

Lights , Camera, Education: From Reel to Reality – Cinemeducation in Action, Shattering Tuberculosis Myths & Shaping Medical Minds!

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Abstract

Background: Tuberculosis (TB) remains a leading cause of mortality in India, yet medical students often lack both comprehensive knowledge and empathetic attitudes toward affected individuals. Conventional didactic lectures, while efficient, may not address the emotional and social dimensions of TB care. Cinemeducation—using film as a teaching tool—has shown promise in enhancing empathy and knowledge retention.

Objective: To compare the effectiveness of cinemeducation versus conventional lecture-based teaching on knowledge acquisition, attitude change, and learner satisfaction regarding TB among Phase II MBBS students.

Methods: A comparative interventional study was conducted among 83 undergraduate medical students. 43 students underwent a cinemeducation session (curated TB film + facilitated discussion), and 40 students received a standard 45-minute didactic lecture. A 20-item MCQ knowledge test was administered pre- and post-intervention. Additionally, the cinemeducation group completed a 16-item Likert-scale feedback questionnaire with five open-ended questions. Quantitative data were analyzed using paired and independent t-tests; qualitative responses underwent thematic analysis.

Results: The cinemeducation group demonstrated a significantly higher mean knowledge gain (6.3 ± 3.1) compared to the conventional group (3.7 ± 3.5 ; $p=0.002$). Post-test scores were 18.5 ± 2.8 vs 14.2 ± 3.5 ($p<0.001$). Feedback from the cinemeducation group was overwhelmingly positive: mean overall rating 4.9/5, with 98% agreeing that the session enhanced empathy and 95% finding it more engaging than traditional lectures. Thematic analysis revealed four major themes: (1) Humanizing TB and reducing stigma, (2) Emotional engagement leading to deeper learning, (3) Bridging theory with clinical practice, and (4) Demand for more cinemeducation sessions.

Conclusion: Cinemeducation is a great learning tool in addition with conventional teaching for TB education, producing both greater knowledge gains and improved empathetic attitudes. It aligns with competency-based medical education and should be integrated into the undergraduate curriculum for infectious diseases and community medicine.

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1. Introduction

1.1 Background

India accounts for nearly 27% of the global tuberculosis (TB) burden, with an estimated 2.8 million new cases annually and over 300,000 deaths (WHO Global TB Report 2023) [15]. Despite the availability of free diagnosis and treatment under the National Tuberculosis Elimination Programme (NTEP), delayed diagnosis, poor treatment adherence, and pervasive stigma continue to hamper elimination efforts [16,17]. For medical students—future physicians at the forefront of TB control—mastery of TB requires not only factual knowledge (microbiology, pharmacotherapy, public health strategies) but also the ability to empathize with patients, address psycho-social barriers, and combat discrimination [18].

1.2 The Problem with Conventional Teaching

Traditional didactic lectures remain the predominant they are often passive, teacher-centered, and fail to evoke emotional engagement [7,8]. Studies have shown that lectures alone do not significantly change attitudes toward stigmatized conditions like TB or HIV [31]. Furthermore, the competency-based medical education (CBME) curriculum introduced by the National Medical Commission (NMC) emphasizes active learning, reflective practice, and attitude development—areas where conventional lectures fall short [9,10].

1.3 Cinemeducation as an Alternative

Cinemeducation—the use of films or movie clips as an educational tool—was first described by Alexander et al. in 1994 [42]. It leverages narrative and emotional resonance to teach psycho-social aspects of medicine, professionalism, and empathy [1,4,38]. Films can depict the lived experience of illness, family dynamics,

healthcare worker attitudes, and systemic barriers in ways that textbooks cannot [2,3]. Recent systematic reviews have confirmed that cinemeducation improves teaching method in Indian medical colleges. While efficient for transmitting large volumes of information,

Knowledge retention, enhances reflective thinking, and positively influences attitudes toward patients with infectious diseases [5,19,34].

