

Awareness of Pulmonary Rehabilitation among Patients Attending Tuberculosis Clinic in Tertiary Care Centre in Mumbai: A Questionnaire-Based Cross-Sectional Study

Prerna Ghodke ^{*1}, Vedang Vaidya ².

^{*1} Assistant Professor, D. Y. Patil School of Physiotherapy, Navi Mumbai, Maharashtra India.

² Assistant Professor, D. Y. Patil School of Physiotherapy, Navi Mumbai, Maharashtra, India.

ABSTRACT

Background: Tuberculosis (TB) continues to impose a massive public health burden on India, accounting for roughly a quarter of the global disease burden. Beyond the acute illness, many post-tubercular patients face persistent lung damage and functional limitations that severely diminish their overall quality of life. While pulmonary rehabilitation (PR) has proven to relieve dyspnoea and enhance physical capacity, its integration into standard TB care within primary healthcare settings remains sparse.

Purpose of the study: To evaluate the baseline awareness of Pulmonary Tuberculosis, its anti-tubercular medical management, and the role of Pulmonary Rehabilitation among individuals visiting a specialized TB clinic at a tertiary care facility in Mumbai.

Methods: A cross-sectional assessment survey was conducted among 50 individuals aged 18 to 60 years with a confirmed history of pulmonary TB. Data was processed using descriptive statistics to explore statistical correlations with demographic variables.

Results: Overall, a low level of awareness (36%) was documented regarding the concept of pulmonary rehabilitation itself. While 76% theoretically believed PR would be beneficial, 82% identified a basic lack of awareness as the primary hurdle preventing people from participating. Employed individuals were statistically more likely to be familiar with the actual exercises involved in rehabilitation compared to students or unemployed individuals ($p = 0.041$)

Conclusion: While grassroots awareness concerning tuberculosis and its basic medical cure is well-established among patients, a significant communication gap persists regarding post-recovery care. Pulmonary rehabilitation remains widely unrecognized and underutilized among the masses. To minimize long-term morbidity and shield patients from post-treatment functional limitations, health systems must prioritize integrating PR education directly into standard TB treatment protocols and bridge infrastructural gaps to ensure accessible, low-cost options.

KEYWORDS: Pulmonary Rehabilitation, Tuberculosis, Physiotherapy.

Address for correspondence: Dr. Prerna Ghodke, D. Y. Patil School of Physiotherapy, D. Y. Patil University School of Medicine, Nerul, Navi Mumbai, India. **E-Mail:** penughodke95@gmail.com

Access this Article online	Journal Information
Quick Response code  DOI: 10.16965/ijpr.2026.132	International Journal of Physiotherapy and Research ISSN (E) 2321-1822 ISSN (P) 2321-8975 https://www.ijmhr.org/ijpr.html DOI-Prefix: https://dx.doi.org/10.16965/ijpr 
	Article Information
	Received: 29 May 2026 Peer Review: 31 May 2026 Revised: 12 Jun 2026
	Accepted: 21 Jun 2026 Published (O): 11 Aug 2026 Published (P): 11 Aug 2026

INTRODUCTION

Tuberculosis (TB) is a major public health burden in India. It is an infectious disease which primarily affects the lungs and is caused by Mycobacterium Tuberculosis that spreads

through air when a sick person spits, coughs, or sneezes. It can also affect other parts of the body, and the infection can be active or latent. It is believed that TB bacteria has infected about 25% of the world's population

and 5–10% of TB infected individuals will have symptoms and develop TB illness. Antibiotics are typically used to treat TB and can be lethal if left untreated. Common symptoms of TB include prolonged cough (sometimes with blood), chest pain, weakness, fatigue, weight loss, fever, night sweats [1]. As per the Global report on Tuberculosis released by the World Health Organization (WHO) in 2023, India has the highest number of cases with Pulmonary TB (PTB). As per a systematic review of 2020, the prevalence of Pulmonary Tuberculosis is higher in rural areas in comparison to the Urban areas, and males had a higher prevalence of bacteriologically positive pulmonary tuberculosis than females [2].

