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Original Article

A Study of Knowledge and Attitude about Leprosy among the Physiotherapy Students and Practitioners: A Cross-Sectional Study

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Physiotherapy adds quality to the life of people. It provides support to people with disability. Leprosy is such a debilitating condition in which people suffer concerning their functionality and emotional parameters even after bacteriological cure. Leprosy is having several types of social stigmas attached to it which could be the reason for the discrimination among this population. Boosting the knowledge and building up a strong and positive attitude among physiotherapy students and practitioners against leprosy will be of help in overcoming the various multiple taboos associated with this condition. This research work aims at evaluating the knowledge and attitude towards leprosy among physiotherapy students and professionals in India. This study involves 300 voluntary participants from the physiotherapy field (students and professionals) above the age of 18 years from any gender from India, with a good hold on the English language. The response of all the participants was descriptively analyzed. Among study participants the mean score for the knowledge was estimated to be 65.47±14.69. Out of 300 participants, only 72 participants have shown a high level of knowledge with a mean score value of 84.54±5.23, and 228 participants showed a low level with a mean score value of 59.44±11.14. The mean score for the attitude related questions was 54.7±26.21. 189 respondents presented a favorable response with a mean of 71.16±16.56 whereas 111 respondents presented an unfavorable attitude with a mean value of 26.67±11.86. The findings of this research work gave us an insight into the "low-level knowledge" and a relatively "favorable behavior" towards the patient affected by leprosy among the physiotherapy students and practitioners in India. However, still, there is a need to enhance the knowledge and improve attitude among the Physiotherapy students and professionals by educating them and including leprosy in sufficient details in physiotherapy curriculum. Properly designed research cum intervention studies are necessary to understand the gaps in knowledge and attitudinal problems and take remedial measures.

Keywords : Leprosy, Hansen's Disease, Physiotherapist, India, Knowledge, Attitude

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Introduction

Leprosy is an infectious disease caused by bacteria. It is also called Hansen Disease (HD); although it is hundred percent curable now, certain health problems persist in some countries. The causative agent for this disease is *Mycobacterium leprae* bacillus (Walker & Lockwood 2007, Graham et al 2010). There are two polar or principle types of leprosy i.e., lepromatous and tuberculoid. The incubation period for HD can vary, and the average incubation period is around five years as the bacilli multiply slowly; however, it can take one year to 20 years to develop symptoms (Goihman-Yahr 1982). This disease involves the skin, mucous membrane, eyes, bones, and peripheral nervous system. In the skin, this bacteria has an affinity toward keratinocytes, macrophages, and histiocytes, and in the nerves, it has an affinity for Schwann cells, whose temperature is lower than that of the rest of the body (White & Franco-Paredes 2015). The most commonly involved nerve in the scalp and face is the facial, auricular, and trigeminal nerve. In the upper limb, median, ulnar, radial nerve, and the superficial branch of the radial nerve gets more affected, and in the lower limb, the peroneal and tibial nerve gets mostly involved (Ooi & Srinivasan 2004, Talhari et al 2015, Fischer 2017). Leprosy patient has symptoms related to skin and sensory loss. This can eventually lead to disability, dysfunction, and disfiguration (Gonçalves et al 2009).

After wide spread use of multidrug treatment, numbers of leprosy cases have come down all over the world. Indian achieved the elimination of leprosy as a public health problem (below 1/10,000) at the end of December 2005 which was more than 95% decline in numbers (Dhillon et al 2006). Ten years later the majority of the cases of leprosy were still reported in India and Brazil (Ramos-e-Silva & Marcia. 2013; Blok et al 2015). According to the report published by WHO, around 208,619 new cases of leprosy were registered in 2018 from 159 countries, and the prevalence rate accounts to 0.2/10000, which eventually shows that the cases are steeply decreasing as compared to the previous data (WHO 2018).

Literature has proved that there have been substantial improvements in long-term health outcomes for individuals diagnosed with leprosy, but the patients who are not diagnosed on time can have several problems like neuritis, function loss, amputation, disfiguration, deformity, disability (Noordeen & Lopez 1991, Noordeen 1995, Al-Qubati & Al-Kubati 2000, Uwimana et al 2017).

Even though after a lot of efforts by the government for the treatment and eradication, this disease has a lot of myths and misconceptions that negatively affect the lives of infected people. This disease is also associated with the various social stigmas that affect the leprosy population's emotions, thoughts, relationships, and behavior (Lusli et al 2015, Nisar et al 2007).

Physiotherapy plays an important role in physical and functional rehabilitation as well it helps in preventing and reducing disabilities (Brandsma & van Brakel 2003, Marciano et al 2018). The primary role of physical therapy in leprosy is to restore the physical well-being of the infected individual. It works holistically for them (Hamilton 1970, Álvarez & Hans 2019).

