

Effect of an AETCOM 1.2 Session on Empathy Levels among First-Year Medical Students: A Pre–Post Study Using the Jefferson Scale of Physician Empathy–Student Version (JSPE-S)

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Received Date: 16/06/2025

Accepted: 22/07/2026

Published Date: 31/08/2026

ABSTRACT

Background: Empathy is an essential component of patient-centred medical care and an important professional competency in undergraduate medical education. The Attitude, Ethics and Communication (AETCOM) modules introduced by the National Medical Commission aim to promote empathy, professionalism and humanistic values among medical students. AETCOM Module 1.2, “What Does It Mean To Be a Patient?”, is designed to encourage first-year medical students to appreciate the emotional, psychological and social dimensions of illness. This study evaluated the immediate effect of an AETCOM 1.2 session on empathy among first-year medical students using the Jefferson Scale of Physician Empathy–Student Version (JSPE-S). **Methods:** A single-group pre–post interventional study was conducted among Phase I MBBS students at JGMM Medical College. Students who provided informed consent and completed both assessments were included. The AETCOM 1.2 session incorporated video-based scenarios, debate and reflective writing. Empathy was assessed immediately before and after the session using the 20-item JSPE-S. Pre- and post-intervention scores were compared using a paired-samples *t*-test. Because the distribution of individual change scores was non-normal, the Wilcoxon signed-rank test was additionally performed as a sensitivity analysis. **Results:** A total of 179 students with complete paired observations were included. The mean age was 18.7 ± 1.3 years; 101 (56.4%) participants were female and 78 (43.6%) were male. The mean JSPE-S score increased from 86.59 ± 8.93 before the intervention to 88.60 ± 10.71 after the session. The mean increase was 2.02 points (95% CI: 0.37–3.67), corresponding to an approximately 2.3% increase from baseline. The paired-samples *t*-test demonstrated a statistically significant increase ($t[178] = 2.41, p = 0.017$); however, the standardized effect size was small (Cohen's $d_z = 0.18$). Individually, 91 (50.8%) students demonstrated an increase in JSPE-S score, 13 (7.3%) showed no change and 75 (41.9%) demonstrated a decrease. The median change was +1 point (IQR: –4 to +6). The Wilcoxon signed-rank test did not demonstrate a statistically significant difference ($p = 0.061$). **Conclusion:** The AETCOM 1.2 session was associated with a small increase in mean JSPE-S scores among first-year medical students. However, the small effect size, substantial inter-individual variability and non-significant non-parametric analysis indicate that evidence for a consistent immediate intervention effect is limited. Longitudinal and repeated AETCOM-based interventions may be required to achieve sustained improvements in empathy.

Keywords: AETCOM; empathy; medical students; JSPE-S; Jefferson Scale of Physician Empathy; medical education; undergraduate medical education.

How to cite this article: Prajwal Toragal¹ Dr. Anupama Deepak² Dr. Sanjivani S. Jadhav³. Effect of an AETCOM 1.2 Session on Empathy Levels among First-Year Medical Students: A Pre–Post Study Using the Jefferson Scale of Physician Empathy–Student Version (JSPE-S). Int J Drug Deliv Technol. 2026;16(80s):1573-1577. DOI: 10.25258/ijddt.16.80s.196.

1. Introduction

Empathy is an essential skill for doctors and plays a major role in building a good doctor–patient relationship.¹ When doctors communicate with

empathy, patients feel understood, develop trust, follow treatment better, and often experience improved health outcomes.² Empathy also helps doctors themselves by reducing stress and burnout.³

Although empathy is widely recognized as a key clinical competency, medical education has historically leaned toward a heavily science-driven, technology-focused model. This evolution has unintentionally encouraged a form of “detached concern,” where emotional involvement is often seen as secondary.⁴ While contemporary curricula now highlight professionalism and communication, research indicates that empathy may decline as students’ progress through medical school—particularly when they begin clinical rotations and are exposed to demanding environments, implicit norms, and emotionally intense situations.² At the same time, other studies suggest that empathy can improve when supported by well-designed educational interventions. These contrasting findings underscore the importance of identifying strategies that can preserve and enhance empathy during training.¹⁰

The National Medical Commission (NMC) introduced the AETCOM (Attitude, Ethics and Communication) modules to address this challenge by intentionally nurturing empathy, professionalism, and humanistic qualities in medical students. AETCOM Module 1.2, titled “What Does It Mean To Be A Patient?,” is specifically designed to help first-year MBBS learners appreciate the lived realities of illness, engage in reflective thinking, and understand the broader emotional, social, and psychological aspects of patient care.⁵