The goal of National TB Institute (NTI) was to establish early diagnosis and prompt treatment that was integrated into general health care [3]. The first-line drugs used for TB treatment are Rifampicin, Isoniazid, Pyrazinamide and Ethambutol, which are FDA (Food and Drug Administration) approved. Resistance to first line medications like Rifampicin and Isoniazid leads to Multidrug resistant TB (MDR-TB). The second line drugs used for MDR-TB include Kanamycin, Capreomycin and Amikacin. Fluoroquinolones are also second line agents used in MDR-TB. Extensively drug-resistant TB (XDR-TB) shows resistance to rifampicin, isoniazid and some fluoroquinolones [4].

Assessing the level of information regarding the treatment and rehabilitation of such a disease which is highly prevalent in the country makes it important to address the problems faced by individuals in reaching out to the treatment centres. Tuberculosis is one of the major health issues which requires prompt action to reduce the mortality and morbidity associated with Tuberculosis. The awareness of pulmonary rehabilitation and its inclusion as a part of medical management delivered to the patients with TB will help to Improve the QOL and strengthen healthcare system [5].

A study conducted in 2022 showed the effect of pulmonary rehabilitation on Post Tubercular patients with functional limitations. It concluded that pulmonary rehabilitation

improved the quality of life, mental health indices and relieved dyspnoea in the patients. The extension of rehabilitation programs as constant medical assistance can defy several obstacles in order to increase public health coverage. It is necessary to integrate these programs in accessible primary healthcare settings for patients to benefit the full potential of rehabilitation [6-8]. Rehabilitation regimens particularly improve the quality of life for individuals from low- and middle-income countries, taking into consideration that TB is the leading cause of death [8,9]. The dissemination of rehabilitation services, as well as promoting equity and efficiency of public health measures, could strengthen worldwide health systems' capacity to ensure the needs of under-resourced populations [10]. PR is a comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies that include exercise training, education, and behaviour change, designed to improve the physical and psychological condition of people with chronic respiratory disease and to promote the long-term adherence to health-enhancing behaviours [11,12]. Tailored to meet individual needs, PR focuses on optimizing lung function and supporting patients in resuming everyday activities [13]. Research indicates that PR significantly enhances health-related QOL and physical exercise capacity in individuals with COPD compared to those receiving conventional care. It has proven especially beneficial for patients with moderate-to-severe COPD, helping them regain better respiratory control and physical endurance. Additionally, patients undergoing PR are more likely to use healthcare services efficiently though the longevity of these benefits remains uncertain [14].

Recognized globally as the largest and fastest-growing TB control initiative, Revised National TB Control Programme (RNTCP) is currently operational across the entire country [15].

This assessment survey will help the health care workers and the rehabilitation specialists to reach their full potential by giving appropriate treatment to the people in the society. Despite ongoing government efforts

to combat TB through updated programs and policies, significant challenges remain in reducing its prevalence and mitigating its effects.

METHODOLOGY

Study design: This was a questionnaire- based cross-sectional study conducted in Mumbai, India.

Participants: This survey assessed 50 patients attending TB clinic of tertiary care centre in Mumbai. It was conducted using a questionnaire which helped to assess the awareness regarding pulmonary tuberculosis, anti-tubercular treatment and pulmonary rehabilitation. The individuals were given information about the nature of the survey and its importance. Those willing to participate were asked questions based on the questionnaire after taking the informed consent.

Ethical considerations: The study received ethical clearance from the institutional ethics committee (D. Y. Patil University, Navi Mumbai, India).

Data collection: Face-to-face interviews were conducted by the primary investigator. Participants also provided demographic data along with the information from the questionnaire.

Statistical analysis:

Data analysis was performed using SPSS v16. Descriptive statistics were computed for demographic variables. A p-value <0.05 was considered statistically significant.