The World health organization has launched its "Global Leprosy Strategy 2016–2020: Accelerating towards a leprosy-free world" (World Health Organization 2016) to moralize the efforts for leprosy control. This strategy focuses on children as well as on avoiding disabilities. Physiotherapy is not only confined to managing the deformity, but its main aim is in preventive rehabilitation as defined in the national leprosy control program which can be achieved by systematic recording

and reporting on the individual deformity status of all the patients followed by standardized methods of preventive management at peripheral clinics run single-handedly by paramedical workers (Hasan 1981). The worldwide healthcare sector is trying its best to eradicate leprosy from society. The physiotherapist works on one parameter in the leprosy cases and works on all the levels of prevention and management of disabilities (NLEP 2012).

The effectiveness of any sector is always determined by the knowledge and attitude of the individual studying or practicing that profession. There are several studies in which the knowledge and attitudes toward leprosy had been examined among other healthcare professionals (Mponda et al 2020, Bajaj et al 2009, Jain et al 2016, Haroon et al 2017, Leena & Priya 2017, Swapna et al 2019). Several studies have evaluated the knowledge and attitude of individuals among different communities (Meima et al 2008, Mohite & Mohite 2016, Mponda et al 2020, Nisar et al 2007, Noordeen 1995, Noordeen & Lopez 1991, Ooi & Srinivasan 2004). Even after the disease will be eventually eradicated, many of the bacteriologically cured leprosy affected persons (LAPs) will be left with nerve deficit and resultant complications who will require life-long support from physiotherapists. However, there is a lack of evidence regarding the literature evaluating knowledge and attitude towards leprosy among physiotherapy students and professionals. Therefore, this study aimed to assess the knowledge and the attitude of physiotherapy students and professionals towards leprosy.

Methodology

Study Setting

An online platform using the Google form was used to undertake this study.

Study Population

The participants included physiotherapy undergraduate, postgraduate or doctorate students, physiotherapy interns, physiotherapy practitioners, physiotherapy academicians, or those working as both practitioners and academicians.

Study Design and Sampling

A cross-sectional study design with purposive sampling was adopted in this study.

Selection criteria

Inclusion criteria

Following inclusion criteria was used:

- The study included students studying in the physiotherapy program and the physiotherapy professionals working in academics and clinical.
- All the participants included in the study were older than 18 years of age.
- Participants of all genders were included in the study.
- Participants only from India with a good understanding of the English language were included.
- Participants who were willing to participate and gave written consent were included in this research.

Exclusion Criteria

- The participants not having physiotherapy backgrounds (academies or professional) were excluded.
- Participants below the age of 18 years were not included.
- Participants who did not give their consent were excluded from this research work.
- Participants not having an understanding of the English language and not Indian citizens were not included in this study.

Operational Definitions

Following operational definitions were used :

- *High-level knowledge* : This category defines those participants who were able to answer more significant than 75% of knowledge questions correctly.
- *Low-level knowledge* : This category defines those participants who answered less than 75% of knowledge questions correctly.
- *Favourable attitude* : This category includes those who score greater than 50% of the attitude questions positively.
- *Unfavourable attitude :* This category includes those participants who answered less than 50% of attitude questions positively.

Data Collection Instrument

The semi self-structured questionnaire was used to evaluate the knowledge and attitude of physiotherapy students and professionals. The questionnaire was adapted from the questionnaire used in a similar study conducted among Nigerian physiotherapy students. The questionnaire consists of closed-ended questions. It was circulated among the individuals related to the field of physiotherapy through the link created by Google form. The questionnaire consists of three sections:

Section A : consists of demographic details, which include name, age, and qualification details,

Section B : contains 15 questions regarding leprosy to assess the knowledge, and

Section C : contains 10 questions to assess the attitude of the population towards leprosy.

Scoring of the Questionnaire

The questions were scored according to the manner traced out by (Ivory 2005). In the knowledge section, each correct answer was scored as "1" and every wrong answer was scored as "0", the total score will be obtained by summing it up then multiplying it by 100, and dividing it by 15. This gave the percentage score for the knowledge. Similarly, in section C, every positive response was scored as "1", and every negative or maybe option was marked as "0". Then total scoring was done by summing up the score and dividing it by 10, which gave the percentage score for the attitude section.

Ethical Considerations

Ethical approval was obtained from the ethical committee of Lovely Professional University (LPU/IEC/2021/01/22). All the study objectives were mentioned in the Google form. The consent was taken electronically from all the participants before filling out the form. Only those participants were included, willing to participate in the study. Confidentiality of the information was assured, and the privacy of the study population was respected and kept as well.

Procedure

After getting approval from the ethical committee, the adapted questionnaire was formulated on the Google form. It was circulated through various social media platforms via, Facebook, WhatsApp, Email, LinkedIn, and Twitter. The responses were collected in March 2021. The 300 respondents gave their responses after submitting their consent electronically. The informed consent was attached at the beginning of the questionnaire, stating the purpose and objective of the study. The responses were collected through the same method for around 15 days after the questionnaire was first circulated. After collecting the data, it was verified, duplicates were removed, and then it was analyzed by using a scientific calculator, tally sheet, and excel. Finally, the analyzed data was presented by using frequency tables, graphs, and narrative texts.

