Current Perceptions and Practices (KAP) about Leprosy among Leprosy Patients: A Comparative Study between High Prevalent & Low Prevalent Districts of West Bengal

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A cross sectional observational study was conducted to assess knowledge, attitude and practices about leprosy among leprosy patients in six districts of West Bengal. Total patients selected for the study were 300; of them 185 patients were from three high prevalent districts and 115 from three low prevalent districts of West Bengal. 56.33 % patients were male and 43.67% were female. Most of the patients (85.67%) belonged to Hindu community and 60% from socially backward group. 64.33 % patients lived below poverty line. Thirty five percentage of patients had correct knowledge that leprosy is caused by a bacteria. Patients from high prevalent districts (41.62%) have better knowledge than those from low prevalent areas (26.09%). Difference was found to be statistically significant (p=0.006). Correct knowledge about spread of leprosy through cough & sneezing, of the patients from high prevalent districts (30.81%) was more than those from low prevalent districts (14.78%) (p=0.001). 74.05% patients from high prevalent districts could tell one or other forms of clinical presentation of a leprosy patients, while 56.52% from low prevalent areas could mention it correctly (p=0.01). About infectiousness, duration of treatment, complications, patients from high prevalent districts showed better knowledge that those from low prevalent districts. Similarly, Attitude of the patients towards leprosy was found to be more adverse in low prevalent areas. 90% patients have idea that leprosy was curable, but only 51.67% patients heard about MDT. Place of residence (high prevalent districts) & level of education (secondary & above) attributed to better knowledge score of the patients, whereas Place of residence (high prevalent districts) & age (younger age group) attributed to better attitude score of the patients.

Key words: Leprosy, Knowledge, Attitude and Practices, low & high prevalent districts

Introduction

Leprosy is probably the oldest disease known to mankind. In India leprosy was known since ancient time as 'Kustharoga' and attributed to punishment or curse from God. Modern day leprosy dated from 1873 when Hansen of Norway discovered *Mycobacterium leprae* (Park 2009). The National leprosy control

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programme was launched in India in 1955, using survey, education and dapsone monotherapy to detect & treat leprosy cases. With introduction of Multi Drug Treatment (MDT), the programme was renamed as National leprosy eradication programme (NLEP) in 1983 with a goal of elimination of leprosy as a public health problem (less than 1 case per 10,000 populations) by the year 2000 AD. This successfully reduced the national prevalence of leprosy from 57.6/10000 in March 1981 to 2.44 per 10000 in March 2004 (NLEP 2004, Siddiqui et al 2009). With a sustained effort, India achieved the goal of elimination of leprosy in December, 2005, when the recorded prevalence rate (PR) in the country was 0.95/ 10,000 population (Sinha 2010).

Nonetheless, India continued to record the highest number of new leprosy cases in the world followed by Brazil and Indonesia. While globally in 2008, 2.5 lakh new cases of leprosy were recorded, India accounted for 1.37 lakhs, of those cases 35% were women. (Sinha 2010). On 1st April, 2008 prevalence rate was recorded to be 0.74/10,000 (www.nlep.nic.in).

In West Bengal PR in 1st April 2009 was 0.99. As per performance assessment report of March 2010, out of 19 districts, 10 districts have attained elimination status, whereas rest of the 9 districts had prevalence rate more than 1 per 10000 population including Bankura and Purulia having prevalence more than 2 per 10000 (www.nlep. nic.in).

Integration of MDT services with general health services has posed various operational challenges in programme management (Kar et al 2010). The disease came with so many myths and carried great social stigma of ostracism which compelled the patients to hide the diseases resulting in deformities (Chudasama et al 2008).

The different studies indicated that Leprosy stigma was still a global phenomenon, occurring in both endemic and non-endemic countries. The consequences of stigma affected individuals as well as effectiveness of Leprosy control activities. Despite enormous cultural diversity, the areas of life affected were remarkably similar. They included mobility, interpersonal relationship, marriage, employment, leisure activity and attendance at social and religious functions (Van Brakel 2003).

Even after two decades of excellent multidrug therapy and remedies for reaction and ulcer, large segment of rural population were seen ignorant or weakly motivated to seek early treatment. A variety of educational activities such as small group talks, posters, and use of catchy slogan were an integral part of health services to educate patients, their families and the general communities on Leprosy and its treatment, in order to dispel ignorance, misconception and prejudices. Despite these efforts, a review by Mutatkar concluded that knowledge-gap about leprosy among general population as well as patients were persisting. It was well accepted that knowledge alone would not change attitude or behaviour (Barkataki et al 2006).

With a view to make more effective community based strategies, maximize the effectiveness of health education programme, it needs to assess current status of perception, attitude and practices of patients and factors influencing it. The finding of such study will help the policy makers to get an idea about perception, prejudices, practices as well as attitude of patients towards the most stigmatized disease so as to adopt appropriate changes accordingly. In this background this study was undertaken with the following objectives.

Objectives

- To assess knowledge, attitude & practices about leprosy among leprosy patients in both high & low endemic districts.
- To compare knowledge, attitude & practices of the respondents between low & high endemic districts of West Bengal.
- To identify factors that might affect KAP of the patients.

Material and Methods

Type of the Study: A cross sectional observational study.

Settings: The study was conducted in 3 high prevalent and 3 low prevalent districts of West Bengal.

