency of cleaning affected part, 62% wash twice daily and 17% wash during morning and evening time. Among 178 patients inter-

**Table 1: Distribution of cases according to Taluks.**

Taluks	Urban n (%)	Rural n (%)	Total (%)
Udupi	21 (11.79)	99 (55.62)	120 (67.4)
Kundapur	12 (6.74)	26 (14.61)	38 (21.35)
Karkala	6 (3.37)	14 (7.87)	20 (11.24)
Total	39 (21.9)	139 (78)	178



**Figure 1:** Exercises practiced for morbidity management (n=152)



**Figure 2:** Protective Measures Used by Patients

**Table 2: Socio Demographic Details of Patients.**

Variables	Category	Male		Female	
		N	%	N	%
Gender		60	33.7	118	66.3
Religion	Hindu	55	91.7	103	87.3
	Muslim	3	5.0	10	8.5
	Christian	2	3.3	5	4.2
Age (yrs)	<15	0	0	1	0.8
	16 to 25	2	3.3	1	0.8
	26 to 35	2	3.3	2	1.7
	36 to 45	5	8.3	15	12.7
	46 to 55	15	25.0	27	22.9
	>56	36	60.0	72	61.0
	Marital status	Married	45	75	62
Unmarried		10	16.7	10	8.5
Widow				44	37.3
Widower		5	8.3		
Single				2	1.7
Educational status	Primary	18	30.0	37	31.4
	Higher primary	22	36.7	26	22.0
	High school	10	16.7	11	9.3
	Pre University	0	0	2	1.7
	Graduate	1	1.7	1	0.8
	Post graduate	0	0.0	0	0.0
	Illiterate	9	15.0	41	34.7
Occupational status	Professional/ white collar	1	1.7	2	1.7
	Business	9	15.0	2	1.7
	Skilled	10	16.7	1	0.8
	Unskilled	17	28.4	18	15.3
	Housewife			88	73.3
	Retired	6	10.3	2	1.7
	Right now not working	12	20.7	1	0.8
	Unemployed	3	5.2	6	5.0

**Table 3: Describes the knowledge and practices for morbidity management among LF patients.**

Characteristic	N (%)	Characteristic	N (%)
Knowledge			
How the disease is caused		About MDA	
Yes	60(33.7)	Yes	168(94.4)
No	118(66.7)	No	10 (5.6)
Nail Hygiene			
Yes	102 (57.3)		
No	76 (42.7)		
Morbidity management			
Sites affected	Males n=60	Females n=118	
Rt arm	1(1.6)	3(2.5)	
Lt arm	2(3.3)	1(0.8)	
Rt Leg	15(25)	44(36.7)	

Lt leg	20(33.3)		54(45.0)
Both Legs	3(5.2)		18(15.0)
Scortum	19(31.6)		
Grading of Lymphoedema		Daily washing of affected body area	
GRADE 1	93(52.2)	Yes	175(98.3%)
GRADE 2	55(30.9)	No	3(1.7%)
GRADE 3	23(12.9)		
Didn't had any edema	7(3.9)		
Time of washing their affected part		Practices of using customized footwear n=152	
Morning time	51(2.7%)	Yes	148(97.4)
Both morning and evening time	30(16.7%)	No	4(2.6)
No specific time	21(11.8%)		
Both morning and night before going to sleep	76(42.7%)		

viewed, 152 had lymphoedema of leg. Daily leg exercise is necessary for the morbidity management as recommended by the NVBDCP program. It was found that only 30% of them practiced one or the other exercise regularly (Figure 1). Elevation of the leg was practiced by 45% patients, 'Up on toe' exercise by 30%, 'Toe pointing exercise' by 31%, 'circle exercise' by 25%. Wearing of customized footwear was practiced by only 2.6% (Table 3). Attendance to morbidity management camp was very less i.e 28%. For protection against mosquitoes, 48% used mosquito repellent coils and only 6% used bed nets (Figure 2).

## DISCUSSION

Global Programme to Eliminate LF (GPELF) focuses on two major components 1. Interrupting transmission, 2. Managing morbidity and preventing disability.<sup>2</sup> Present study focused on the second major component of the GPELF. One of the study conducted in tertiary care centre Kerala,<sup>11</sup> 72.6% (82) had in the age group of 60-85 years which was almost similar to our study were most of the patients were above age of 56 years 60.7% (108). Other similar study conducted in Srilanka<sup>12</sup> had male patients 33.3% (22) and female patients 66.7% (44), both legs affected patients were 9% (6). 45.5% (30) were in Grade 1 stage and 16.7% (11) were in Grade 3 stage, which was similar to our study as female patients were 66.3% (118) and male patients 33.7% (60). Both legs patients were 21 (11.8%), 52.2% (93) were in Grade 1 stage and 12.9% (23) were in Grade 3 stage. Knowledge of nail hygiene was lower in present study (57.3%) compared to the above study in which it was above 80%. A study conducted in northeastern Brazil<sup>13</sup> showed that the patients who were not using bed nets at night were at two times high risk of developing infection than those who were using the bed nets at night (OR=1.87; 95CI:1.47-2.38). As present study did not focus on the risk factors, rather use of protective measures was studied. Only 6.2% of the patients used bed nets and 4.5% used both bed nets and coils, 41% did not use any form of protective measure against mosquitoes.

## CONCLUSION

The program has to ensure that all the LF patients will undergo morbidity management training and know how to take care of lymphoedema. A total of 178 people were interviewed in the study among them most of the patients i.e. 60.7% were above 55 years and women were more (66.3%) than men (33.7%). The literacy rate among subjects was fairly good, 31% had up to primary level 27% of them up to secondary level. Regarding knowledge on how filariasis is caused, women (32%) had better knowledge than men (22%). Regarding MDA both men and women

had good knowledge and 95% of men and 84% women had received drugs during recent MDA. The lymphoedema of leg was found both in men and women. More than 50% of them had grade I stage lymphoedema followed by grade II (31%). In morbidity management, washing was practiced by 98.3% among which majority (42.7%) said that they washed both morning and night before going to sleep. Recommended exercises for morbidity management were not practiced by most of the patients.

## Limitations

Due to the cross sectional study design, a temporal association cannot be made. Moreover, lesser duration of the study and in depth perception of the patients regarding morbidity management was not possible.

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## CONFLICT OF INTEREST

None

## ABBREVIATIONS USED

**GPELF:** Global Programme to Eliminate LF; **LF:** Lymphatic Filariasis; **MDA:** Mass Drug Administration; **NVBDCP:** National Vector Borne Disease Control Programme; **NTD:** Neglected Tropical Diseases; **WHO:** World Health Organization.

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