Results

The demographic information about the 300 participants included in this study is presented in Table 1. These participants belonged to different regions of country. The participants included in this survey were above the age of 18 years, out of which 86% were aged between 18-25 years, 13.3% were aged between 26-39 years, 0.7% were aged above 40 years. In this study, 41.3% were males, and 58.7% were females. In terms of the professional background, participants were divided into two groups i.e. students group 84.3% and the professional group 15.7%. In the student group, 13.3% were from BPT 1st year, 18.3% were from BPT 2nd year, 12% from BPT 3rd year, 24.3% from BPT 4th year, 10% students were in their internship, 6% participants were from 1st and 2nd year of post-graduation, and only 0.3% was pursuing a doctorate in physiotherapy. In the professional group, 3.3% were from academics, 7% were from clinical, and 5.3% were from both academics and clinical. The knowledge of the physiotherapy students, practitioners related to leprosy, and their attitude was assessed at the same time.

Knowledge

The mean value for the knowledge is 65.47±14.69 ranging from 26.67 to 100. Out of 300 participants, only 72 respondents shows a high level of knowledge i.e. score 75% with a mean score of 84.54±5.23 ranging between 80 and 100; whereas 228 respondents showed a low level of knowledge related to leprosy i.e. < 75% with a mean score of 59.44±11.14 that ranges between 26.67 to 73.33. The response of the participants related to knowledge-related questions is shown

Table 1 : Demographic Information of the participants

	Age in years	Number	Percentage
Age distribution of the	18-25	258	86%
Participants	26-39	40	13.3%
	40-55	2	0.7%
	Above 55	0	0%
Gender Distribution	**Males**	124	41.3%
	Females	176	58.7%
Participants Groups	**Student Groups**	BPT 1 year = n=40	13.3%
		BPT 2 year = n= 55	18.3%
		BPT 3 year = n= 36	12%
		BPT 4 year = n= 73	24.3%
		Internship = n= 30	10%
		MPT 1 year = n= 10	3.3%
		MPT 2 year = n= 8	2.7%
		PhD = n=1,	0.3%
	Professional Group	Academics= n= 10,	3.3%
		Clinician's only = n=21	7%
		Both acad. & clinical = n= 16,	5.3%

in Table 2. Our finding suggests that 91% of the respondents were aware that leprosy spread through bacteria. 75.3% of participants knew about the typical features of leprosy. The ulnar nerve is the most common nerve which gets affected and was correctly answered by 58.7% of the participants, and 62.7% of the participants were also aware of the most severe form of

Table 2 : Knowledge Related Questions

S.No.	Knowledge related Questions	Correct answer percentage	Incorrect answer percentage
1	Leprosy is a disease due to	N=273 (91%)	N= 27 (9%)
2	Which is the typical feature associated with leprosy?	N= 225 (75.3%)	N= 75 24.7%
3	Which nerve is commonly affected in leprosy	N= 176 (58.7%)	N=124 41.3%
4	Which is the most severe form of Leprosy?	N=188 (62.7%)	N=112 47.3%
5	Which country is with biggest Leprosy problem?	N= 243 (81%)	N= 57 19%
6	What is not the sign or symptom of Leprosy?	N= 92 (30.7%)	N= 208 69.3%
7	Leprosy spreads mainly through.	N= 190 (63.3%)	N=110 36.7%
8	Which patient needs immediate medical attention?	N= 184 61.3%	N=116 38.7%
9	What laboratory test is done for the patient suspected of Leprosy?	N= 191 63.7%	N= 109 36.3%
10	What is the cause of deformity in Leprosy?	N= 278 (92.7%)	N= 22 7.3%
11	Should Leprosy patients be isolated during the treatment?	N=235 (78.3%)	N= 65 21.7%
12	Is Leprosy treatment available free of cost to patients in India?	N= 163 (54.3%)	N= 137 45.7%
13	Can a person not having Leprosy marry someone with Leprosy?	N= 209 (69.7%)	N= 91 30.3%
14	Can others touch Leprosy patients?	N= 186 (62%)	N= 114 38%
15	Is there any vaccine against Leprosy?	N=112 (37.3%)	N=188 62.7%

leprosy. India is the leading country in terms of leprosy-infected patients, 81% responded correctly to this question. In our study, 92% of participants were aware of the signs and symptoms of leprosy. In addition, 63.3% of the participants were able to correctly identify droplets as the transmission source of this infectious disease. However, only 61.3% of participants knew when and which form of treatment is required based on the patient's condition. It was also noted that 63.7% of the participants were aware of the laboratory tests required in suspected cases of leprosy. There was a high percentage of the participants of 92.7%, were aware of the type of deformity present in leprosy. 78.3% of participants were aware that the leprosy patient needs not to be isolated at the time of treatment and only 54.3% were knowing that leprosy treatment is freely available in India. The knowledge of the non-availability of vaccines for leprosy was justified by only 37.3% of respondents. 69.7% were willing to marry leprosy-infected individuals, whereas only 62% of participants were aware that they can touch a leprosy patient.