1.4 Rationale for the Present Study

Despite growing evidence, few studies have directly compared cinemeducation with conventional teaching for TB education in the Indian undergraduate medical context. Most existing studies are either descriptive or lack a control group. Furthermore, few have incorporated both quantitative (knowledge scores) and qualitative (thematic analysis of feedback) outcomes. The present study was designed as a comparative interventional study to assess and compare the impact of cinemeducation versus conventional teaching on TB-related knowledge acquisition, attitude change, and learner satisfaction among Phase II MBBS students.

1.5 Objectives |

Primary Objective:

To compare the mean post-test knowledge scores between the cinemeducation group and the conventional teaching group.

Secondary Objectives:

To assess the within-group pre- to post-test knowledge gain in both groups.

To evaluate learner feedback (satisfaction, empathy, engagement) in the cinemeducation group using quantitative and qualitative methods.

To identify thematic patterns in students reflections on the cinemeducation session.

2 Review of Literature

2.1 Historical Evolution of Cinemeducation

The term “cinemeducation” was coined by Alexander, Hall, and Pettice in 1994, who used the film “The Doctor” to teach psycho-social medical care to family medicine residents [42]. Since then, its use has expanded across disciplines. In psychiatry, Kuhnigk et al. (2012) used films to teach about mental illness and reduce stigma [33]. In community medicine, Sinha et al. (2024) reported that cinemeducation improved student engagement and knowledge retention compared to traditional methods [3].

2.2 Theoretical Foundations

Cinemeducation draws upon experiential learning theory (Kolb), where learners construct knowledge through concrete experiences and reflective observation [22]. Watching a film provides a vicarious experience, while the subsequent discussion facilitates reflective thinking. Emotional engagement theory posits that emotionally charged content is better remembered because it activates the amygdala and enhances consolidation of memory [21]. Blasco et al. (2006) demonstrated that films evoke empathy by allowing viewers to identify with characters [38].

2.3 Evidence for Cinemeducation in Infectious Diseases

Shankar (2019) described the use of the film Philadelphia to teach about HIV stigma and empathy [31]. Students reported increased willingness to care for HIV-positive individuals. Similarly, Salajegheh et al. (2024) found that cinemeducation significantly improved empathy scores among medical students using a validated empathy scale [4]. In the context of TB, Sinha et al. (2024) used a short film depicting a TB patient’s journey and reported that 92% of students felt more empathetic after the session [3].

2.4 Gaps in Existing Literature

While the above studies are encouraging, most are single-arm (no control group), use only quantitative measures, or assess short-term outcomes only. Few directly compare cinemeducation with conventional lectures using both pre-post knowledge tests and qualitative feedback. The present study addresses these gaps.

2.5 Relevance to Indian Medical Education

The NMC’s CBME curriculum requires medical graduates to demonstrate “attitude, ethics, and communication” (AETCOM) competencies [9]. Cinemeducation directly addresses AETCOM modules by fostering empathy and reflection. Moreover, TB is a high-priority disease in India, and teaching methods that improve both knowledge and attitudes can contribute to NTEP goals [16,17].

3 Materials and Methods

3.1 Study Design and Setting

This was a comparative interventional study with a mixed-methods (quantitative + qualitative) component, conducted in the Department of Microbiology at KAHER J.N. Medical College, a tertiary care teaching hospital in Belagavi, Karnataka, India. The study duration was four weeks.

3.2 Study Population and Sampling

All Phase II (third semester) MBBS students who had not yet received formal teaching on TB were eligible. A total of 86 students were enrolled; 83 completed both pre- and post-tests (96.5% response rate). Students were divided into two groups based on their existing tutorial batches (non-randomized but comparable at baseline): Cinemeducation group (Group C): 43 students

Conventional teaching group (Group L): 40 students
Sample size was calculated using G*Power (effect size 0.5, $\alpha=0.05$, power=0.80), which indicated a minimum of 34 per group.

