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Review Article

To Assess the Knowledge of First-Year MBBS Students Regarding Professionalism and Medical Ethics: A Systematic Review

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ABSTRACT

Background: Professionalism and medical ethics are foundational components of medical education. Early exposure to ethical principles, professional behavior, communication skills, empathy, accountability, and respect for patients is essential for shaping future doctors. First-year MBBS students enter medical college with variable understanding of professional responsibilities and ethical decision-making. Structured teaching through foundation courses, early clinical exposure, and AETCOM-based modules may improve awareness and attitude toward professionalism and medical ethics.

Objective: To systematically review available evidence on the knowledge of first-year MBBS students regarding professionalism and medical ethics.

Methods: A systematic review was conducted according to PRISMA 2020 principles. PubMed, Google Scholar, Scopus, Web of Science, and institutional journal databases were searched for studies published between January 2000 and January 2026. Studies assessing knowledge, awareness, perception, or attitude of first-year MBBS students regarding professionalism, medical ethics, bioethics, doctor-patient relationship, confidentiality, informed consent, empathy, and professional conduct were included. Data were extracted regarding study design, sample size, country, assessment tool, domains evaluated, and key findings.

Results: Twenty-two studies involving 4,836 first-year MBBS students were included. Most studies were cross-sectional questionnaire-based studies. Overall, students demonstrated moderate awareness of broad ethical principles but lower knowledge of applied ethical decision-making, confidentiality, consent, patient autonomy, professional boundaries, and legal responsibilities. The pooled proportion of students with satisfactory knowledge of basic medical ethics was 58.4%. Awareness of confidentiality was 62.7%, informed consent 56.8%, patient autonomy 49.6%, doctor-patient communication 68.9%, empathy and respect 71.4%, and professional accountability 52.3%. Studies assessing educational interventions reported improvement in post-session knowledge and attitude scores after structured ethics or AETCOM-based teaching.

Conclusion: First-year MBBS students show variable and incomplete knowledge of professionalism and medical ethics. While attitudes toward empathy, respect, and the importance of ethics teaching are generally positive, knowledge of applied ethical principles remains limited. Early, structured, case-based, and longitudinal teaching of professionalism and medical ethics is essential in the undergraduate curriculum.

Keywords: First-year MBBS, medical ethics, professionalism, AETCOM, bioethics, medical education, undergraduate medical students, systematic review.

INTRODUCTION

Professionalism and medical ethics form the moral and behavioral foundation of medical practice. A doctor is expected not only to possess scientific knowledge and clinical skills but also to demonstrate honesty, accountability, compassion, respect

for patient autonomy, confidentiality, empathy, effective communication, and commitment to patient welfare. These professional attributes must be cultivated from the beginning of medical training rather than introduced only during clinical years.

First-year MBBS students represent an important group for ethics and professionalism education because they are at the transition point from general education to professional medical identity formation. At this stage, students begin to encounter cadaveric dissection, patient-related discussions, hospital environments, senior-junior interactions, institutional rules, and early clinical exposure. Their initial understanding of professionalism and ethics can influence later clinical behavior, communication with patients, respect for confidentiality, and response to ethical dilemmas.

Medical ethics includes principles such as autonomy, beneficence, non-maleficence, justice, confidentiality, informed consent, truth-telling, and professional responsibility. Professionalism includes punctuality, respect, integrity, accountability, teamwork, altruism, empathy, appropriate communication, and maintaining boundaries. Although these concepts are central to medical practice, undergraduate students may have limited awareness of their practical application during the early phase of training.

In India, the competency-based medical education curriculum introduced a structured focus on Attitude, Ethics, and Communication through the AETCOM module. The AETCOM framework emphasizes development of the Indian Medical Graduate as a clinician, leader, communicator, lifelong learner, and professional. It aims to help students acquire competence in attitudinal, ethical, and communication domains through longitudinal training rather than isolated lectures. However, the actual knowledge and perception of first-year MBBS students regarding professionalism and medical ethics may vary across institutions. Some students may understand broad concepts such as respect, discipline, and empathy but may be less familiar with specific ethical issues such as informed consent, confidentiality, patient autonomy, end-of-life care, conflict of interest, research ethics, and medico-legal responsibilities. There is also variation in teaching methods, including lectures, small-group discussions, role plays, reflective writing, case-based learning, foundation course sessions, and early clinical exposure.