Table 3 : Attitude related Questions

S.No	Attitude related Questions	Positive Response percentage	Negative Response percentage	May be Response percentage
16	Are you willing to treat a patient suffering from Leprosy?	N=267 (89%)	N= 33 (11%)	-
17	Would you work together in the same environment with patients of Leprosy (On or completed treatment)?	N= 249 (83%)	N= 51 (17%)	-
18	Would you eat with a person affected by leprosy?	N= 64 (21.3%)	N= 109 36.3%	127 (42.3%)
19	Would you work at a leprosy hospital?	N= 175 (58.3%)	N= 35 (11.7%)	N=90 (30%)
20	Do you think patient of leprosy should be treated at all conventional hospitals?	N= 182 (60.7%)	N=41 (13.7)	N= 77 (25.7%)
21	Would you agree to travel in a transport system where maximum people are leprosy patients?	N=78 (26%)	N= 124 (41.3%	N= 98 (32.7%)
22	Would you marry a person having /recovered from leprosy	N= 93 (31%)	N= 83 (27.7%)	N= 124 (41.3%)
23	Would you allow your department to be adjacent to the room for treating leprosy patient?	N= 196 (65.3%)	N=31 (10.3%)	N= 73 (24.3%)
24	Would you be in close contact with other clinicians who are involved in treatment of leprosy or research related to it?	N= 159 (53%)	N= 53 (17.7%)	N= 88 (29.3%)
25	Would you allow any physiotherapist suffering or cured from leprosy act as your assistant?	N= 178 (59.3%)	N= 27 (9%)	N= 95 (31.7%)

Table 4 : Correct response, incorrect response, average score and knowledge percentage among different groups of participants

Education	Category	KQ1	KQ2	KQ3	KQ4	KQ5	KQ6	KQ7	KQ8	KQ9	KQ10	KQ11	KQ12	KQ13	KQ14	KQ15
B1	Correct	31.00	24.00	20.00	21.00	32.00	10.00	27.00	26.00	24.00	29.00	35.00	17.00	25.00	26.00	10.00
	Incorrect	9.00	16.00	20.00	19.00	8.00	30.00	13.00	14.00	16.00	11.00	5.00	23.00	15.00	14.00	30.00
	Average	0.78	0.60	0.50	0.53	0.80	0.25	0.68	0.65	0.60	0.73	0.88	0.43	0.63	0.65	0.25
	Percentage	77.50	60.00	50.00	52.50	80.00	25.00	67.50	65.00	60.00	72.50	87.50	42.50	62.50	65.00	25.00
B2	Correct	52.00	36.00	33.00	36.00	44.00	14.00	29.00	32.00	46.00	53.00	47.00	21.00	38.00	34.00	27.00
	Incorrect	3.00	19.00	22.00	19.00	11.00	41.00	26.00	23.00	9.00	2.00	8.00	34.00	17.00	21.00	28.00
	Average	0.95	0.65	0.60	0.65	0.80	0.25	0.53	0.58	0.84	0.96	0.85	0.38	0.69	0.62	0.49
	percentage	94.55	65.45	60.00	65.45	80.00	25.45	52.73	58.18	83.64	96.36	85.45	38.18	69.09	61.82	49.09
B3	Correct	35.00	25.00	25.00	27.00	28.00	8.00	26.00	24.00	24.00	34.00	30.00	16.00	24.00	24.00	17.00
	Incorrect	1.00	11.00	11.00	9.00	8.00	28.00	10.00	12.00	12.00	2.00	6.00	20.00	12.00	12.00	19.00
	Average	0.97	0.69	0.69	0.75	0.78	0.22	0.72	0.67	0.67	0.94	0.83	0.44	0.67	0.67	0.47
	percentage	97.22	69.44	69.44	75.00	77.78	22.22	72.22	66.67	66.67	94.44	83.33	44.44	66.67	66.67	47.22
B4	Correct	71.00	61.00	40.00	39.00	59.00	25.00	46.00	40.00	43.00	69.00	48.00	41.00	51.00	42.00	16.00
	Incorrect	2.00	12.00	33.00	34.00	14.00	48.00	27.00	33.00	30.00	4.00	25.00	32.00	22.00	31.00	57.00
	Average	0.97	0.84	0.55	0.53	0.81	0.34	0.63	0.55	0.59	0.95	0.66	0.56	0.70	0.58	0.22
	percentage	97.26	83.56	54.79	53.42	80.82	34.25	63.01	54.79	58.90	94.52	65.75	56.16	69.86	57.53	21.92
M1	Correct	8.00	8.00	5.00	7.00	8.00	3.00	4.00	8.00	7.00	10.00	9.00	7.00	9.00	4.00	4.00
	Incorrect	2.00	2.00	5.00	3.00	2.00	7.00	6.00	2.00	3.00	0.00	1.00	3.00	1.00	6.00	6.00
	Average	0.80	0.80	0.50	0.70	0.80	0.30	0.40	0.80	0.70	1.00	0.90	0.70	0.90	0.40	0.40
	percentage	80.00	80.00	50.00	70.00	80.00	30.00	40.00	80.00	70.00	100.00	90.00	70.00	90.00	40.00	40.00
M2	Correct	6.00	5.00	5.00	7.00	6.00	1.00	7.00	3.00	4.00	8.00	7.00	5.00	7.00	6.00	1.00
	Incorrect	2.00	3.00	3.00	1.00	2.00	7.00	1.00	5.00	4.00	0.00	1.00	3.00	1.00	2.00	7.00
	Average	0.75	0.63	0.63	0.88	0.75	0.13	0.88	0.38	0.50	1.00	0.88	0.63	0.88	0.75	0.13
	percentage	75.00	62.50	62.50	87.50	75.00	12.50	87.50	37.50	50.00	100.00	87.50	62.50	87.50	75.00	12.50