3.3 Inclusion and Exclusion Criteria

Inclusion: Phase II MBBS students present on the day of the session, willing to provide informed consent.

Exclusion: Students who had previously attended a TB workshop or received formal TB teaching, those absent for either pre- or post-test.

3.4.1 Development of Study Tools

3.4.2 Knowledge Test (MCQ)

A 20-item multiple-choice questionnaire was developed based on standard TB curricula (Park's Textbook, NTEP guidelines, Harrison's Principles) [18,26]. Questions covered:

1. Discovery of tubercle bacillus (Robert Koch)
2. Acid-fastness (mycolic acid)
3. Most common species (*M. tuberculosis*)
4. Antigen for serodiagnosis (Antigen 5)
5. Most common extrapulmonary TB (tuberculous lymphadenitis)
6. Droplet nuclei size (<5 µm)
7. Major risk factor (HIV infection)
8. Diagnostic skin test (Mantoux test)
9. Ziehl-Neelsen staining (acid-fast staining)
10. Colony morphology on LJ medium (rough, tough, buff)
11. Molecular diagnostic method (GeneXpert/CBNAAT)
12. Outermost layer component (lipids/glycolipids)
13. Duration of short-course chemotherapy (6 months)
14. DOTS phase with multiple drugs (Intensive phase)
15. Region with highest TB cases (South-East Asia)
16. Scrofuloderma site (skin)
17. More sensitive than ZN staining (fluorescent auramine)
18. Miliary TB spread (hematogenous)
19. Faster culture method (MGIT system)
20. Country with largest TB burden (India)

The test was pilot-tested on 10 interns (Cronbach's $\alpha = 0.82$). Same test was used for pre- and post- intervention.

3.4.3 Feedback Questionnaire (Cinemeducation Group Only)

A 16-item Likert-scale questionnaire (1 = strongly disagree, 5 = strongly agree) assessed:

- 1) Realism and relevance of storyline
- 2) Portrayal of emotional/social challenges
- 3) Relatability of characters
- 4) Audiovisual quality
- 5) Dispelling myths
- 6) Learning new clinical facts
- 7) Alignment with guidelines
- 8) Empathy enhancement
- 9) Emotional engagement
- 10) Reflection on beliefs/biases
- 11) Discussion linking film to clinical practice
- 12) Facilitator encouragement
- 13) Comfort in asking questions
- 14) Engagement compared to traditional lecture
- 15) Appropriateness of duration
- 16) Desire for more cinemeducation sessions

Additionally, five open-ended questions were included:

- 17) Most important takeaway from the session
- 18) Did the film change your attitude toward TB? If yes, how?
- 19) Describe one moment or character that stood out and why

20) Which aspect impacted you the most (film, discussion, content)?

21) Do you feel more prepared to approach TB issues with empathy and professionalism? Why?

Overall session rating (1–5 stars) was also collected.

3.5 Interventions

3.5.1 Conventional Teaching Group (Group L)

Students received a 45-minute didactic lecture delivered by a senior faculty member using PowerPoint slides. Content included: epidemiology of TB in India, microbiology (*M. tuberculosis*), pathogenesis, clinical features, diagnosis (smear, culture, molecular tests), treatment (DOTS, 6-month regimen), and NTEP guidelines. No film or discussion beyond Q&A was provided.

3.5.2 Cinemeducation Group (Group C)

Students watched a curated 30-minute film depicting: A young adult with chronic cough, weight loss, and night sweats
Delayed diagnosis due to stigma and fear of family rejection
Isolation by family members after diagnosis
Supportive doctor who explains treatment and adherence
Successful completion of therapy and return to normal life

After the film, a 30-minute structured discussion was done covering:

Clinical signs shown in the film

Myths about TB (e.g., sharing utensils, airborne transmission)

Psycho-social impact of stigma

Doctor-patient communication strategies

Role of NTEP and DOTS providers

3.6 Data Collection Procedure

Day 1 (Pre-test): Both groups completed the 20-item MCQ knowledge test (15 minutes).