Study subjects: Leprosy patients for assessment of their perception and practices regarding leprosy.

Sample size: 25% of leprosy patients getting MDT in 25% blocks of 3 high prevalent and all patients in 25% blocks in 3 low prevalent districts of West Bengal, thus, 185 patients from high endemic districts and 115 patients from low endemic district were selected.

Sampling techniques: Multi-stage sampling technique was adopted.

Subject Inclusion criteria: Patients who could communicate verbally, was currently under treatment and have given informed consents were included for interview.

Methodology

In the 1st stage sampling, 3 out of 10 districts achieving elimination status and 3 out of 9 districts not achieving elimination status were selected randomly for the study. The selected districts in high prevalent areas were Purulia, Bankura & Dakshin Dinajpur and three selected districts in low prevalent areas were Howrah, North & South 24 Parganas. In the 2nd stage of sampling one-fourth i.e 25% blocks and 25% of municipality/ urban areas (at least one, if total urban area in the district is less than 4) were selected randomly from each district. Thus, 13 blocks & 3 municipal areas in high prevalent districts and 18 blocks & 10 municipal areas in low prevalent districts were selected. In 3rd stage of sampling, one-fourth (25%) of recorded leprosy patients receiving treatment under NLEP in each selected block/municipality of high prevalent districts were chosen randomly and all recorded leprosy patients receiving treatment in each selected block/municipality of low prevalent districts were selected to assess KAP and treatment compliance of the patients. Thus, 185 patients in high endemic districts, and 115 patients from low endemic districts were selected.

The schedule developed to collect data was validated independently by three experts working in the field of public health and was pre-tested in similar situation in the field prior to actual survey to rule out operational constraints. Informed consent was taken from all participants of the study before undertaking interviews. Ethical clearance was taken from Institutional Ethics Committee of Institute of Post Graduate Medical Education & Research, Kolkata.

Necessary permission was taken from Dept of Health & Family Welfare to conduct the study in the selected districts and cooperation from the district authority was requested.

Outcome variable: Knowledge about cause, mode of spread, signs, complication and treatment of leprosy, treatment seeking behaviour and attitude of the patients towards leprosy.

Analysis

Data were entered in the MS Excel starter 2010 version. Percentage of correct responses to questions on knowledge about leprosy, and

responses to the questions on attitude & practices (outcome) was computed with respect to places of residence (high vs low prevalent districts) and differences were examined by Chi-square test. A knowledge & attitude score was computed based on 10 questions on knowledge & 12 questions on attitude towards leprosy. To develop score only 2 responses were considered, correct response or not for knowledge; and positive response or not towards leprosy for attitude. Mean knowledge & attitude score were compared with respect to different pertinent predictor variables like place of residence (high prevalent vs low prevalence), age, sex, religion, education etc. First Bivariate analysis was done, and finally with variables showing significant difference were put on multivariable regression analysis to predict about factors responsible for outcome. For this SPSS version 17.0 was used.

Result

Total patients selected for the study were 300; of them 185 patients were from three high prevalent district, and 115 from three low prevalent districts of West Bengal. Age of most of the patients (80%) in high prevalent district were less than < 50 years , as compared with that of low prevalent districts, where about 60 % patients were of less than 50 years, and 40 % patients belonged to above 50 years (p<0.01). Fifty six percent of patients were male and 44 % were female. Proportion of male was more in low prevalent districts as compared to its counterpart (61.74% vs 52.97%), but no statistical differences were found. Thirty seven percent patients were service holder, 26% housewives, about 9% were students, 9% self-employed, and rest were at home having no occupation. Thirty eight percent patients were found to be illiterate, and only 17% have crossed secondary level. Illiteracy wee more among patients from high prevalent districts (43.78%) compared with the patients from low prevalent

area (27.83), differences are found to be statistically significant (p=0.02). Most of the patients (85.67%) belonged to Hindu community and 60% from socially backward group. In high prevalent districts, more than 70% patients were found among SC, ST, & OBC communities (p<0.001). Sixty nine percent patients in high prevalent districts belonged to BPL families, which is significantly more than the proportion of the patients (56.52%) belonging to BPL families in low prevalent districts (p=0.02). More than 70% patients were married, and same proportion was found among both the groups. (Table-1)

Almost all patients (98%) heard about leprosy. 35.67% patients have correct knowledge that leprosy was caused by a bacteria. Patients from high prevalent districts (41.62%) have better knowledge than those from low prevalent areas (26.09%). Difference was found to be statistically significant (p=0.006). A sizable number of patients (21%) said that leprosy was caused by curse, sin, heredity or bad blood, whereas 40% patients have no idea about the causation of the disease. Regarding mode of spread, 43% had no knowledge, while 10.33 % said that close contact with patients would cause leprosy. A good number of patients (18.33%) have opinion that sharing article with patients may cause leprosy. That leprosy spread through cough & sneezing from cases was known by 25% patients as a whole, but knowledge of the patients from high prevalent districts (30.81%) was more than those from low prevalent districts (14.78%) (p=0.001).