INT	Correct	26.00	25.00	18.00	18.00	25.00	13.00	18.00	22.00	16.00	29.00	26.00	20.00	17.00	14.00	14.00
	Incorrect	4.00	5.00	12.00	12.00	5.00	17.00	12.00	8.00	14.00	1.00	4.00	10.00	13.00	16.00	16.00
	Average	0.87	0.83	0.60	0.60	0.83	0.43	0.60	0.73	0.53	0.97	0.87	0.67	0.57	0.47	0.47
	percentage	86.67	83.33	60.00	60.00	83.33	43.33	60.00	73.33	53.33	96.67	86.67	66.67	56.67	46.67	46.67
CL	Correct	18.00	19.00	11.00	16.00	20.00	9.00	16.00	12.00	13.00	21.00	16.00	16.00	17.00	16.00	10.00
	Incorrect	3.00	2.00	10.00	5.00	1.00	12.00	5.00	9.00	8.00	0.00	5.00	5.00	4.00	5.00	11.00
	Average	0.86	0.90	0.52	0.76	0.95	0.43	0.76	0.57	0.62	1.00	0.76	0.76	0.81	0.76	0.48
	percentage	85.71	90.48	52.38	76.19	95.24	42.86	76.19	57.14	61.90	100.00	76.19	76.19	80.95	76.19	47.62
ACD	Correct	10.00	8.00	6.00	7.00	8.00	3.00	6.00	7.00	5.00	9.00	5.00	6.00	7.00	7.00	6.00
	Incorrect	0.00	2.00	4.00	3.00	2.00	7.00	4.00	3.00	5.00	1.00	5.00	4.00	3.00	3.00	4.00
	Average	1.00	0.80	0.60	0.70	0.80	0.30	0.60	0.70	0.50	0.90	0.50	0.60	0.70	0.70	0.60
	percentage	100.00	80.00	60.00	70.00	80.00	30.00	60.00	70.00	50.00	90.00	50.00	60.00	70.00	70.00	60.00
BCA	Correct	15.00	14.00	13.00	10.00	12.00	6.00	11.00	9.00	8.00	15.00	11.00	13.00	13.00	12.00	7.00
	Incorrect	1.00	2.00	3.00	6.00	4.00	10.00	5.00	7.00	8.00	1.00	5.00	3.00	3.00	4.00	9.00
	Average	0.94	0.88	0.81	0.63	0.75	0.38	0.69	0.56	0.50	0.94	0.69	0.81	0.81	0.75	0.44
	percentage	93.75	87.50	81.25	62.50	75.00	37.50	68.75	56.25	50.00	93.75	68.75	81.25	81.25	75.00	43.75
PHD	Correct	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
	Incorrect	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Average	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
	percentage	100.00	100.00	0.00	0.00	100.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00

Abbreviations : B1= BPT first year, B2= BPT 2nd year, B3= BPT 3rd year, B4= BPT 4th year, INT= Internship, M1= Masters 1st year, M2= Master 2nd year, CL= clinical, ACD= Academics, BCA= both Academics and Clinical, PHD= Physiotherapy PhD, KQ1= Knowledge question 1, KQ2= Knowledge question 2, KQ3=Knowledge question 3, KQ4: = Knowledge question 4, KQ5= Knowledge question 5, KQ6= Knowledge question 6, KQ7= Knowledge question 7, KQ8= Knowledge question 8, KQ9= Knowledge question 9, KQ10= Knowledge question 10, KQ11= Knowledge question 11, KQ12= Knowledge question 12, KQ13= Knowledge question 13, KQ14= Knowledge question 14, KQ15= Knowledge question 15.