The Jefferson Scale of Physician Empathy – Student Version (JSPE-S) is the most commonly used and well-validated tool to measure empathy among medical students. Research from different countries shows cultural variations in empathy scores. For example, a long-term Japanese study found an average JSPE-S score of 110.8 ± 11.8 among first-year students, with females scoring higher than males.⁶⁻⁸

Despite these efforts, evidence from India on the effectiveness of specific AETCOM sessions, particularly Module 1.2, in improving empathy remains limited. Although several studies have used quantitative measures to assess empathy among medical students, relatively few have examined whether a structured teaching session can produce a measurable change in empathy scores. Evaluating the effect of an AETCOM 1.2 session is therefore important for understanding its educational value and for identifying ways to strengthen empathy-focused components of the undergraduate medical curriculum.

Aim

To assess the immediate effect of an AETCOM 1.2 session on empathy levels among first-year medical students using the Jefferson Scale of Physician Empathy–Student Version (JSPE-S).

2. MATERIALS AND METHODS

2.1 Study design and setting

A single-group pre–post interventional study was conducted among Phase I MBBS students at Department of Physiology, JGMM Medical College.

2.2 Study participants

The study population comprised Phase I MBBS students. The planned sample consisted of 200 students, and convenience sampling was proposed among eligible students. Students voluntarily consenting to participate were included.

Inclusion criteria

- All Phase I MBBS students of JGMM Medical College.
- Students who provided informed consent.

Exclusion criteria

- Students absent during either the pre-test or post-test.
- Students who did not complete the JSPE-S questionnaire.

2.3 Sample size and sampling

Based on the previous study by K. S. Ravisankar, and considering the limited number of students available in the academic year, a convenience sampling method will be used. Students who voluntarily agree to participate after receiving an explanation of the study objectives and assurances of anonymity will be included. The sampling will be non-random, as participation will depend solely on the students’ willingness to take part in the study.⁹

2.4 Study procedure

Following institutional Ethics permissions and informed consent, participants completed the JSPE-S pre-test. The AETCOM 1.2 session was subsequently conducted and included:

1. Video-based scenarios
2. Debate
3. Reflective writing

The JSPE-S post-test was administered immediately after completion of the session. Feedback regarding the session was also collected through reflection.

2.5 Outcome measure

Empathy was assessed using the **Jefferson Scale of Physician Empathy–Student Version (JSPE-S) © Thomas Jefferson University, 2001. All rights reserved.** The JSE was used in this study with permission from Thomas Jefferson University. The instrument consists of 20 items scored on a 7-point Likert scale. Individual responses were coded anonymously.

The primary outcome was the change in total JSPE-S score between the pre-test and immediate post-test.

2.6 Statistical analysis

Data were entered into Microsoft Excel and analysed using SPSS. Descriptive statistics were expressed as mean $\pm$ standard deviation, median and interquartile range, frequencies and percentages, as appropriate. Pre- and post-intervention JSPE-S scores were compared using a paired-samples *t*-test. Because the distribution of individual change scores was non-normal, the Wilcoxon signed-rank test was additionally performed as a non-parametric sensitivity analysis. The standardized within-participant effect was expressed using Cohen's *d*. A

two-sided p value <0.05 was considered statistically significant.

3. RESULTS

3.1 Participant characteristics

A total of 179 first-year medical students had complete paired pre-test and post-test JSPE-S data and were included in the final analysis. The mean age was 18.7 ± 1.3 years. Among the participants, 101 (56.4%) were female and 78 (43.6%) were male.

Table 1: Baseline characteristics of study participants

Characteristic	Value
Total participants, n	179
Age, mean $\pm$ SD (years)	18.7 ± 1.3
Female, n (%)	101 (56.4)
Male, n (%)	78 (43.6)

3.2 Comparison of pre- and post-intervention JSPE-S scores

The mean JSPE-S score increased from 86.59 ± 8.93 at baseline to 88.60 ± 10.71 immediately following the AETCOM 1.2 session. The mean change was **2.02 points** (95% CI: 0.37–3.67), representing an approximately 2.3% increase from the baseline mean.

Table 2: Descriptive statistics of JSPE-S scores before and after the AETCOM 1.2 session

Variable	Pre-test	Post-test	Change
n	179	179	179
Mean	86.59	88.60	2.02
SD	8.93	10.71	11.08
Median	87.00	88.00	1.00
Minimum	52.00	65.00	–26.00
Maximum	111.00	141.00	22.00
25th percentile	82.98	84.07	–3.87
75th percentile	91.98	94.02	4.00

JSPE-S, Jefferson Scale of Physician Empathy–Student Version. Change was calculated as post-test minus pre-test.