Most of the patients had knowledge that either anesthetic patch (35.33%) or hypopigmented patch (32%) was the clinical presentation of the disease, whereas 28.67 % had no idea about it. 74.05 % & 56.52% patients from high & low prevalent districts respectively could mention one or other forms of clinical presentation of a leprosy patients correctly (p=0.01). About

Table 1 : Demographic profile of the patients

Attributes	Category	High prevalent districts No (%)	Low prevalent districts No (%)	Total
Age	19 and below	26 (14.05)	10 (8.7)	36 (12.00)
	20 - 29	47 (25.41)	21 (18.26)	68 (22.67)
	30 - 39	38(20.54)	20 (17.39)	58 (19.33)
	40 - 49	36(19.46)	19 (16.52)	55 (18.33)
	50 - 59	21(11.35)	24 (20.87)	45 (15.00)
	60 and above	17(9.19)	21(18.26)	38 (12.67)
	x^2=12.88, df=5, p=0.024			
Sex	Male	98 (52.97)	71 (61.74)	169 (56.33)
	Female	87 (47.03)	44 (38.26)	131 (43.67)
	x^2=2.22, df=1, p=0.136			
Occupation	At home	23 (12.43)	24 (20.87)	47 (15.67)
	Housewife	50 (27.03)	28 (24.35)	78 (26.00)
	Service-holder	67 (36.22)	44 (38.26)	111(37.00)
	Student	19 (12.27)	8 (6.96)	27 (9.00)
	Self employed	26 (14.05)	11 (9.57)	37 (12.33)
Education	Illiterate	81 (43.78)	33 (28.69)	114 (38.00)
	Primary	74 (40.00)	61 (53.04)	135 (45.00)
	Secondary	29 (15.68)	21 (18.26)	50 (16.67)
	Graduation	1 (0.54)	0 (0.00)	1 (0.33)
	x^2=7.82, df=2, p=0.02			
Religion	Hindu	175 (94.59)	82 (71.3)	257 (85.67)
	Muslim	10 (5.41)	33 (28.7)	43 (14.33)
	x^2=31.33, df=1, p<0.001			
Caste	General	52 (28.11)	68 (59.13)	120 (40.00)
	OBC	13 (7.03)	5 (4.35)	18 (6.00)
	SC	86 (46.49)	36 (31.30)	122 (40.67)
	ST	34 (18.38)	6 (5.22)	40 (13.33)
	x^2=35.52, df=3, p<0.001			
Economic status	APL	57 (30.81)	50 (43.48)	107 (35.67)
	BPL	128 (69.19)	65 (56.52)	193 (64.33)
	x^2=4.96, df=1, p=0.02			
Marital Status	Married	134 (72.43)	81 (70.43)	215 (71.67)
	Unmarried	39 (21.08)	24 (20.87)	63 (21.00)
	Widow	10 (5.41)	9 (7.83)	19 (6.33)
	Others	2 (1.08)	1 (0.87)	3 (1.00)

Table 2 : Knowledge of the patients about leprosy

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
What causes leprosy?	Correct	77 (41.62)	30 (26.09)	107 (35.67)
	Incorrect	40 (21.62)	34 (29.56)	74 (24.67)
	Don't know	68 (36.75)	51 (44.35)	119 (39.66)
	χ^2=7.46 , df=1 (correct vs incorrect responses), p=0.006			
How does the disease spread to others?	Correct	57 (30.81)	17 (14.78)	74 (24.67)
	Incorrect	59 (31.89)	39 (33.91)	98 (32.67)
	Don't know	69 (37.30)	59 (51.30)	128 (42.67)
	χ^2=9.80 , df=1 (correct vs incorrect responses), p=0.001			
What are the signs a patient of leprosy presents with?	Correct	137 (74.05)	65 (56.52)	202 (67.33)
	Incorrect	4 (2.16)	8 (6.95)	12 (4.00)
	Don't know	44 (23.78)	42 (36.52)	86 (28.67)
	χ^2=5.63 , df=1 (correct vs incorrect responses), p=0.01			
Are all leprosy patients infectious to others?	Correct	75 (40.54)	28 (24.35)	103 (34.33)
	Incorrect	25 (13.51)	58 (50.43)	83 (27.67)
	Don't know	85 (45.95)	29 (25.22)	114 (38.00)
	χ^2=8.25 , df=1 (correct vs incorrect responses), p=0.004			
Is there any cure of leprosy?	Correct	167 (90.27)	103 (89.57)	270 (90.00)
	Incorrect	5 (2.7)	3 (2.61)	8 (2.67)
	Don't know	13 (7.03)	9 (7.83)	22 (7.33)
	χ^2=0.04 , df=1, p=0.84			
Have the patient heard about MDT?	Yes	101 (54.59)	54 (46.96)	155 (51.67)
	No	84 (45.41)	61 (53.04)	145 (48.33)
	χ^2=1.66 , df=1, p=0.19			
How long is required to complete the treatment?	Correct	93 (50.27)	63 (54.78)	156 (52.00)
	Incorrect	29 (15.67)	31 (26.95)	102 (34.00)
	Don't know	21 (11.35)	21 (18.26)	42 (14.00)
	χ^2=.57 , df=1, p=0.44			
Complication of leprosy	Correct	134 (72.43)	63 (54.78)	197 (65.67)
	Incorrect	24 (12.97)	33 (28.70)	57 (19.00)
	Don't know	27 (14.59)	19 (16.52)	46 (15.33)
	χ^2=9.79 , df=1, p=0.002			
How should a patient avoid disability?	Correct	171 (92.43)	99 (86.09)	270 (90.00)
	Incorrect	5	8	13
	Don't know	9 (4.86)	8 (6.95)	17 (5.67)
	χ^2=3.17 , df=1, p=0.07			