RESULTS

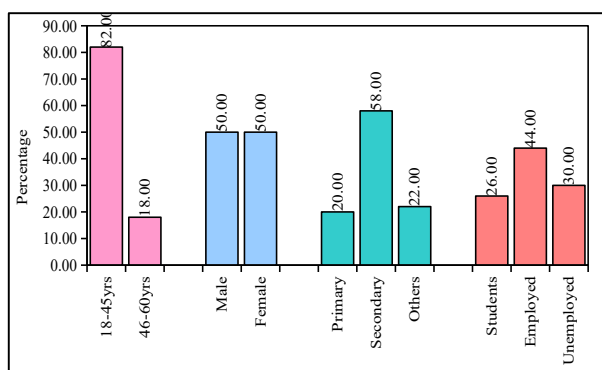


Fig. 1: Participant characteristics.

Inference: The individuals involved in our study included equal number of males (50%) and females (50%). The majority of the respondents

fall into the age group of 18-45 years (82%), and the remaining fall in the age group of 46-60 years (18%). Our study included 44% employed, 26% students and 30% unemployed individuals.

Table 1: Age-wise demographic profile of respondents.

Demographic profile	18-45yrs	%	46-60yrs	%	Total	%
Gender						
Male	21	84	4	16	25	50
Female	20	80	5	20	25	50
Educations						
Primary	6	60	4	40	10	20
Secondary	25	86.21	4	13.79	29	58
Others	10	90.91	1	9.09	11	22
Occupations						
Students	13	100	0	0	13	26
Employed	18	81.82	4	18.18	22	44
Unemployed	10	66.67	5	33.33	15	30
Total	41	82	9	18	50	100

Inference: The number of male and female respondents between 18-45 years of age was 21 and 20, respectively, whereas the number of male and female respondents between 46-60 years of age was 4 and 5, respectively. 10 respondents within the age group of 18-45 years and 5 respondents between 46-60 years were unemployed. 25 respondents between 18-45 years and 4 respondents between 46-60 years completed their education till secondary school. This shows that our study included individuals who were employed as well as unemployed. Some of them had completed their primary education, some had completed their secondary education and some from higher education as well.

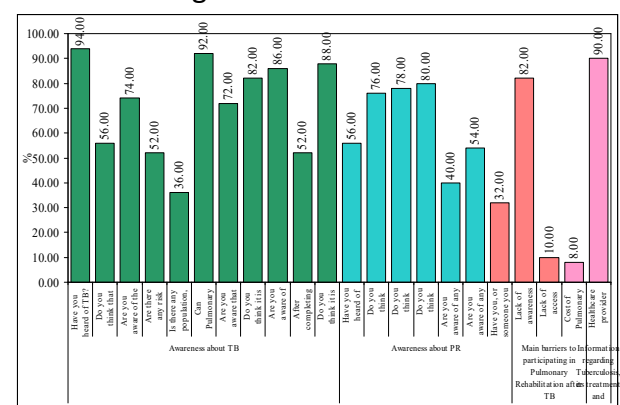


Fig. 2: Question wise awareness on Pulmonary TB and Pulmonary Rehabilitation (Presented only yes)

Inference:

1. The statistical analysis of our study showed that 94% of the respondents were aware of pulmonary tuberculosis whereas only 56% were aware that lungs are primarily affected

in the condition.

2. 74% of the respondents were aware of the symptoms of pulmonary tuberculosis and 52% were aware that the condition might develop due to some risk factors of health.

3. 92% respondents were aware that pulmonary tuberculosis can be treated but only 72% were aware that the treatment requires a combination of drugs that have to be taken over few months.

4. 86% respondents were just aware that government has few tuberculosis control programs and 82% agreed that it was important to complete the course of drugs for few months.

5. 52% respondents agreed that it is possible for PTB to recur after the first episode and 88%

believe that it is important to follow up with the health care provider after the course of Anti-tubercular treatment.

6. Majority of the respondents, about 82% were not aware of the pulmonary rehabilitation, 10% complained about lack of access to the pulmonary rehabilitation services and 8% raised the concern of high cost associated with the pulmonary rehabilitation.

Out of 100% respondents, 90% were aware of pulmonary tuberculosis, its treatment and pulmonary rehabilitation through the information received from the healthcare provider whereas only 10% received information through mass media like television and radio.

Table 2: Association between age groups with awareness according to each question.