Day 2 (Intervention):

Group L attended the 45-minute lecture.

Group C attended the film + discussion session.

Day 2 (Immediate Post-test): Within 30 minutes after intervention, both groups retook the same MCQ test.

Day 2 (Feedback): Only Group C completed the feedback questionnaire (10 minutes).

All responses were anonymized using roll numbers.

3.7 Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 25 (IBM Corp., Armonk, NY). Descriptive statistics: Mean, standard deviation, frequencies, percentages.

Within-group comparison: Paired t-test (pre-test vs post-test).

Between-group comparison: Independent t-test (post-test scores of Group C vs Group L).

Effect size: Cohen’s d calculated.

Qualitative analysis: Thematic analysis of open-ended responses using Braun & Clarke’s six-step framework. Two independent researchers coded the data; disagreements were resolved by consensus. Statistical significance was set at $p < 0.05$.

3.8 Ethical Considerations

Institutional Ethics Committee approval was obtained vide letter MDC/JNMCIEC/192. Written informed consent was taken from all participants. Students in the conventional group were offered the

cinemeducation session after data collection to ensure equitable learning. No incentives were provided.

4. Results

4.1 Demographic Characteristics

A total of 83 students completed the study (Group C: n=43, Group L: n=40). Mean age: 20.4 ± 1.1 years. Gender distribution: 48 females (57.8%), 35 males (42.2%). No significant difference in age or gender between groups ($p > 0.05$). Baseline (pre-test) scores were comparable (Group C: 12.2 ± 5.1 , Group L: 10.5 ± 4.2 ; $p = 0.11$), indicating similar prior knowledge.

4.2 Knowledge Acquisition: Within-Group Comparison

Group	N	Pre-test Mean \pm SD	Post-test Mean \pm SD	Mean Gain \pm SD	Paired t-value	p-value	Cohen’s d
Cinemeducation (C)	43	12.2 \pm 5.1	18.5 \pm 2.8	6.3 \pm 3.1	12.8	<0.001	1.4
Conventional (L)	40	10.5 \pm 4.2	14.2 \pm 3.5	3.7 \pm 3.5	6.7	<0.01	0.9

Interpretation: Both groups showed statistically significant improvement. However, the cinemeducation group had a larger mean gain (6.3 vs 3.7) and a very large effect size (Cohen’s d = 1.4) compared to the conventional group (d = 0.9).

4.3 Between-Group Comparison of Post-test Scores

Comparison	Mean Difference	95% CI	t-value	p-value
Post-test: Cine vs Conventional	4.3	(2.1, 6.5)	3.9	<0.001

The cinemeducation group scored significantly higher on the post-test ($p < 0.001$).

4.4 Distribution of Scores

In the cinemeducation group:

Perfect score (20/20): 12 students (27.9%)

Scores ≥ 18 : 31 students (72.1%)

Scores < 15 : 2 students (4.7%)

In the conventional group:

Perfect score: 0 students (0%)

Scores ≥ 18 : 6 students (15%)

Scores < 15 : 14 students (35%)

This indicates a clear shift toward higher mastery in the cinemeducation group.

4.5 Item-Wise Analysis (Cinemeducation Group)

The largest improvements (pre- to post-test) were observed in questions related to:

Transmission and droplet nuclei (+85% correct responses)

Stigma and social challenges (not directly tested but reflected in feedback)

Duration of DOTS treatment (+78% correct)

Miliary TB spread (hematogenous) (+72% correct)

The smallest improvements were in questions about colony morphology and specific antigen names, suggesting that purely factual recall may still require supplementary reinforcement.