infectiousness of the patients, 4.67% patients had idea that all types of leprosy were infectious; and 34.33% patients mentioned that some patients might spread disease, whereas 38% did not have any idea about it. 40.54% patients from high prevalent districts & only 24.35% patients from low prevalent districts could show right knowledge on it. Difference was found to be statistically significant (p=0.004). Ninety percent patients believed that it was curable, this was almost same in both high & low prevalent groups. (p=0.84). 52% patients heard about MDT; while comparing, proportion of patients having heard about MDT, it was found more in high prevalent group (54.59 %) than that of low prevalent group (46.96%), but the difference was not statistically significant (p=0.19). Regarding duration of treatment, almost 50% of the patients in both the group mentioned that 6 to 12 months period was required for treatment of a leprosy case.

63.33% and 14.67% patients mentioned deformity and ulcer respectively as complications of leprosy, whereas 15.33% have no idea about it. 72.43% & 54.78% patients from high & low prevalence areas respectively could mention one or more complications if patient did not take appropriate treatment (p=.002). 90% patients had idea that early diagnosis & treatment would prevent complication, but few (5.33%) have stressed that worshiping god could prevent it (Table 2).

So far as source of information was concerned, most of the patients got information about leprosy from hoarding (25.67%), radio (14.33%) or from TV (31%). 2.16% patients in high prevalent district heard about leprosy from folk media, but no patients from low prevalent districts mentioned about it. A sizable number of patients, 18.38% & 17.33% from high & low prevalent districts respectively, have no exposure
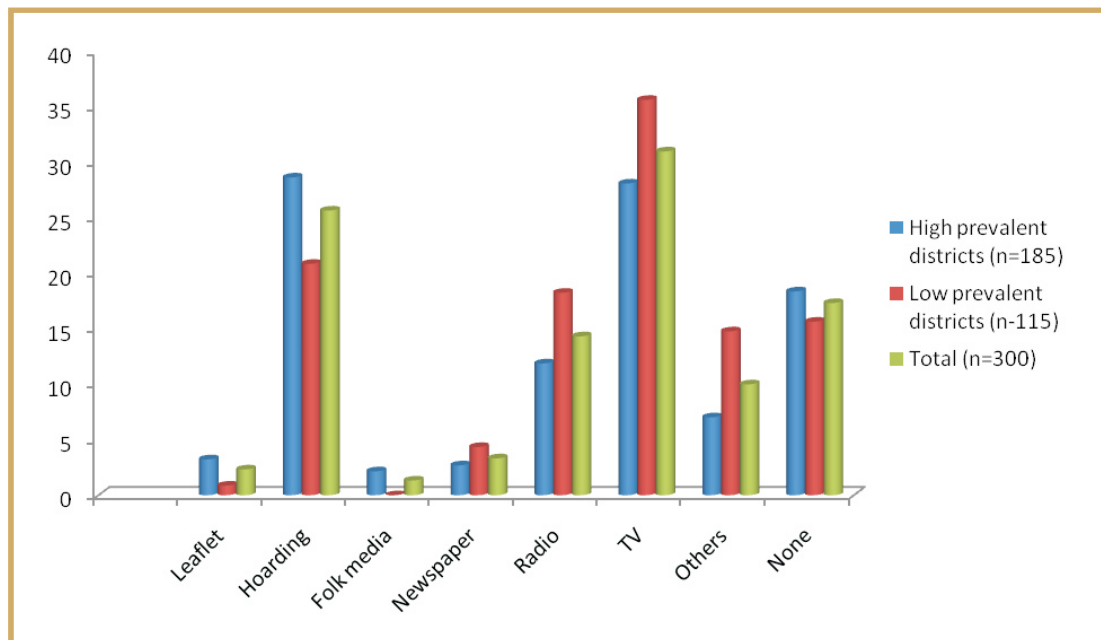

Fig 1 : Respondents (in percentage) getting information about leprosy from different media

to any media regarding message about leprosy. It was evident from the study that Health workers & medical officers were playing an important role in spreading IEC on leprosy. 47.67% & 34% patients mentioned the names of health workers & medical officers who gave information about leprosy. Health workers were found to be percolating information more in high risk districts as compared to low risk one. Neighbours also have a good contribution. 15% of patients got information from neighbours. (Fig 1 & 2)

Most of the patients (73%) were suffering from multi-bacillary type of leprosy. MB type was more found in low prevalent districts than high prevalent districts (p=0.007). 80% patients presented with hypo-pigmented patch, whereas 16.33% with tingling & numbness of extremities. Duration of illness was found more among patients in low prevalent areas as compared to

that of high prevalent area (p=0.00005) (Table 3).