Attitude

The mean score for the attitude among the physiotherapy students and practitioners related to leprosy was 54.7±26.21 ranging from 0 to 100. Among 300 responses, 189 participants presented a favourable response with a mean score of 71.16±16.56 which varies from 50 to 100, whereas 111 participants presented with an unfavourable attitude towards leprosy with a mean score of 26.67±11.86 that ranging between 0 to 40. The response of participants on questions related to the attitude toward leprosy is shown in Table 3. Although as compared to knowledge, the positive attitude percentage was a bit higher (89%) towards leprosy, with 83% not having any problem in sharing the workspace with these patients. The percentage drops only to 21.3% who were willing to share their meal with leprosy patients. The respondents willing to work in leprosy hospitals were 58.3%, with about 60.7% having a positive attitude towards leprosy patients to be treated at all conventional hospitals. In terms of traveling in the same vehicle with leprosy patients and marrying, these percentages dropped to 26% & 31%, respectively. 65.3% of the respondents were not having any problem setting up the leprosy clinic in their department. Only 53% had a positive attitude towards being in close contact with other clinicians involved in the treatment of leprosy or research related to leprosy, and 59.3% had a positive attitude towards allowing any physiotherapist suffering from or cured of leprosy to act as their assistant.

Table 4 shows the comparison of knowledge related to leprosy based on their educational qualification. The knowledge above 75% was considered good and below 75% was considered poor. The analysis of results shows the higher

Table 5 : Comparison of positive attitude, negative attitude, average score and supportive attitude percentage among different groups of participants towards leprosy

Education	Category	AQ1	AQ2	AQ3	AQ4	AQ5	AQ6	AQ7	AQ8	AQ9	AQ10
B1	Positive	34.00	34.00	7.00	24.00	23.00	6.00	14.00	25.00	20.00	23.00
	Negative	6.00	6.00	33.00	16.00	17.00	34.00	26.00	15.00	20.00	17.00
	Average	0.85	0.85	0.18	0.60	0.58	0.15	0.35	0.63	0.50	0.58
	percentage	85.00	85.00	17.50	60.00	57.50	15.00	35.00	62.50	50.00	57.50
B2	Positive	49.00	48.00	11.00	33.00	36.00	16.00	21.00	43.00	32.00	32.00
	Negative	6.00	7.00	44.00	22.00	19.00	39.00	34.00	12.00	23.00	23.00
	Average	0.89	0.87	0.20	0.60	0.65	0.29	0.38	0.78	0.58	0.58
	percentage	89.09	87.27	20.00	60.00	65.45	29.09	38.18	78.18	58.18	58.18
B3	Positive	33.00	30.00	8.00	22.00	23.00	10.00	10.00	20.00	16.00	22.00
	Negative	3.00	6.00	28.00	14.00	13.00	26.00	26.00	16.00	20.00	14.00
	Average	0.92	0.83	0.22	0.61	0.64	0.28	0.28	0.56	0.44	0.61
	percentage	91.67	83.33	22.22	61.11	63.89	27.78	27.78	55.56	44.44	61.11
B4	Positive	61.00	54.00	17.00	39.00	43.00	21.00	22.00	42.00	34.00	40.00
	Negative	12.00	19.00	56.00	34.00	30.00	52.00	51.00	31.00	39.00	33.00
	Average	0.84	0.74	0.23	0.53	0.59	0.29	0.30	0.58	0.47	0.55
	percentage	83.56	73.97	23.29	53.42	58.90	28.77	30.14	57.53	46.58	54.79

M1	Positive	10.00	8.00	0.00	3.00	7.00	2.00	3.00	7.00	6.00	9.00
	Negative	0.00	2.00	10.00	7.00	3.00	8.00	7.00	3.00	4.00	1.00
	Average	1.00	0.78	0.00	0.33	0.67	0.22	0.33	0.78	0.67	0.89
	percentage	100.00	77.78	0.00	33.33	66.67	22.22	33.33	77.78	66.67	88.89
M2	Positive	8.00	8.00	2.00	5.00	7.00	2.00	0.00	5.00	5.00	4.00
	Negative	0.00	0.00	6.00	3.00	1.00	6.00	8.00	3.00	3.00	4.00
	Average	1.00	1.00	0.25	0.63	0.88	0.25	0.00	0.63	0.63	0.50
	percentage	100.00	100.00	25.00	62.50	87.50	25.00	0.00	62.50	62.50	50.00
INT	Positive	27.00	26.00	2.00	20.00	20.00	5.00	6.00	21.00	16.00	17.00
	Negative	3.00	4.00	28.00	10.00	10.00	25.00	24.00	9.00	14.00	13.00
	Average	0.90	0.87	0.07	0.67	0.67	0.17	0.20	0.70	0.53	0.57
	percentage	90.00	86.67	6.67	66.67	66.67	16.67	20.00	70.00	53.33	56.67
CL	Positive	20.00	19.00	6.00	9.00	10.00	7.00	7.00	11.00	12.00	11.00
	Negative	1.00	2.00	15.00	12.00	11.00	14.00	14.00	10.00	9.00	10.00
	Average	0.95	0.90	0.29	0.43	0.48	0.33	0.33	0.52	0.57	0.52
	percentage	95.24	90.48	28.57	42.86	47.62	33.33	33.33	52.38	57.14	52.38
ACD	Positive	8.00	6.00	3.00	7.00	4.00	2.00	4.00	7.00	5.00	5.00
	Negative	2.00	4.00	7.00	3.00	6.00	8.00	6.00	3.00	5.00	5.00
	Average	0.80	0.60	0.30	0.70	0.40	0.20	0.40	0.70	0.50	0.50
	percentage	80.00	60.00	30.00	70.00	40.00	20.00	40.00	70.00	50.00	50.00
BCA	Positive	16.00	15.00	8.00	12.00	9.00	7.00	6.00	15.00	12.00	14.00
	Negative	0.00	1.00	8.00	4.00	7.00	9.00	10.00	1.00	4.00	2.00
	Average	1.00	0.94	0.50	0.75	0.56	0.44	0.38	0.94	0.75	0.88
	percentage	100.00	93.75	50.00	75.00	56.25	43.75	37.50	93.75	75.00	87.50
PHD	Positive	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00
	Negative	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
	Average	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00
	percentage	100.00	100.00	0.00	100.00	0.00	0.00	0.00	0.00	100.00	100.00