Questions	18-45yrs	%	46-60yrs	%	Total	%	Chi-square	p-value
Awareness about TB								
Have you heard of TB?	39	95.12	8	88.89	47	94	0.508	0.476
Do you think that TB primarily affects lungs?	24	58.54	4	44.44	28	56	0.595	0.441
Are you aware of the symptoms of TB?	29	70.73	8	88.89	37	74	1.265	0.261
Are there any risk factors for developing pulmonary TB?	21	51.22	5	55.56	26	52	0.056	0.814
Is there any population, according to you, which is at high risk of developing pulmonary TB?	16	39.02	2	22.22	18	36	0.904	0.342
Can Pulmonary TB be cured with Proper Treatment?	38	92.68	8	88.89	46	92	0.144	0.704
Are you aware that TB is treated with a combination of medicines for several months?	32	78.05	4	44.44	36	72	4.134	0.0420*
Do you think it is important to complete the full course of anti-tubercular treatment?	35	85.37	6	66.67	41	82	1.748	0.186
Are you aware of govt programs to control TB?	36	87.8	7	77.78	43	86	0.616	0.432
After completing the anti-tubercular treatment do you think it is possible for TB to return?	23	56.1	3	33.33	26	52	1.532	0.216
Do you think it is important to follow up with the health care provider after completion of Anti Tubercular Treatment?	36	87.8	8	88.89	44	88	0.008	0.928
Awareness about pulmonary rehabilitation								
Have you heard of Pulmonary Rehab?	22	53.66	6	66.67	28	56	0.507	0.477
Do you think Pulmonary Rehab is beneficial for persons recovering from Pulmonary TB?	31	75.61	7	77.78	38	76	0.019	0.89
Do you think Pulmonary Rehab can improve your quality of life?	32	78.05	7	77.78	39	78	0	0.986
Do you think Pulmonary Rehab should be included in the standard care of TB for individuals?	33	80.49	7	77.78	40	80	0.034	0.854
Are you aware of any exercises included in Pulmonary Rehab?	18	43.9	2	22.22	20	40	1.445	0.229
Are you aware of any Pulmonary Rehab programs or services in your area?	22	53.66	5	55.56	27	54	0.011	0.918
Have you, or someone you know ever participated in Pulmonary Rehab after TB?	14	34.15	2	22.22	16	32	0.482	0.487

Inference: It was found that the awareness about treatment of pulmonary tuberculosis includes a combination of drugs for several months was present amongst individuals between 18-45 years of age. The p-value for

association of awareness with age group is 0.04 ($p < 0.05$) which is statistically significant. This implies that there was hardly any association of age with the awareness regarding pulmonary tuberculosis and its rehabilitation.

Table 3: Association between gender and awareness according to each question.

Questions	Males	%	Females	%	Total	%	Chi-square	p-value
Awareness about TB								
Have you heard of TB?	24	96	23	92	47	94	0.355	0.552
Do you think that TB primarily affects lungs?	14	56	14	56	28	56	0	1
Are you aware of the symptoms of TB?	18	72	19	76	37	74	0.104	0.747
Are there any risk factors for developing pulmonary TB?	13	52	13	52	26	52	0	1
Is there any population, according to you, which is at high risk of developing pulmonary TB?	13	52	5	20	18	36	5.556	0.0180*
Can Pulmonary TB be cured with Proper Treatment?	23	92	23	92	46	92	0	1
Are you aware that TB is treated with a combination of medicines for several months?	17	68	19	76	36	72	0.397	0.529
Do you think it is important to complete the full course of anti-tubercular treatment?	22	88	19	76	41	82	1.22	0.269
Are you aware of govt programs to control TB?	21	84	22	88	43	86	0.166	0.684
After completing the anti-tubercular treatment do you think it is possible for TB to return?	14	56	12	48	26	52	0.321	0.571
Do you think it is important to follow up with the health care provider after completion of Anti Tubercular Treatment?	22	88	22	88	44	88	0	1
Awareness about pulmonary rehabilitation								
Have you heard of Pulmonary Rehab?	15	60	13	52	28	56	0.325	0.569
Do you think Pulmonary Rehab is beneficial for persons recovering from Pulmonary TB?	18	72	20	80	38	76	0.439	0.508
Do you think Pulmonary Rehab can improve your quality of life?	22	88	17	68	39	78	2.914	0.088
Do you think Pulmonary Rehab should be included in the standard care of TB for individuals?	21	84	19	76	40	80	0.5	0.48
Are you aware of any exercises included in Pulmonary Rehab?	9	36	11	44	20	40	0.333	0.564
Are you aware of any Pulmonary Rehab programs or services in your area?	12	48	15	60	27	54	0.725	0.395
Have you, or someone you know ever participated in Pulmonary Rehab after TB?	8	32	8	32	16	32	0	1