51%, 26.33% & 10% of patients first consulted medical officers, ANM & local practitioners respectively. 40% patients attended health facilities of their own, whereas 49% patients were accompanied to health facilities by their family members. Self reporting was more among patients from high prevalent districts (47.03%) than the patients in low prevalent districts (27.83%), difference highly significant (p=0009). 66% patients attended health facilities within six months of appearance of sign or symptoms, whereas 16% patients consulted health personnel after 12 months. Early reporting was found higher among patients from high prevalent districts (71.89) than patients from low prevalent districts (57.39), difference was statistically significant (p=0.009). (Table 4)
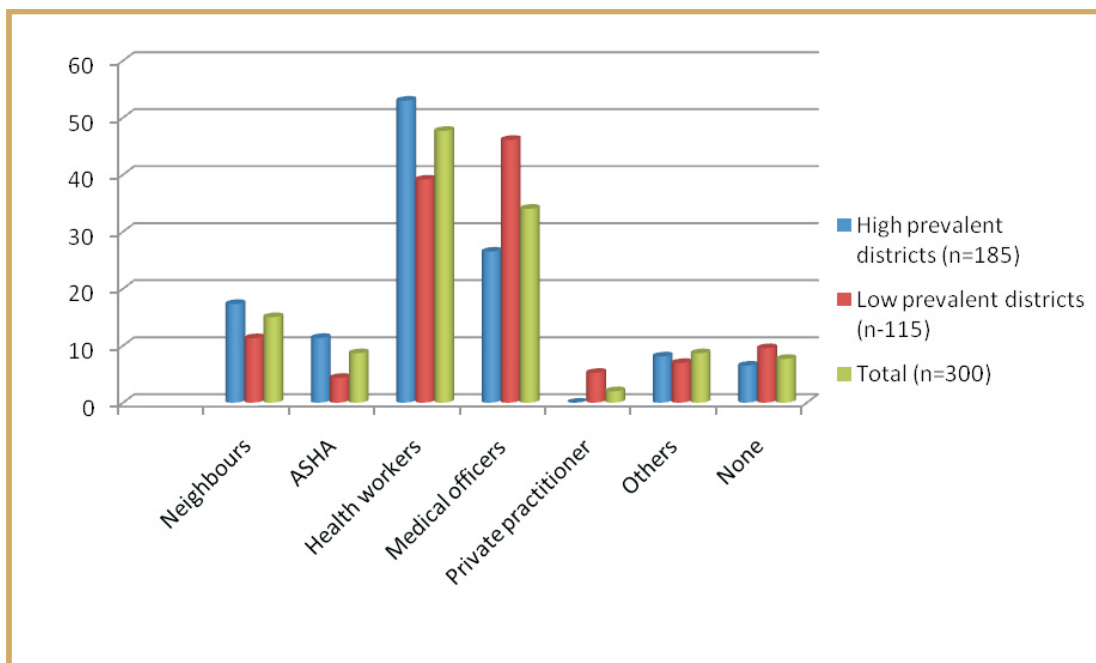
55% patients developed one or other form of

Fig 2 : Respondents (in percentage) getting information about leprosy from human sources.

Table 3 : Type of leprosy, duration of illness and presenting signs

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
Type of leprosy	MB	125 (67.57)	94 (81.74)	219 (73.00)
	PB	56 (30.27)	18(15.65)	74 (24.67)
	Don't know	4 (2.16)	3 (2.61)	7 (2.33)
	^{2}=23 , df=1(MB vs others), p=0.007			
Duration of illness	More than 24 months	51 (27.57)	61 (53.04)	112 (37.33)
	12-23 months	46 (24.86)	24 (20.87)	70 (23.33)
	6-11 months	63 (34.05)	15 (13.04)	78 (26.00)
	Less than 6 months	19 (10.27)	12(10.43)	31 (10.33)
	DK	6 (3.24)	3 (2.61)	9 (3.00)
	^{2}=24.95 , df=4, p=0.00005			
Presenting symptoms	Hypo-pigmented patch	158 (85.41)	82 (71.30)	240 (80.00)
	Tingling and numbness of extremities	19 (10.27)	30 (26.09)	49 (16.33)
	Nodules	4 (2.16)	7 (6.09)	11 (3.67)
	Others	4 (2.16)	7 (6.09)	11(3.67)

disabilities, which was less in high prevalent area (42%) compared with that in low prevalent district (75.65%), difference was found to be highly significant (p=0.0000). Of 165 patients with some sorts of disabilities, 26% used MCR sandals, 12.7% got ulcer treatment, bur a large number of patients (48.48%) did not get any sort of treatment. Proportion of the disabled patients not getting treatment was higher in low prevalent districts (57.47%) as compared to high prevalent areas (38.46%) (p=0.01). 4.67% patients was compelled to change their occupation, the proportion seemed to be higher among patients in low prevalent districts. (Table 5)

Most of the patients (more than 90%) both from high prevalent and low prevalent districts were counselled at different steps of management. 95% were counselled for continuation of MDT, 57.67% for removing fear, 35.33% for self care, but few patients were counselled for possible complication of the diseases (15.33%) (Table 6).