Abbreviations : B1= BPT first year, B2= BPT 2nd year, B3= BPT 3rd year, B4= BPT 4th year, INT= Internship, M1= Masters 1st year, M2= Masters 2nd year, CL= clinical, ACD= Academics, BCA= both academics and Clinical, PHD= Physiotherapy PhD, AQ1= Attitude question 1, AQ2= Attitude question 2, AQ3= Attitude question 3, AQ4= Attitude question 4, AQ5= Attitude question 5, AQ6= Attitude question 6, AQ7= Attitude question 7, AQ8= Attitude question 8, AQ9= Attitude question 9, AQ10= Attitude question 10.

knowledge among the participants with higher qualifications (PHD and BCA). Participants pursuing Masters also had good knowledge. On comparison between the different years of Bachelor's, it was found that lesser knowledge in the first year and final year as compared to second year and third year. The participants only working in academics have similar knowledge like bachelor's first and final year.

Table 5 shows the comparison of the altitude of participants towards leprosy based on their educational qualifications. The attitude was

categorized in positive and negative based on their response. The analysis shows group involving both clinicians and academician, interns, Masters, and Bachelors participants have a nearly similar attitude toward the leprosy disease. Whereas, clinicians, and academician participants had relatively poorer attitude as compared to other groups.

Discussion

The aim and objective of this research were to evaluate the knowledge and attitude of individuals related to the field of physiotherapy towards leprosy. The findings of this study have provided ideas regarding the changes to be incorporated in the curriculum of physiotherapy so that it enhances the knowledge and improves the attitude of physiotherapy-related professionals towards leprosy.

According to the survey conducted by the TLIF in 2008 in Indonesia, it was found that many a leprosy-affected people were unemployed; maybe the reason could be discrimination among them and the normal population. It was also found that these people were also not accepted by their family member. We all know leprosy is on the verge of eradication, still the social stigma and misconceptions create problems in the lives of leprosy patients (Yayasan Transformasi Lepra Indonesia 2008). Stigma in leprosy plays a key role in the lives of people who suffer from leprosy (Fife & Wright 2004). in their research paper, concluded that "the specific nature of stigma associated with serious illnesses'' and it depends on 3 elements: blaming the person for the disease, the threat the illness represents to others, and the threat that it represents to individual competence. One of the research concluded that the patient with leprosy suffers in the four main domains of life i.e., Body structure, Body function, Activity participation/limitation, and Personal or environmental factors (van Brakel et al 2012). This research also added that around 75% of affected people had a physical impairment which was also supported by research conducted on leprosy patients (Meima et al 2008). However, these figures cannot be generalized and will vary from area to area depending upon early or delayed detection and management. It is also well known that leprosy affected people continue to suffer from varying degrees of disability (Gitte 2020).

Physiotherapy intervention has proven to be one of the best professions that can help them to get back to normal life. Physiotherapists help in restoring the normal functioning of leprosy patients. it helps in the neuritis caused by the bacteria by inflaming the nerves, it also helps in paralysis as well it proves to be beneficial in surgical cases after the tendon transplant (Furness 1982). It also has a key role in preventive rehabilitation, and it works on all the levels of the national prevention program. Therefore, it is essential for the individuals related to the field of physiotherapy, including students and professionals to have sound knowledge and a positive or supportive attitude for better rehabilitation of the patient suffering from leprosy.

The results of our study show that there was a "low level of knowledge'' (65.47%), among our study participants, and only 54.7% of the participants had a "favourable behavior" toward the leprosy patient prevailing in the population. This was supported by the study, which showed that 32.29% of participants had poor knowledge and, 57.42% had fair knowledge about leprosy, and only 10.29% had good knowledge. However in terms of attitude 30.57% of participants had poor attitude scores, 42.57% had fair scores while 26.86% had good attitude scores (Jain et al 2016). In contrast, a study in Assam showed adequate knowledge and positive behaviour among healthcare providers about leprosy. Although this study

also suggests organizing educational camps at regular intervals for new employees (Kar et al 2010).