Inference: There was no significant association between gender and awareness about pulmonary tuberculosis and rehabilitation. Males were more aware about the risk of a particular population in developing pulmonary tuberculosis than females as $p=0.01$ ($p<0.05$) which is statistically significant.

Table 4: Association between educations with awareness according to each question.

Questions	Primary	%	Secondary	%	Others	%	Chi-square	p-value
Awareness about TB								
Have you heard of TB?	8	80	28	96.55	11	100	4.512	0.105
Do you think that TB primarily affects lungs?	5	50	19	65.52	4	36.36	2.934	0.231
Are you aware of the symptoms of TB?	7	70	22	75.86	8	72.73	0.145	0.93
Are there any risk factors for developing pulmonary TB?	5	50	14	48.28	7	63.64	0.774	0.679
Is there any population, according to you, which is at high risk of developing pulmonary TB?	2	20	10	34.48	6	54.55	2.782	0.249
Can Pulmonary TB be cured with Proper Treatment?	9	90	26	89.66	11	100	1.228	0.541
Are you aware that TB is treated with a combination of medicines for several months?	5	50	23	79.31	8	72.73	3.172	0.205
Do you think it is important to complete the full course of anti-tubercular treatment?	7	70	25	86.21	9	81.82	1.324	0.516
Are you aware of govt programs to control TB?	7	70	26	89.66	10	90.91	2.668	0.263
After completing the anti-tubercular treatment do you think it is possible for TB to return?	4	40	12	41.38	10	90.91	8.559	0.0140*
Do you think it is important to follow up with the health care provider after completion of Anti Tubercular Treatment?	8	80	25	86.21	11	100	2.194	0.334
Awareness about pulmonary rehabilitation								
Have you heard of Pulmonary Rehab?	6	60	16	55.17	6	54.55	0.082	0.96
Do you think Pulmonary Rehab is beneficial for persons recovering from Pulmonary TB?	7	70	21	72.41	10	90.91	1.742	0.418
Do you think Pulmonary Rehab can improve your quality of life?	7	70	24	82.76	8	72.73	0.934	0.627
Do you think Pulmonary Rehab should be included in the standard care of TB for individuals?	7	70	22	75.86	11	100	3.685	0.158
Are you aware of any exercises included in Pulmonary Rehab?	3	30	13	44.83	4	36.36	0.759	0.684
Are you aware of any Pulmonary Rehab programs or services in your area?	6	60	15	51.72	6	54.55	0.207	0.902
Have you, or someone you know ever participated in Pulmonary Rehab after TB?	2	20	8	27.59	6	54.55	3.491	0.175

Inference: The statistical analysis showed that the individuals who have completed secondary school education and higher, have more awareness about the possibility of TB to return after completing the course of treatment than those with the primary education. ($p < 0.05$) This shows that the level of education affects the level of awareness regarding tuberculosis and its rehabilitation.

Table 5: Association between occupations with awareness according to each question.