37% patients were found to be depressed, proportion was more among patients in low prevalent districts (46%) than high prevalent areas (31.35%). 13% patients still had belief that leprosy was a result of curse of God, this belief was more among patients from low prevalent districts (19.13%) than high prevalent one (9.19%) (p=.01). 22.67% patients considered that leprosy was the consequence of patients own fault. Similarly this belief was more prevalent among low endemic districts (36.52) as compared with

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Table 4 : Treatment seeking behavior of the patients

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
Whom patient consulted first?	ANM	59 (31.89)	20 (17.39)	79 (26.33)
	MO	97 (52.43)	56 (48.70)	153 (51.00)
	Local practitioner	7 (3.78)	23 (20.00)	30 (10.00)
	ASHA	6 (3.24)	- -	6 (2.00)
	Others	16 (8.65)	16 (13.91)	32 (10.67)
Who took the patient to health facilities?	Family member	81 (43.78)	66 (57.39)	147 (49.00)
	Self	87 (47.03)	32 (27.83)	119 (39.67)
	Neighbours	5 (2.70)	10 (8.70)	15 (5.00)
	Friends	6 (3.24)	4 (3.48)	10 (3.33)
	ASHA	1 (0.54)	1 (0.87)	2 (0.67)
	Others	5 (2.70)	2 (1.74)	7 (2.33)
	^{2}=10.92 , df=1(self-reporting vs other), p=0.0009			
Gap between identification of a sign and reporting to health facilities.	Less than 6 months	133 (71.89)	66 (57.39)	199 (66.33)
	6-11 months	24 (12.97)	18 (15.65)	42 (14.00)
	More than 12 months	20 (10.81)	28 (24.35)	48 (16.00)
	Don't know	8 (4.32)	3 (2.61)	11 (3.67)
	^{2}=6.68 , df=1(early -reporting vs other), p=0.009			

high endemic districts (14.05). The difference was highly significance (P=0.0000). 20% patients concealed disease from others, it was found more in low endemic districts (26.96) than high endemic one (15.68%). 23% consider it to be the outcome of past sin. 23% feared that they would not perform normal activities, and 30% feared of developing deformity. These negative thoughts were more prevalent among patients in low prevalent districts. Eight percent patients experienced discrimination; it was more in low endemic (15.65%) than in high endemic districts (3.24%) (p=0.0001). Six percent did not share room with other family members. Three to four percent patients hesitated to move freely in the community, or use public transport system (Table 7).

From Bi-variate analysis it was revealed that patient from high prevalent districts had significantly higher knowledge score than their counterpart of low prevalent districts. Sixty & above age group have less knowledge score that middle & lower age group. Education level was found to be related to higher knowledge of the patients. But gender, religion, caste or economic status showed no effect on Knowledge score of the patients. On multivariate regression analysis, it was revealed that place of residence (high or low prevalent districts), & Education of the patients determined knowledge score, but effect

Table 5 : Distribution of study subjects according to management of deformity due to leprosy

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
Disabilities	Present	78 (42.16)	87 (75.65)	165(55.00)
	Absent	107(57.84)	28 (24.35)	135(45.00)
	^{2}=32.14 , df=1, p=0.0000			
Treatment for deformity*	Getting ulcer management services	6 (7.69)	15 (17.24)	21 (12.73)
	Using MCR	27 (34.62)	16(18.39)	43 (26.06)
	Others	18 (23.08)	17(19.54)	35 (21.21)
	None	30(38.46)	50(57.47)	80 (48.48)
	^{2}=5.95, df=1, p=0.01			
Is there any change in occupation as a consequence of the disease?	Yes	2(1.08)	12(10.43)	14 (4.67)
	No	183(98.92)	103(89.57)	286 (95.33)

  *% done on disabled patients only

Table 6 : Counselling of the patients

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
Whether counselled by service provider	Yes, during treatment	126 (68.11)	70 (60.87)	196 (65.33)
	Yes, at RFT	43 (23.24)	25 (21.74)	68 (22.67)
	Yes, at diagnosis	160 (86.49)	106 (92.17)	266 (88.67)
	No	6 (3.24)	6 (5.22)	12 (4.00)
About which were the patients counselled?	To remove fear	110 (59.46)	63 (54.78)	173 (57.67)
	Continuation of MDT	178 (96.22)	107 (93.04)	285 (95.00)
	Possible drug side effects	122 (65.95)	54 (46.96)	176 (58.67)
	Possible complication	43 (23.24)	3 (2.61)	46 (15.33)
	Self-care	68 (36.76)	38(33.04)	106 (35.33)

of age could not be established (Table 8 & 9). Similarly, attitude was found to be related with place of residence, age & education on bi-variate analysis, but role of education could not be sustained on multivariate regression. Place of residence (high prevalent districts) & lower age

