ORIGINAL ARTICLE

Effectiveness of an Educational Intervention on Pulmonary Tuberculosis among Monks of BenchenNangten Thoesam Ling Monastery of Pharping

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ABSTRACT

Introduction: Pulmonary Tuberculosis (PTB) is a communicable disease caused by Mycobacterium tuberculosis, transmitted through airborne particles small enough to reach the lungs. PTB remains a major public health concern in Nepal. Studies show that there is a lack of knowledge about PTB, especially in community settings. This study aims to assess the knowledge of PTB among monks and evaluate the impact of an educational intervention at Benchen Monastery.

Methods: A pre-experimental one-group pretest-posttest design was implemented, involving 61 monks from BenchenNangten Thoesam Ling monastery to assess the effectiveness of the independent variable "educational intervention" on the dependent variable "knowledge on Pulmonary Tuberculosis (PTB)." A semi-structured questionnaire was used to collect data. Paired sample T-test was used to assess the effectiveness of an educational intervention on knowledge regarding PTB at a level of significance with a p-value less than 0.05.

Results: Before the intervention, a majority of monks exhibited low 56(91.8%) to moderate 5(8.2%) levels of knowledge regarding pulmonary tuberculosis. Following the educational intervention, the proportion of monks with high knowledge levels increased significantly to 58(95.1%). Data analysis confirmed a significant difference between pretest and post-test scores, indicating a substantial improvement in knowledge after the intervention.

Conclusion: This study concludes the effectiveness of targeted educational strategies in enhancing monk's knowledge about pulmonary tuberculosis.

Keywords: Educational intervention, knowledge level, pulmonary tuberculosis

INTRODUCTION

Tuberculosis (TB) is a communicable bacterial disease caused by *Mycobacterium tuberculosis*, an aerobic acid-fast bacillus that primarily affects the lungs as pulmonary tuberculosis (PTB) but can involve other organs.[1] Globally, major contributors to TB in 2022 included under nutrition, HIV infection, alcohol use, smoking, and diabetes, with poverty and poor awareness further increasing risk.[2, 3] Rapid detection, prompt treatment, and contact evaluation remain essential for TB control. Southeast Asia bears the highest burden.[4] In Nepal, TB continues to be a serious public health problem, with significant numbers of notified and missed cases reported in 2022/23.[5] Evidence shows that limited

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knowledge about TB persists among various groups. Young populations, including students and monks, can serve as effective change agents if properly educated.[6-8] Therefore, targeted health education interventions are needed to improve knowledge, reduce stigma, and enhance TB prevention and control among monks at Benchen Monastery.

METHODS

This study has utilized a pre-experimental one group pre-test post-test design to evaluate the effectiveness of an educational intervention on Monk's knowledge regarding pulmonary tuberculosis. The research was conducted at BenchenNangten Thoesam Ling Monastery, with a sample size of 61 monks were selected on basis on Non-Probability Purposive sampling technique excluded monks which below 18 years, manager and teachers. The data were collected using a semi- structured questionnaire divided into two parts viz. socio-demographic data, knowledge about pulmonary tuberculosis. Content validity was ensured through expert consultation, while reliability was tested via a pre-test with the question in 10% (which was 6 in number) of the sample size in Kopan Monastery.

Data collection was carried out in three phases: firstly, a pre- test conducted on 6th October 2024 followed by a 60-minute educational session conducted on the same day by using various audio-visual aids such as meta-card, LCD, poster, and pamphlet, post-test was carried out on 18th November 2024 using the same tool. An ethical approval was obtained from IRC of Public Health Concern Trust (phect-NEPAL). The participants were provided with clear, understandable information about the research to obtain voluntary consent, anonymity and confidentiality throughout the study were strictly maintained, and the data was securely.

The data obtained from the study were checked for errors and completeness to ensure the accuracy and fed to SPSS version 20 software for statistical analysis. Different statistical tools like frequency, percentage, mean, Standard deviation were used to describe the data, while a paired t-test was used to evaluate the effectiveness of the intervention by comparing pre-and post- test results.