Questions	Students	%	Employed	%	Unemployed	%	Chi-square	p-value
Awareness about TB								
Have you heard of TB?	13	100	21	95.45	13	86.67	2.343	0.31
Do you think that TB primarily affects lungs?	8	61.54	14	63.64	6	40	2.241	0.326
Are you aware of the symptoms of TB?	9	69.23	16	72.73	12	80	0.453	0.797
Are there any risk factors for developing pulmonary TB?	7	53.85	14	63.64	5	33.33	3.305	0.192
Is there any population, according to you, which is at high risk of developing pulmonary TB?	4	30.77	10	45.45	4	26.67	1.575	0.455
Can Pulmonary TB be cured with Proper Treatment?	12	92.31	22	100	12	80	4.849	0.089
Are you aware that TB is treated with a combination of medicines for several months?	11	84.62	17	77.27	8	53.33	3.922	0.141
Do you think it is important to complete the full course of anti-tubercular treatment?	12	92.31	17	77.27	12	80	1.31	0.52
Are you aware of govt programs to control TB?	12	92.31	18	81.82	13	86.67	0.755	0.686
After completing the anti-tubercular treatment do you think it is possible for TB to return?	6	46.15	14	63.64	6	40	2.237	0.327
Do you think it is important to follow up with the health care provider after completion of Anti Tubercular Treatment?	13	100	20	90.91	11	73.33	5.005	0.082
Awareness about pulmonary rehabilitation								
Have you heard of Pulmonary Rehab?	7	53.85	12	54.55	9	60	0.141	0.932
Do you think Pulmonary Rehab is beneficial for persons recovering from Pulmonary TB?	8	61.54	19	86.36	11	73.33	2.844	0.241
Do you think Pulmonary Rehab can improve your quality of life?	11	84.62	17	77.27	11	73.33	0.529	0.768
Do you think Pulmonary Rehab should be included in the standard care of TB for individuals?	9	69.23	20	90.91	11	73.33	2.995	0.224
Are you aware of any exercises included in Pulmonary Rehab?	7	53.85	11	50	2	13.33	6.4	0.0410*
Are you aware of any Pulmonary Rehab programs or services in your area?	9	69.23	12	54.55	6	40	2.4	0.301
Have you, or someone you know ever participated in Pulmonary Rehab after TB?	4	30.77	9	40.91	3	20	1.804	0.406

Inference: The analysis showed that those employed were more aware about the exercises included in pulmonary rehabilitation as compared to the students and those unemployed. ($p < 0.04$)

Table 6: Association between Demographic profile and the main barriers to participating in Pulmonary Rehabilitation after TB.

Demographic profile	Lack of awareness	Lack of access	Cost of Pulmonary	Total	Chi-square	p-value
Age groups						
18-45yrs	33	4	4	41	0.802	0.62
46-60yrs	8	1	0	9		
Gender						
Male	22	1	2	25	2.02	0.364
Female	19	4	2	25		
Educations						
Primary	7	2	1	10	1.637	0.802
Secondary	25	2	2	29		
Others	9	1	1	11		
Occupations						
Students	12	1	0	13	4.972	0.29
Employed	19	2	1	22		
Unemployed	10	2	3	15		
Total	41	5	4	50		

Inference: There was no significant association of age, gender, level of education and occupation with the barriers to participating in pulmonary rehabilitation ($p > 0.05$). It was found that lack of access and cost of pulmonary rehabilitation are the major barriers that restrict the individuals from participating in treatment program.

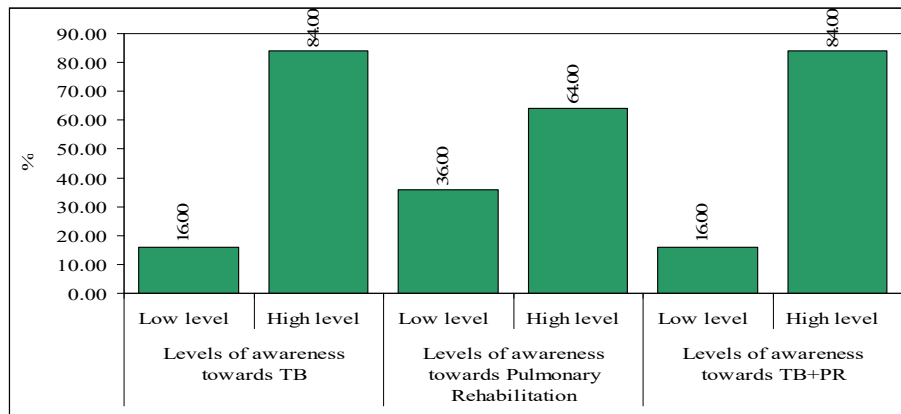


Fig. 3: Levels of awareness towards TB and Pulmonary Rehabilitation and as a whole.