Table 7 : Attitudes of the patients towards leprosy

Attributes	Category	High prevalent districts (n=185) No (%)	Low prevalent districts (n=115) No (%)	Total (n=300)
When you knew it was leprosy, were you depressed?	Yes	58 (31.35)	53 (46.09)	111 (37.00)
	No	119 (64.32)	60 (52.17)	179 (59.67)
	Didn't answer	8 (4.32)	2 (1.74)	10 (3.33)
	χ^2=6.61, df=1, p=0.01			
Do you consider the disease as a curse of God?	Yes	17 (9.19)	22 (19.13)	39 (13.00)
	No	122 (65.95)	73 (63.48)	195 (65.00)
	Don't know	46 (24.86)	20 (17.39)	66 (22.00)
	χ^2=6.20 , df=1, p=0.01			
Do you consider the disease as own fault of the patient?	Yes	26 (14.05)	42 (36.52)	68 (22.67)
	No	100 (54.05)	58 (50.43)	158 (52.67)
	Don't know	59 (31.89)	15 (13.04)	74 (24.67)
	χ^2=20.42 , df=1 , p=0.0000			
Have you concealed the disease from others?	Yes	29 (15.68)	31 (26.96)	60 (20.00)
	No	148 (80.00)	81 (70.43)	229 (76.330)
	Didn't answer	8 (4.32)	3 (2.61)	11 (3.67)
	χ^2=5.64 , df=1, p=0.01			
You can no longer do anything - do you agree?	Yes	31 (16.76)	37 (32.17)	68 (22.67)
	No	146 (78.92)	73 (63.48)	219 (73.00)
	Don't know	8 (4.32)	5 (4.35)	13 (4.33)
Do you fear that you may develop deformity?	Yes	47 (25.41)	42 (36.52)	89 (29.67)
	No	130 (70.27)	68 (59.13)	198 (66.00)
	Don't know	8 (4.32)	5 (4.35)	13 (4.33)
Have you faced any discrimination?	Yes	6 (3.24)	18 (15.65)	24 (8.00)
	No	173 (93.51)	95 (82.61)	268 (89.33)
	Didn't answer	6 (3.24)	2(1.74)	8 (2.67)
	χ^2=14.84 , df=1, p=0.0001			
Do you live in the same room with other family members?	Yes	174 (94.05)	101 (87.83)	275 (91.67)
	No	6 (3.24)	12 (10.43)	18 (6.00)
	Didn't answer	5 (2.70)	2 (1.74)	7 (2.33)
Do you move around freely in the community?	Yes	178 (96.22)	104 (90.43)	282 (94.00)
	No	2 (1.08)	9 (7.83)	11 (3.67)
	Didn't answer	5 (2.7)	2 (1.74)	7 (2.33)
Do you use the public transport?	Yes	179 (96.76)	106 (92.17)	285 (95.00)
	No	1 (0.54)	7 (6.09)	8 (2.67)
	Didn't answer	5 (2.70)	2 (1.74)	7 (2.33)

Table 8 : Bivariate analysis of Knowledge & Attitude score with respect to different predictor variables

Variables	Category	Number of respondent	Knowledge Score Mean knowledge score (SD)	Test of significance P value	Attitude score Mean attitude score (SD)	Test of significance P value
Endemicity	High prevalent districts	185	6.46 (2.39)	t=3.43 P=.001	9.61 (2.60)	t=3.27 p=.001
	Low prevalent districts	115	5.51(2.23)		8.61(2.54)	
Age group	< 20 yrs	36	6.11(2.56)	F=2.53@ p=.029	10.17(2.37)	F=4.168@@ P=.001
	20-29 yrs	68	6.01(2.36)		9.19(2.71)	
	30-39 yrs	58	6.81(1.99)		9.83(1.92)	
	40-49yrs	55	6.33(2.08)		9.49(2.39)	
	50-59 yrs	45	5.82(2.73)		8.33(2.89)	
	60 yrs & above	38	5.16(2.49)		8.16(3.04)	
Sex	Male	169	6.30(2.28)	t=1.62 P=.10	9.02(2.79)	t=-1.53 P=.128
	Female	131	5.85(2.48)		9.49(2.37)	
Education	Illiterate	114	5.59(2.52)	F =9.13* P=<.0001	9.05(2.95)	F =4.304** p=.014
	Primary	135	6.10(2.26)		9.01(2.39)	
	Secondary & above	51	7.25(1.98)		10.20(2.21)	
Religion	Hindu	257	6.07(2.36)	t=-.53 P=.59	9.28(2.60)	t=.801 P=.424
	Muslim	43	6.28(2.48)		8.93(2.75)	
Caste	General	120	5.99(2.36)	F=2.267 P=.08	9.07(2.75)	F=.98 P=.403
	OBC	18	6.61(3.07)		8.89(3.86)	
	SC	122	6.38(2.14)		9.53(1.95)	
	ST	40	5.35(2.67)		8.92(3.38)	
Economic status	APL	107	6.16(2.44)	t=.319 p=.75	8.89(2.60)	t=-1.67 p=.096
	BPL	193	6.07(2.35)		9.41(2.62)	

@ Post hoc test (Bonferroni):30-39 agegroup vs 60 & above age group (p<.013).

*Post hoc test (Bonferroni): Difference is found between illiterare vs secondary & above (p<.001) and primary vs secondary & above (p<.008), and no difference between illiterate & primary group.

@@ Post hoc test (Bonferroni): <20 vs 50-59 age group (p=.02) and <20 vs 60 & above age group (p<.01), 20-29 vs 60 & above age group (p=.029).

**Post hoc test (Bonferroni): Difference is found between illiterare vs secondary & above (p=.028) and primary vs secondary & above (p=.017), and no difference between illiterate & primary group.

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Table 9 : Regression analysis

a) Dependent Variable: Knowledge score

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.577	.515		8.885	.000
Age	.003	.009	.022	.374	.709
Education	.883	.194	.264	4.553	.000
Endemicity	1.126	.280	.231	4.024	.000

b) Dependent Variable: Attitude score

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	9.417	.576		16.346	.000
Age	-.027	.010	-.158	-2.634	.009
Education	.373	.217	.101	1.719	.087
Endemicity	.884	.313	.164	2.824	.005

group showed less adverse attitude towards leprosy. (Table 8 and 9)

Discussion

A cross sectional observational study was conducted to assess knowledge, attitude, and practices about leprosy among leprosy patients in 3 high prevalent and 3 low prevalent districts of West Bengal to make IEC strategy more effective through patient driven and community based approaches. 185 leprosy patients in high endemic districts and similarly, 115 patients in low endemic districts were interviewed.