3.3 Statistical comparison

The paired-samples t -test demonstrated a statistically significant increase in mean JSPE-S score ($t[178] = 2.41$, $p = 0.017$). However, the standardized within-participant effect size was small (Cohen's $d_z = 0.18$).

Table 3: Paired comparison of JSPE-S scores

Comparison	Mean difference	95% CI	Test statistic	p value	Effect size
Post-test – Pre-test	2.02	0.37–3.67	$t = 2.41$, $df = 178$	0.017	Cohen's $d_z = 0.18$

3.4 Individual changes

At the individual level, 91 (50.8%) students demonstrated an increase in JSPE-S score, 13 (7.3%) showed no change and 75 (41.9%) demonstrated a decrease. The median change was +1 point (IQR: –4 to +6).

Table 4: Distribution of individual changes in JSPE-S scores

Change category	n	%
Increased	91	50.8
No change	13	7.3
Decreased	75	41.9
Total	179	100.0

3.5 Sensitivity analysis

The distribution of individual change scores was markedly non-normal. Therefore, the Wilcoxon signed-rank test was performed as a non-parametric sensitivity analysis. Although the analysis indicated a trend toward improvement, the difference did not reach conventional statistical significance ($p = 0.061$).

Table 5: Non-parametric analysis of change in JSPE-S scores

Parameter	Result
Median change	+1
IQR	–4 to +6
Wilcoxon signed-rank test	$p = 0.061$
Interpretation	Not statistically significant

4. DISCUSSION

The present study assessed the effect of a single AETCOM 1.2 session on empathy among first-year medical students using the Jefferson Scale of Physician Empathy–Student Version (JSE-S). Among the 179 students with complete paired observations, the mean JSE-S score increased from 86.59 ± 8.93 before the session to 88.60 ± 10.71 after the session, representing a mean increase of 2.02 points (95% CI: 0.37–3.67). The paired-samples t -test demonstrated a statistically significant difference ($t[178] = 2.41$, $p = 0.017$). However, the standardized within-participant effect size was small (Cohen's $d_z = 0.18$), and the Wilcoxon signed-rank sensitivity analysis did not reach conventional statistical significance ($p = 0.061$). Furthermore, 91 students (50.8%) showed an increase in JSE-S scores, 75 (41.9%) showed a decrease, and 13 (7.3%) showed no change. The median change was only 1 point (IQR: –4 to +6). These findings therefore indicate a modest short-term improvement in self-reported empathy, with substantial individual variability and limited statistical robustness.

Empathy is a fundamental aspect of professionalism and patient-centred medical practice. It plays an important role in building effective doctor–patient relationships and has been linked to better communication, increased patient satisfaction, improved adherence to treatment, and better clinical outcomes. Beyond understanding a patient's symptoms, empathy allows physicians to appreciate the emotional, social, and psychological aspects of illness and respond to them appropriately. Therefore, empathy should be intentionally fostered during undergraduate medical education rather than being left to develop naturally through clinical exposure alone.

The modest improvement observed in the present study is in line with previous literature suggesting

that empathy can be developed and sustained through structured educational experiences. Majumder et al. highlighted several approaches that can be incorporated into medical curricula to promote empathy, including reflective writing, narrative-based learning, communication-skills training, role play, experiential learning, patient interviews, and simulation. Their review further suggested that interventions involving authentic patient experiences, self-reflection, and simulated patient encounters can contribute to improvements in empathy among medical students.³

The relevance of these findings is particularly important given that the participants were first-year medical students. This early stage of medical education is a crucial period for professional identity formation, as students begin to move from general education towards understanding the responsibilities, values, and expectations of the medical profession. Hermasari and Nugroho, in their study of first-year medical students, described empathy development as a process that begins with an initial stimulus, followed by an internal learning process, and ultimately influences both the learner and the patient. Their qualitative findings highlighted several factors that may support the development of empathy, including awareness of its importance, motivation, positive role models, case-based learning, feedback, and social or community-based experiences. These factors may partly explain the improvement observed following the AETCOM session in the present study. However, since the study did not examine the individual components of the session separately, it is not possible to determine which specific elements contributed most to the observed change.¹

The modest improvement observed in the present study may be related to the multidimensional and developmental nature of empathy. A single educational session may not be sufficient to bring about a substantial or sustained change in empathy, particularly when empathy develops gradually through continued learning and clinical experiences. Greater improvement may require repeated opportunities for reflection, experiential learning, feedback, and positive role modelling throughout medical training. Another important finding was the considerable variation in individual responses. Although the mean JSE-S score increased after the intervention, this improvement was not consistent across all students, with nearly half of the participants showing a decrease in their scores. This finding highlights the individual variability in empathy development and suggests that changes in group-level mean scores may not fully capture the diverse responses of individual students.