Inference: The overall awareness about tuberculosis was 84% of the total respondents which showed that the individuals are aware about the condition. There was low level of awareness (36%) regarding pulmonary rehabilitation among the total respondents. This implies that pulmonary rehabilitation has not reached the masses in management of pulmonary tuberculosis in India.

Table 7: Association between demographic profiles with levels of awareness towards Pulmonary Rehabilitation.

Demographic profile	Levels of awareness towards Pulmonary Rehabilitation					Chi-square	p-value
	Low level	%	High level	%	Total		
Age groups							
18-45yrs	15	36.59	26	63.41	41	0.034	0.854
46-60yrs	3	33.33	6	66.67	9		
Gender							
Male	9	36	16	64	25	0	1
Female	9	36	16	64	25		
Educations							
Primary	3	30	7	70	10	0.204	0.903
Secondary	11	37.93	18	62.07	29		
Others	4	36.36	7	63.64	11		
Occupations							
Students	5	38.46	8	61.54	13	0.305	0.858
Employed	7	31.82	15	68.18	22		
Unemployed	6	40	9	60	15		
Total	18	36	32	64	50		

Inference: There was no significant difference in the level of awareness about pulmonary rehabilitation amongst individuals between 18-45 years of age and 46-60 years of age; between males and females; between the individuals with a low and higher level of education and between the employed and unemployed individuals ($p > 0.05$).

DISCUSSION

Globally, TB remains a significant public health issue, with around 10.6 million new cases and 1.6 million deaths annually. Approximately 500,000 of these cases involve MDR-TB. While TB is treatable, standard therapy involves prolonged courses of multiple antibiotics, typically lasting 6–9 months with drugs like isoniazid, rifampicin, pyrazinamide, and

ethambutol. Treating drug-resistant strains requires even lengthier and more intensive regimens, often extending up to 24 months [15]. The government has made initiatives and is constantly updating the programs and policies for combating tuberculosis. Health issues faced even after medical management that alter QOL can be reduced if proper pulmonary rehabilitation is provided to this section of

society. Pulmonary rehabilitation is an effective tool to improve clinical, physical, psychosocial, and overall quality of life in these patients. The study assessed individuals with a history of PTB at a tertiary care facility for awareness about PR. It helps increase quality of life, reduce post-TB problems, and improve lung function. The results highlighted the necessity of integrating rehabilitation into TB treatment regimens, educating patients about PR, and addressing obstacles including stigma [13,14].

CONCLUSION

Though our study shows that individuals are aware of the condition and its management to some extent, a lot of efforts need to be made to encourage individuals to participate in pulmonary rehabilitation, and various physiotherapy centres should encourage the same. PR not only involves improving respiratory capacity and lung function after medical management but also preventing various pulmonary infections by improving lung function in a healthy individual.