Though most of the patients (98%) heard about leprosy, but a large number of leprosy patients did not have knowledge about causal agents (64%), mode of transmission of the disease (75%), chance of infection to others from leprosy patients (66%), presenting symptoms (33%) and treatment with MDT (48%). Similarly, they still have adverse belief & attitudes towards leprosy. Few patients thought leprosy to be associated with divine curse (13%) and patient's own fault (22.7%). A sizable number of patients (21%) said that leprosy was caused by curse, sin, heredity or bad blood. 20% of patients concealed disease from others, and 2-3% patients did not move freely, nor did use public vehicle. In a study done in Uttar Pradesh among leprosy patients and community members revealed the findings that large percentage of leprosy patients had mentioned anaesthesia as the leading symptom followed by patch. Bad blood was cited as the reason for leprosy by most respondents, including leprosy patients. Almost all the respondents were sure there was a treatment for leprosy, but relatively small percentage could specifically mention MDT even among leprosy patients. Nearly 70% of the respondents felt that leprosy affected social participation either by self-stigma or adverse attitudes from others (Barkataki et al 2006). In another study undertaken in Maharastha it was seen that 43.13% of cases were aware that leprosy was an infectious disease.

68.62% of cases were aware of hypo-pigmented patches being a symptom of leprosy; and that the disease is curable was known by 88.24% of patients (Mankar et al 2011). Singh et al (2009) found that 54.28% of leprosy patients had no significant participation restriction in Society and only 3.67% had extreme participation restriction. Findings of our study corroborated that less proportion of the patients had knowledge about MDT, but regarding social discrimination & stigma our result was found to be comparatively less.

Though the patients residing in high endemic districts were comparatively poor (69.2% vs 56.5%), illiterate (43.8% vs 27.8%), and belonging to socially backward classes (79.9% vs 41%), their knowledge, attitude & practices towards leprosy patient were found to be better than that of people living in low endemic districts with respect to some pertinent attribute, like knowledge about cause of leprosy (41.62% vs 26.09%), mode of transmission (30.8% vs 14.8), chance of infection from patient (40.5 vs 24.35) & clinical presentation of a leprosy (76.2% vs 63.5%). Differences were found to be statistically significant (p<0.01). Self-reporting (47.03% vs 27.83%) & early reporting (71.89% vs 57.39), were found to be more in high prevalent districts.

Most of the patients (73%) were suffering from multi-bacillary type of leprosy. MB type was more found in low prevalent districts than high prevalent districts (p=0.007). 55% patients developed one or other form of disabilities, which was less in high prevalent area (42%) compared with that in low prevalent district (75.65%), difference was found to be highly significant (p=0.0000), but a large number of patients with deformity (48.48%) did not get any sort of treatment. Proportion of the disabled patients not getting treatment was higher in low prevalent districts (57.47%) as compared to high prevalent areas (38.46%) (p=0.01).

As the number of new cases has been reduced considerably, emphasis has shifted to provide quality care for prevention of disability and care of disabled leprosy persons, (nlep.nic.in), but the study findings particularly as seen in low endemic area went against this view. 55% patients developed one or other form of disabilities, which was less in high prevalent area (42%) compared with that in low prevalent district (75.65%) (p=0.0000). A study conducted by Sinha et al revealed that 32.20% had grade II deformity, 31.40% grade I and the rest 36.3% non-deformed (Sinha et al 2009). Favourable knowledge & attitude towards leprosy in high prevalent districts compared to low prevalence ones might be due to better IEC effort, more involvement of frontline workers implementing NLEP in the area and more involvement of NGOs.

To explore factors determining knowledge & attitude of the patients towards leprosy, both bi-variate and multivariate analysis was done. It was found that place of residence (high prevalent districts) and levels of education (secondary or more) were statistically associated with higher score of knowledge among leprosy patients. Moreover, high prevalent districts & younger age group showed less adverse attitudes towards leprosy.

From the present study it came to light that higher prevalence of MB cases, delayed reporting to health care facilities, less awareness of people, more adverse attitude towards leprosy reflected less preparedness of health care facilities in low prevalent districts compared to high prevalent ones to combat leprosy, thus it might be becoming silent threat towards 'leprosy free India'.

Conclusion

KAP of low endemic districts were found much less that of high endemic one, and more proportion of MB cases, warranting stringent IEC

at community level with appropriate channels of communication. A high proportion of patients with disability were found to be uncared. In view of the new priority, prevention and appropriate management of the disability needed urgent & timely attention. Focused research on pertinent areas like childhood leprosy, disability due to leprosy - its prevention, management & rehabilitation, community survey in low endemic district to identify their perception & practices, and searching for hidden cases, is urgently needed to get rid of the age-old problem of leprosy in our country. Experience so far gained in implementing NLEP in high prevalent districts should be used as a guide to reach the patients and community in more concerted ways.

Limitation

This study was undertaken by interview of the patient, no qualitative assessment of cases was done to corroborate their interview findings. Attitude scoring was done based on positive or negative responses (No 5 point scale was used).

Acknowledgment

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