RESULTS

Table 1: Tuberculosis History of Respondents (n=61)

Variables	Number (%)
Family History of PTB	
No	59 (96.7%)
Yes	2 (3.3%)
PTB history	
No	49 (80.3%)
Yes	12 (19.7%)
Duration of PTB positive in year	
Below 5 years	10 (83.3%)
5-10 years	1 (16.6%)
Under medication period in month	
1-5	6 (50%)
6-18	6 (50%)
Got medicine from	
Himalayan trust	2 (16.7%)
Hospital	2 (16.7%)
Monastery clinic	8 (66.6%)

Above table shows that 12 respondents had history of PTB. Similarly, those who had a previous history, mostly 10 (83.3%) period of below 5 years. Likewise, who has taken the medicine is half of the respondents 6(50%) for 1-5 months and half of the respondents 6(50%) was for 6-18months. Likewise, most of the respondents who had Pulmonary Tuberculosis majority 6(50%) got the medicine from the Monastery free clinic and minority 1(8.3%) got the medicine from the pharmacy and private clinic respectively.

Table 2: Knowledge on Causes, Mode of Transmission of PTB (n=61)

Description	Pre –test	Post –test
Definition of PTB	**Number (%)**	**Number (%)**
It is an infectious disease that mostly affects the lungs and is caused by bacteria. It spreads through the air when infected people cough, sneeze.	32 (52.5%)	57(93.4%)
Cause of Tuberculosis		

Bacteria/germs	46 (75.4%)	50 (82.0%)
PTB is transmitted through*		
Handshakes	14 (23%)	60 (98.4%)
The air, the infected person coughs and sneezes	48 (78.7%)	61 (100%)
Sharing dishes	28 (45.9%)	58 (95.1%)
Touching items in public spaces (doorknobs, handles)	8 (13.1%)	60 (98.4%)
Eating from same plates	29 (47.5%)	59 (96.7%)

** multiple responses*

Majority of 46 (75.4%) respondents correctly recognized bacteria as the main cause of PTB. Most of the respondents 48 (78.7%) responded PTB is transmitted through air by coughing and sneezing.

Table 3: Knowledge on Signs and Symptoms of PTB (n=61)

Description	**Pre –test**	**Post-test**
Sign and symptoms	**Number (%)**	**Number (%)**
Cough that lasts for more than 3 weeks	37 (60.7%)	60 (98.4%)
Coughing up blood	31 (50.8%)	60 (98.4%)
Severe headache	13 (21.3%)	60 (98.4%)
Weight loss	26 (42.6%)	60 (98.4%)
Fever	13 (21.3%)	60 (98.4%)
Chest pain	33 (54.1%)	59 (96.7%)
Shortness of breath	26 (42.6%)	61 (100%)
Ongoing fatigue	7 (11.5%)	57 (93.4%)
Onset of fever at the evening	6 (9.8%)	47 (77%)
Diagnosis for PTB*		
Sputum test	29 (47.5%)	59 (96.7%)
Chest X-ray	26 (53%)	60 (98.4%)
Blood test	39 (63.9%)	60 (98.4%)
Skin test	10 (16.4%)	60 (98.4%)
Best time to collect the sputum: In the early morning before brushing, drinking and eating some food	42 (68.9%)	46 (75.4%)

It highlights the knowledge regarding signs and symptoms of PTB where the majority 37(60.7%) identified that cough lasting for more than 3 weeks. Additionally, the table displays that only few 6(9.8%) responded that fever rises in the evening in pre-test whereas the result was significantly increased by majority 47(77%) in post-test. Likewise, during the post-test majority 46 (75.4%) believed that the best time to collect sputum was early morning before brushing, eating and drinking.

Table 4: Knowledge about the Treatment Regimen of Pulmonary Tuberculosis(n=61)

Description	**Pre-test**	**Post-test**
	Number(%)	Number(%)
Treatment for Pulmonary Tuberculosis		
Anti-Tuberculosis medicine	37 (60.7%)	52 (85.2%)
Duration of treatment		
6 months	18 (29.5%)	19 (31.1%)
One feels better than stopping by one's own	10 (16.4%)	4 (6.6%)
6 months completed and the health worker tells you to stop	25 (41%)	36 (59%)
Nine months	24 (41. %)	2 (3.3%)
Name of anti-tuberculosis medicine		
Pyrazinamide, Isoniazid, Rifampicin, Ethambutol	4 (6.6%)	20 (32.8%)
Place to get free medicine		
Clinic	14 (23%)	3 (4.9%)
Pharmacy	8 (13.1%)	5 (8.2%)
DOTS center	11 (18%)	42 (68.9%)
Hospital	28 (45.9%)	11 (18%)