Conflicts of interest: None

Funding: None

REFERENCES

- [1]. World Health Organization. Tuberculosis [Internet]. Geneva: World Health Organization; [cited 2026 May 29]. Available from: <https://www.who.int/news-room/fact-sheets/detail/tuberculosis>
- [2]. Sathiyamoorthy R, Kalaivani M, Aggarwal P, Gupta SK. Prevalence of pulmonary tuberculosis in India: A systematic review and meta-analysis. *Lung India*. 2020 Jan-Feb;37(1):45-52. https://doi.org/10.4103/lungindia.lungindia_181_19 PMID:31898620 PMCID:PMC6961104
- [3]. Mahadev B, Kumar P. History of tuberculosis control in India. *J Indian Med Assoc*. 2003 Mar;101 (3): 142-3.
- [4]. Padda IS, Reddy KM. Antitubercular medications. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK430685/> and <https://www.ncbi.nlm.nih.gov/books/NBK557666/>
- [5]. Meca AD, Mititelu-Tarău L, Bogdan M, Dijmarescu LA, Pelin AM, Foia LG. Mycobacterium tuberculosis and Pulmonary Rehabilitation: From Novel Pharmacotherapeutic Approaches to Management of Post-Tuberculosis Sequelae. *J Pers Med*. 2022 Apr 2;12(4):569. <https://doi.org/10.3390/jpm12040569> PMID:35455684 PMCID:PMC9027178
- [6]. Hussain A, Khurana AK, Goyal A, et al. Effect of pulmonary rehabilitation in patients with post-tuberculosis sequelae with functional limitation. *Indian Journal of Tuberculosis*. 2024 Apr;71(2):123-129. <https://doi.org/10.1016/j.ijtb.2023.08.005> PMID:38110253
- [7]. World Health Organization. Taking rehabilitation seriously. *Bulletin of the World Health Organization*. 2019;97(8):519-520. <https://doi.org/10.2471/BLT.19.020819> PMID:31384069 PMCID:PMC6653826
- [8]. Stubbs B, Siddiqi K, Elsei H, Siddiqi N, Ma R, Romano E, Siddiqi S, Koyanagi A. Tuberculosis and Non-Communicable Disease Multimorbidity: An Analysis of the World Health Survey in 48 Low- and Middle-Income Countries. *Int J Environ Res Public Health*. 2021 Mar;18(5):2439. <https://doi.org/10.3390/ijerph18052439> PMID:33801381 PMCID:PMC7967573
- [9]. Visca D, Zampogna E, Sotgiu G, Centis R, Sadler L, D'Ambrosio L, Pegoraro V, Pignatti P, Muñoz-Torrico M, Migliori GB, et al. Pulmonary rehabilitation is effective in patients with tuberculosis pulmonary sequelae. *Eur Respir J*. 2019 Mar;53(3):1802184. <https://doi.org/10.1183/13993003.02184-2018> PMID:30872556
- [10]. Akkerman OW, Ter Beek L, Centis R, Maeurer M, Visca D, Muñoz-Torrico M, Tiberi S, Migliori GB. Rehabilitation, optimized nutritional care, and boosting host internal milieu to improve long-term treatment outcomes in tuberculosis patients. *Int J Infect Dis*. 2020 Mar;92S:S10-S14. <https://doi.org/10.1016/j.ijid.2020.01.029> PMID:31982628
- [11]. Jesus TS, Hoenig H, Landry MD. Development of the Rehabilitation Health Policy, Systems, and Services Research Field: Quantitative Analyses of Publications over Time (1990-2017) and across Country Type. *Int J Environ Res Public Health*. 2020 Feb;17(3):965. <https://doi.org/10.3390/ijerph17030965> PMID:32033180 PMCID:PMC7036950
- [12]. Muñoz-Torrico M, Rendon A, Centis R, et al. Is there a rationale for pulmonary rehabilitation following successful chemotherapy for tuberculosis? *J Bras Pneumol*. 2016 Oct;42(5):374-385. <https://doi.org/10.1590/S1806-37562016000000226> PMID:27812638 PMCID:PMC5094875
- [13]. McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database of Systematic Reviews*. 2015 Feb 23;(2):CD003793. <https://doi.org/10.1002/14651858.CD003793.pub3>
- [14]. Lee AL, Butler SJ, Varadi RG, Goldstein RS, Brooks D. The Impact of Pulmonary Rehabilitation on Chronic Pain in People with COPD. *COPD: Journal of Chronic Obstructive Pulmonary Disease*. 2020 Mar 3;17(2):165-174. <https://doi.org/10.1080/15412555.2020.1733952> PMID:32131643
- [15]. Directorate General of Health Services (DGHS). Revised National Tuberculosis Control Programme [Internet]. New Delhi: Ministry of Health & Family Welfare, Government of India; [cited 2026 May 29]. Available from: https://dghs.gov.in/content/1358_3_Revised_National_Tuberculosis_Control_Programme.aspx

How to cite this article: Prerna Ghodke, Vedang Vaidya. Awareness of Pulmonary Rehabilitation among Patients Attending Tuberculosis Clinic in Tertiary Care Centre in Mumbai: A Questionnaire-Based Cross-Sectional Study. *Int J Physiother Res* 2026;14(3):4983-4990. DOI: 10.16965/ijpr.2026.132