4.6 Quantitative Feedback (Cinemeducation Group, n=43)

Item No.	Question	Mean \pm SD
1	The storyline was realistic and relevant to medical practice.	4.9 \pm 0.3
2	The film effectively portrayed emotional/social challenges of TB.	4.9 \pm 0.4
3	Characters and situations felt relatable and authentic.	4.8 \pm 0.5
4	Visual/audio quality enhanced my engagement.	4.8 \pm 0.5

5	The session helped dispel common myths about TB.	4.8 ± 0.4
6	I learned new, clinically relevant facts about TB.	4.8 ± 0.5
7	Content aligned with current medical guidelines and ethics.	4.8 ± 0.4
8	The session made me more empathetic toward people with TB.	4.9 ± 0.3
9	I felt emotionally engaged while watching the film.	4.8 ± 0.5
10	I reflected on my own beliefs and biases regarding TB.	4.7 ± 0.6
11	Discussion helped connect film content to clinical practice.	4.8 ± 0.4
12	Facilitator encouraged open, respectful discussion.	4.9 ± 0.3
13	I felt comfortable sharing or asking questions.	4.7 ± 0.5
14	Film-based teaching was more engaging than a traditional lecture.	4.8 ± 0.5
15	Session duration was appropriate.	4.7 ± 0.6
16	I would like to have more sessions using cinemeducation.	4.8 ± 0.5

Overall session rating (out of 5 stars) 4.9 ± 0.3

Key findings:

98% agreed/strongly agreed that the session enhanced empathy.
 95% found it more engaging than traditional lectures.
 93% wanted more cinemeducation sessions.
 Mean overall rating was 4.9/5 (excellent).

4.7 Qualitative Thematic Analysis

Responses from the five open-ended questions (total of 215 individual comments) were analyzed. Four major themes emerged, each with sub-themes and representative quotes.

Theme 1: Humanizing TB and Reducing Stigma
 This theme captured how the film transformed students’ perception of TB from a purely biomedical entity to a human experience.

Sub-theme 1.1: Seeing the person behind the disease
 “The film helped me understand that TB is not just a medical condition but also a social issue deeply connected with stigma, poverty, and lack of awareness. It humanized people living with TB.” (Roll No. 3)

Sub-theme 1.2: Recognizing stigma as a barrier
 “The character who hid his TB diagnosis due to fear of rejection stood out. It showed how stigma can delay treatment and worsen outcomes.” (Roll No. 64)

Subtheme 1.3: Changed attitude toward patients
 “Yes, the film significantly changed my attitude. I now understand that people with TB are not to be feared or judged, but supported.” (Roll No. 39)

Theme 2: Emotional Engagement Leading to Deeper Learning
 Students reported that emotional resonance enhanced their attention, retention, and motivation.

Sub-theme 2.1: Emotional impact of specific scenes
 “The moment when the patient was isolated by his own family stood out. It was powerful and heartbreaking. This scene reflected the deep-rooted stigma around TB.” (Roll No. 48)

Sub-theme 2.2: Connection between emotion and clinical relevance

“The doctor treating the patient infected with TB taught me empathy. I will remember this when I see TB patients in the future.” (Roll No. 59)

Sub-theme 2.3: Immersive experience
 “Every moment of the movie touched my heart. It was not just a film—it was a lesson in humanity.” (Roll No. 22)

Theme 3: Bridging Theory with Clinical Practice
 Students appreciated how the film and discussion connected textbook knowledge to real-world patient care.

Sub-theme 3.1: Application of clinical concepts
 “The discussion after the film was most impactful. Hearing real-world stories and professional perspectives on managing TB-HIV co-infection made the issue feel immediate and practical.” (Roll No. 39)

Subtheme 3.2: Reinforcing NTEP guidelines
 “I learned how DOTS works in real life, not just in theory. The film showed a patient actually taking treatment under supervision.” (Roll No. 83)

Sub-theme 3.3: Preparing for future practice
 “Yes, I feel more prepared. The session equipped me with both clinical knowledge and emotional awareness. I am now more confident in offering support and fighting stigma.” (Roll No. 39)

Theme 4: Demand for More Cinemeducation Sessions
 Overwhelmingly, students requested that cinemeducation be integrated into the regular curriculum.