Majority 52(85.2%) responded to anti-tuberculosis medicine for the treatment of Pulmonary tuberculosis

in post-test. Moreover, 36(59%) respondents responded to show the result of the treatment period is 6 months complete and when the health workers tell to stop

Table 5: Level of Pre and Post-Test Knowledge about Pulmonary Tuberculosis (n=61)

Description	Pre-test	Post-test
	Number(%)	Percent(%)
High-level knowledge	0 (0%)	58 (95.1%)
Moderate level Knowledge	5 (8.2%)	2 (3.3%)
Low-level knowledge	56 (91.8%)	1 (1.6%)

The distribution of respondent's knowledge levels regarding Pulmonary tuberculosis (PTB), as assessed through pre-test and post-test scores, where the majority 56(91.8%) of respondents has a low level of knowledge and few 5(8.2%) of them have a moderate level of knowledge in a pre-test. Following intervention, all most 58(95.1%) has high-level knowledge likewise, minority 2(3.3%) has a moderate level of knowledge and only 1(1.6%) has a low level of knowledge.

Table 6: Association between Pre-test and Post-test Knowledge on Pulmonary Tuberculosis (n=61)

Variables	Pre-test		Post-test			
	Mean	Standard deviation	Mean	Standard deviation	T-test	P value
Paired sample statistics	30.54	9.350	61.11	5.447	-25.67	0.001

Note: p-value(statistically significant)=<0.05

Above table reveals the comparison between pre-test and post-test knowledge on Pulmonary tuberculosis in which the cational intervention mean was increased to 66.11and the standard deviation was decreased to 5.447. Paired t-test was applied with a significance level of 0.05 to test the hypothesis to find out the difference in knowledge regarding pulmonary tuberculosis. The calculated p-value was 0.001 which was found to be less than 0.05.

DISCUSSION

A pre-experimental one-group pre-test/post-test study was conducted among monks of Benchen Nangten Thoesam Ling Monastery using purposive sampling and semi-structured questionnaires. The study found that 19.7% of respondents had positive cases, which is comparable to findings from China where 22 cases of active pulmonary TB were reported. [9, 10] Most respondents (63.9%) were aged 18–23 years, consistent with Siddiqui et al., where the majority (65.2%) were within the 15–35 age group.[11] These similarities indicate that TB-related educational interventions are particularly relevant for young adult populations. [12] The contextual findings highlight a continued need to strengthen TB awareness and health-seeking behavior in community settings. Since this study targeted monks in a monastery, it aligns with research from Bhutan involving traditional healers, emphasizing the importance of engaging influential community groups. [13] However, unlike studies from Malaysia, the monks in this setting were less socially visible, which may affect information dissemination.[14]

Regarding knowledge of pulmonary tuberculosis, 75.4% correctly identified bacteria as the cause in the pre-test, similar to findings from Bhutan where 60% of trainees knew the cause. [15, 16] Despite this, baseline knowledge of TB symptoms was relatively poor, with only about one-third answering correctly before the intervention. Post-intervention results showed marked improvement (98.4% and 93.4%), supporting findings by Kalthoum et al. that educational program significantly enhance symptom awareness. [17]

The mean knowledge score increased from 7.05 (64%) in the pre-test to 9.15 (83.2%) in the post-test, demonstrating a statistically significant improvement ($p = 0.001$). [18] This is consistent with Hatzenbuehler et al, who reported a 12% knowledge gain following educational intervention. [19] Additional studies, including those reported in Scholars Journal of Applied Medical Sciences (2022) and research from rural South India and Chennai, similarly confirm that structured health education—especially with audio-visual aids—substantially improves tuberculosis knowledge and treatment awareness. [20-22] Overall, the present study demonstrates that targeted educational intervention among monks significantly improved knowledge regarding the introduction, causes, risk factors, and

symptoms of pulmonary tuberculosis, highlighting the effectiveness of focused health education in specialized community settings.[23, 24]

CONCLUSION

The majority of monks had low knowledge in the pre-test, but after an educational intervention, the majority had high knowledge, and a few had moderate level of knowledge. This study revealed that an educational intervention appears to be an effective measure to raise the knowledge on pulmonary tuberculosis.

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