The findings of the present study can also be viewed in the context of the study by Keshtkar et al., which assessed empathy across five years of medical education using the same JSE-S instrument. They reported considerably higher absolute empathy

scores, ranging from 110.42 to 115.02, compared with the baseline mean score of 86.59 observed in the present study. More importantly, their study found a small but significant decline of 1.82 points in empathy scores between students in years 1–3 and those in years 4–5 ($p = 0.025$). In contrast, the present study showed a 2.02-point increase following a targeted educational intervention. While the findings of Keshtkar et al. suggest that empathy may decline during the later stages of medical training, our results indicate that even a brief, focused educational exposure may be associated with a modest improvement in empathy among early medical students. Keshtkar et al. also identified several factors that may influence empathy, including stress, time constraints, role modelling, a predominantly biomedical orientation, and limited emotional capacity. Taken together, these findings highlight the importance of incorporating empathy-building activities throughout the medical curriculum, with repeated opportunities for reflection and practice rather than relying on isolated educational sessions.²

The findings of the present study are also consistent with the observations of Shankar and Ravisankar, who reported variation in empathy across different stages of undergraduate medical education. In their study, overall empathy was highest among first-year students, declined during the second and third years, and increased again during the final year and compulsory rotating medical internship. They emphasized the importance of integrating empathy into the medical curriculum through practical and experiential approaches, including role-play, audiovisual activities, workshops, and repeated training, rather than relying solely on theoretical teaching. The improvement observed in the present study may therefore suggest that structured educational exposure can positively influence empathy, particularly during the early stages of medical training. However, an important difference between the two studies is the study design. Shankar and Ravisankar used a cross-sectional approach to compare students at different stages of training, whereas the present study used paired pre–post measurements, allowing assessment of change within the same individuals following the intervention.⁹

The timing of the post-test is another important consideration when interpreting the findings. Since the assessment was conducted immediately after the session, the observed change may reflect a short-term shift in students' perceptions or self-reported responses. However, it does not establish whether this change would be maintained over time or reflected in actual empathic behaviour during patient interactions. In addition, the JSE-S is a self-reported measure and may not fully reflect how students demonstrate empathy in clinical settings. Therefore, the findings should be interpreted as an immediate improvement in self-reported empathy rather than as

definitive evidence of a sustained change in clinical empathic behaviour.

Strengths

The study provides an assessment of a specific AETCOM module using a validated empathy measurement tool and includes paired observations from 179 students. Reporting both effect size and non-parametric sensitivity analysis provides a more balanced interpretation than reliance on statistical significance alone.

Limitations

The single-group pre–post design without a contemporaneous control group limits the ability to attribute the observed change specifically to the AETCOM 1.2 session. In addition, the immediate post-test assessment provides information only about short-term changes and does not indicate whether the improvement is sustained over time. Since the JSPE-S is a self-reported instrument, the findings may also be influenced by response tendencies and social desirability. The considerable variability and non-normal distribution of the change scores further suggest that the mean difference alone may not fully capture the range of individual responses to the intervention.

Future studies could address these limitations by using controlled or randomized study designs with larger, multicentre samples and longer follow-up periods. Repeated AETCOM interventions delivered at different stages of medical training may help determine whether empathy can be developed and sustained over time. In addition to JSPE-S scores, incorporating objective assessments of communication skills, structured clinical observations, reflective writing, and assessments from patients or faculty could provide a more comprehensive understanding of empathy development and its translation into clinical practice.

5. CONCLUSION

The AETCOM 1.2 session was associated with a small immediate increase in mean JSPE-S scores among first-year medical students. Although the paired-samples *t*-test showed a statistically significant increase, the small standardized effect size, considerable variation in individual responses, and non-significant Wilcoxon signed-rank test suggest that the evidence for a consistent intervention effect is limited. These findings indicate that AETCOM-based education may have a role in promoting empathy among medical students, but meaningful and sustained changes are likely to require repeated exposure and longitudinal integration of empathy-focused learning throughout the medical curriculum.

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