Sub-theme 4.1: Preference over traditional methods
 “The cinematic film made the class more engaging and interactive than any PowerPoint lecture I have attended.” (Roll No. 46)

Sub-theme 4.2: Suggestions for future sessions
 “Include a short interactive quiz or role-play to reinforce key messages.” (Roll No. 39)

“Invite a person living with TB or HIV to share their experience if they are willing—firsthand stories are powerful.” (Roll No. 39)

“Provide resource links or take-home guides on TB and HIV management.” (Roll No. 39)

Sub-theme 4.3: No negative feedback

“Nothing, it’s too good.” (Roll No. 42)

“It was perfect. No suggestions.” (Roll No. 62, 66)

4.8 Comparison of Qualitative Themes with Quantitative Findings

Students who reported the highest emotional engagement (item 9, mean 4.8) also demonstrated the largest knowledge gains. This suggests a positive correlation between emotional resonance and learning outcomes—a finding consistent with emotional engagement theory [21].

5. Discussion

5.1 Summary of Principal Findings

This comparative interventional study demonstrated that cinemeducation is superior to conventional didactic lectures for teaching tuberculosis to Phase II MBBS students. The cinemeducation group achieved significantly higher post-test knowledge scores (18.5 vs 14.2, $p < 0.001$), a larger mean gain (6.3 vs 3.7), and a very large effect size (Cohen’s $d = 1.4$). Moreover, students in the cinemeducation group reported profound changes in empathy, attitudes, and engagement, with 98% agreeing that the session made them more empathetic and 95% finding it more engaging than traditional lectures. Qualitative analysis revealed that the film humanized TB, reduced stigma, connected theory to practice, and generated strong demand for more such sessions.

5.2 Interpretation in the Context of Existing Literature

Our findings align closely with those of Rueb et al. (2024), who reported that cinemeducation promotes reflective thinking and deeper learning through emotional engagement [1]. Similarly, Cheema et al. (2024) found that films make abstract concepts tangible and improve retention [2]. The effect size we observed ($d = 1.4$) is larger than that reported in some previous studies, possibly because our film was specifically curated for TB and included a structured discussion—a key component emphasized by Sinha et al. (2024) [3]. The improvement in empathy scores is consistent with Salajegheh et al. (2024), who used a validated empathy scale and found significant post-intervention increases [4]. Our qualitative data added depth to this finding: students explicitly described how seeing a patient’s isolation and the doctor’s compassion changed their own attitudes. This is particularly important for TB, where stigma remains a major barrier to care [17,18]. The finding that cinemeducation was more effective for questions related to transmission, stigma, and treatment adherence—topics visually depicted in the film—supports the theory of dual coding (verbal + visual

information) and experiential learning [22]. Students did not merely memorize facts; they embedded them in a narrative context, which enhances retrieval.

5.3 Why Was Cinemeducation More Effective?

Several mechanisms may explain our results:

Emotional arousal: The amygdala enhances memory consolidation for emotionally charged events. The film’s depiction of family rejection and patient suffering likely triggered this response [21].

Narrative transportation: When viewers become immersed in a story, they are less resistant to persuasive messages. The film allowed students to “experience” TB vicariously without real-world risk [38].

Social cognitive learning: Students identified with the compassionate doctor as a role model, shaping their own professional identity [22].

Active processing: The facilitated discussion forced students to articulate their thoughts, correct misconceptions, and apply concepts to clinical scenarios—unlike passive lecture attendance [13].

5.4 Comparison with Conventional Teaching

The conventional group also showed significant improvement ($p < 0.01$), indicating that lectures are not ineffective. However, the magnitude of gain was smaller, and no student achieved a perfect score. Moreover, the conventional group did not receive any empathy training or attitude-focused content. This suggests that while lectures can transmit facts, they are sub-optimal for teaching attitudes, empathy, and stigma reduction—all of which are CBME competencies [9,10].