Our study on comparison among the different groups of participants Table 4 for knowledge and Table 5 showed that the physiotherapy undergraduate students were more enthusiastic in participation as compared to postgraduates and professionals and even the number of the participants was also more from the physiotherapy undergraduates. However, the knowledge varies with the educational qualification and clinical practice, as our finding suggests that the physiotherapy postgraduate students and professionals have better knowledge than undergraduate students do. A similar finding, involves medical students evaluating knowledge and attitude related to leprosy. The final year students had better knowledge about leprosy compared to their counterparts in the first-year medical students (Leena & Priya 2017). One strange thing was that even though the knowledge parameter was better in professionals and post-graduate participants, there was hardly any difference in the response towards the attitude questionnaire. Maximum of the participants were aware that what are the causing agents of leprosy, but they were minimally aware of the signs and symptoms and availability of the vaccination, which was opposite to the results of Mankar et al (2011), who found in their study that leprosy patients were aware of the nature of the disease, its symptoms, transmission, and curability than the control group included in this study. The reason could be that they get the knowledge in their institutions, but they do not get the real-time experience of interacting with the patients, so they are not aware of most of the signs and symptoms. The knowledge is only theoretically based, but no patient interaction is there. This could be one reason also towards the low response in particular questions of attitude. On the one hand, the participants are showing a positive attitude towards treating the leprosy cases, even working in the leprosy hospital but maximum participants are showing a negative attitude towards eating with them, traveling with the leprosy cases, and even marrying them. This type of result was found in every participant group. According to the results of this study, the participants are ready to spend some time with them, maybe due to professional earnings, but they are not ready to have close association or bonds with them.

The findings of our study are better in comparison to the similar type of research work conducted by Fidelis T. Iyor's among the Nigerian population. Only 19% of their participating population showed a good attitude towards leprosy patients, and 65.46% of the population, on average, had good knowledge about leprosy conditions (Iyor 2005). In our study, the knowledge among the participants was 65.47±14.69 ranging from 26.67 to 100. Out of 300 participants, only 72 participants (24%) show a high level of knowledge. The mean score for the attitude among the physiotherapy students and practitioners related to leprosy was 54.7±26.21 ranging from 0 to 100. Among 300 responses, 189 participants (63%) presented a favorable response with a mean score of 71.16 ± 16.56.

The result of our research lead to the conclusion that the knowledge of the physiotherapist and students undergoing this course is relatively low, while their attitude is relatively favorable. There is a requirement to bring more awareness related to this topic as well as setting a positive behaviour towards the leprosy-affected individuals and people in their close contacts. Our study conclusion is supported by Doulat Rai Bajaj's study, which was conducted on the general Practitioners in Hyderabad and found there is variation and

deficiencies in the knowledge, referral pattern, and treatment of the leprosy patients among general practitioners, which needs to be improved by conducting awareness activities (Bajaj et al 2009).

Proper information, knowledge of the topic, awareness among the people, and a positive attitude are what are required to end leprosy and fulfill the aim of the National Leprosy Eradication Programme. This is supported by the study conducted by Graciano-Machuca et al (2013) in which they tested the university students for the knowledge and attitude toward leprosy and it was suggested that it is necessary to improve current health education measures by using updated educational strategies. This will help in reduce the stigma related to leprosy, and it will also be helpful in minimizing the segregation of leprosy patients and their families (Graciano-Machuca et al 2013). The same type of research was conducted in the southern part of India among the undergraduate medical students, and this study also concluded that there is a need for an increasing the focus on imparting adequate leprosy-related knowledge (Swapna et al 2019). Prevention and management of disabilities have been an important global and national goal for a long time (NLEP 2012, Srinivasan 1993). Proper knowledge about impairments and other related factors is important disabilities in leprosy (van Brakel et al 2012). As physiotherapists are important personnel during the management of leprosy and aftercare, understanding of their attitudes and knowledge is vital.

Conclusion

The study suggests a great need to improve and upgrade the knowledge about various aspects of leprosy among physiotherapy students and professionals. Although leprosy knowledge is given in this profession, we think it should be on the grand scale because of the disability faced by leprosy patients, and in terms of the social stigma should be improved by conducting the regular webinar, camps, and conferences related to this topic, so that attitude of physiotherapy students will change towards them. It is always said, "Knowledge brings a change in the attitude" so it should be implemented.

Limitations

There were also some limitations to the study as this study was conducted in only a short period and through online mode, and participants may not be representative of these groups all across the country. As there is a lack of evidence in this field, so such well-planned studies should be conducted regularly in different parts of India in research cum intervention mode for finding the gaps in knowledge, blocks in attitude so as to achieve the desired success.

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