5.5 Implications for Medical Education in India

Curriculum Integration: Cinemeducation can be integrated into:

Community Medicine (TB module, NTEP training)

Microbiology (laboratory diagnosis, but with human context)

Medicine wards (bedside teaching supplemented by film)

AETCOM modules (empathy, communication, ethics)

Practical Considerations:

Low cost: requires only a projector, screen, and facilitator.

Scalable: can be used for large batches or small groups.

Acceptable: 93% of students wanted more sessions.

Aligned with NMC’s CBME: promotes active learning, reflection, and attitude development [9].

Faculty Development: Facilitators need training to link film content to learning objectives, manage emotional reactions, and guide reflective discussion. Steinert (2022) emphasized that faculty development is critical for successful implementation of innovative methods [23].

5.6 Suggestions for Improvement from Students

Students provided actionable suggestions:

Interactive elements: Quizzes, role-play, or case studies after the film.

Real survivor testimonials: Inviting a TB survivor to share their story.

Take-home resources: Handouts or links to NTEP guidelines, videos, or articles.

More time for discussion: Some felt the 30-minute discussion was too short.

Legal and ethical content: Confidentiality, contact tracing, and patient right.

These suggestions align with best practices described by Gordon et al. (2023) [12] and McLean & Gibbs (2023) [13].

5.5 Strengths of the Study

Mixed-methods design: Combined quantitative (pre-post scores) with rich qualitative data.

Control group: Direct comparison with conventional teaching.

Validated tool: MCQ test based on standard curricula.

High response rate: 96.5% completion.

5.6 Limitations

Single institution: Generalizability may be limited to similar settings.

Non-randomized grouping: Batch allocation was convenience-based, though baseline scores were comparable.

Immediate post-test only: Long-term retention (e.g., at 3 or 6 months) was not assessed.

No validated empathy scale: We used Likert-scale items rather than a standardized tool like the Jefferson Scale of Empathy.

5.7 Future Research Directions

Longitudinal studies: Assess knowledge retention at 3, 6, and 12 months.

Multicenter trials: Include multiple medical colleges across India.

Use of validated empathy scales: Jefferson Scale or Toronto Empathy Questionnaire.

Objective structured clinical examination (OSCE): Measure communication skills with simulated TB patients.

Comparison of film types: Documentary vs dramatization vs animated explainers.

Cost-effectiveness analysis: Compare cinemeducation with other active learning methods (simulation, role-play).

6. Conclusion

Cinemeducation is a highly effective and engaging teaching method for tuberculosis education among Phase II MBBS students. Compared to conventional didactic lectures, it produces significantly greater knowledge gains, fosters empathy, reduces stigma, and is overwhelmingly preferred by learners. The qualitative findings reveal that cinemeducation humanizes TB, connects theory to practice, and motivates students to provide compassionate care.

In the context of India's National Tuberculosis Elimination Programme and the competency-based medical education curriculum, cinemeducation should be integrated as a regular teaching tool—not as a replacement for lectures, but as a complementary strategy that addresses the affective and behavioral domains of learning. Medical educators are encouraged to adopt cinemeducation for TB and other stigmatized conditions (HIV, leprosy, mental illness) to produce physicians who are not only knowledgeable but also empathetic and patient-centered.

7. Recommendations

Based on our findings and student suggestions, we recommend:

For Medical Educators:

Incorporate at least one cinemeducation session per major infectious disease module.

Use films that depict both clinical and psycho-social dimensions.

Allocate sufficient time for facilitated discussion (minimum 30 minutes).

For Curriculum Committees:

Include cinemeducation as a formal teaching method in CBME guidelines.

Develop a bank of curated films with accompanying facilitator guides.

For Future Research:

Conduct multi-center randomized controlled trials.

Assess long-term retention and clinical behavioral outcomes.

Evaluate cost-effectiveness and scalability.

For NTEP and National Health Mission:

Consider cinemeducation for training healthcare workers on stigma reduction.

Develop region-specific films addressing local myths and cultural contexts.

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9. Conflict of Interest: Nil.

10. References (Vancouver Style)

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