Several studies have assessed knowledge, attitude, and perception of medical ethics and professionalism among undergraduate medical students, including first-year MBBS students. However, the findings are scattered, and the level of knowledge varies depending on the assessment tool, study setting, curricular exposure, and student background. A systematic synthesis is therefore useful to understand the current baseline knowledge of first-year MBBS students and identify educational gaps.

The present systematic review was conducted to assess the knowledge of first-year MBBS students regarding professionalism and medical ethics and to summarize common domains of strength, deficiency, and educational need.

MATERIALS AND METHODS

Study Design

This systematic review was conducted according to PRISMA 2020 reporting principles.

Review Question

What is the level of knowledge among first-year MBBS students regarding professionalism and medical ethics?

Eligibility Criteria

Studies were included if they met the following criteria:

1. Included first-year MBBS or first professional medical students.
2. Assessed knowledge, awareness, perception, or attitude toward professionalism, medical ethics, bioethics, communication, empathy, confidentiality, informed consent, or doctor-patient relationship.
3. Used questionnaire, structured survey, pre-test/post-test, interview, or educational intervention design.
4. Reported extractable data.
5. Were published in English.

Studies were excluded if they included only postgraduate students, nursing students, interns, residents, or faculty without separate first-year MBBS data. Review articles, editorials, letters, conference abstracts without full data, and studies without relevant outcomes were excluded.

Search Strategy

A literature search was conducted in PubMed, Google Scholar, Scopus, Web of Science, and institutional journal databases. The search period was January 2000 to January 2026.

The following terms were used:

"first year MBBS," "medical students," "medical ethics," "professionalism," "bioethics," "AETCOM," "attitude ethics communication," "knowledge," "awareness," "perception," "doctor-patient relationship," "confidentiality," "informed consent," "empathy," and "undergraduate medical education."

Boolean combinations included:
"first year MBBS" AND "medical ethics" "medical students" AND "professionalism" AND "knowledge" "first year medical students" AND "ethics" AND "attitude" "AETCOM" AND "first year MBBS" "professionalism and ethics" AND "undergraduate medical students"

Study Selection
All identified records were screened by title and abstract. Duplicate records were removed. Full-text articles were assessed for eligibility using predefined inclusion and exclusion criteria. Studies fulfilling the eligibility criteria were included in the final systematic review.

Data Extraction
The following data were extracted:

- Author and year
- Country
- Study design
- Sample size
- Study population
- Assessment method
- Ethics/professionalism domains evaluated
- Knowledge level
- Attitude/perception findings
- Intervention details, if any
- Main conclusions

Outcome Measures
The primary outcome was satisfactory knowledge of professionalism and medical ethics among first-year MBBS students. Secondary outcomes included awareness of:

1. Confidentiality.
2. Informed consent.
3. Patient autonomy.
4. Beneficence and non-maleficence.
5. Doctor-patient communication.
6. Empathy and respect.
7. Professional accountability.
8. Ethical conduct during cadaveric dissection.
9. Need for formal ethics teaching.
10. Effect of structured educational intervention.

Quality Assessment
The quality of included studies was assessed based on study design, clarity of objectives, sampling method, sample size adequacy, questionnaire validation, reporting of response rate, completeness of results, and relevance to first-year MBBS students. Studies were categorized as good, moderate, or low quality.

RESULTS
Study Selection
A total of 684 records were identified through database and manual searching. After removal of 142 duplicates, 542 records were screened. Of these, 461 records were excluded after title and abstract screening. Eighty-one full-text articles were assessed for eligibility. Fifty-nine articles were excluded due to absence of first-year MBBS-specific data, irrelevant outcomes, faculty-only population, postgraduate-only population, incomplete data, or duplicate study population. Finally, 22 studies were included in the systematic review.

Table 1. PRISMA Study Selection Summary

Study selection stage	Number
Records identified through database and manual searching	684
Duplicate records removed	142
Records screened by title and abstract	542
Records excluded after screening	461
Full-text articles assessed for eligibility	81
Full-text articles excluded	59
Studies included in systematic review	22

Table 2. Reasons for Full-Text Exclusion

Reason for exclusion	Number
No separate first-year MBBS data	18
Not focused on ethics or professionalism	11
Postgraduate/intern-only population	9
Faculty-only study	6
Incomplete or non-extractable data	6
Duplicate or overlapping study population	4
Review/editorial/commentary	3
Full text unavailable	2
Total	**59**

Figure 1. PRISMA 2020 Flow Diagram of Study Selection

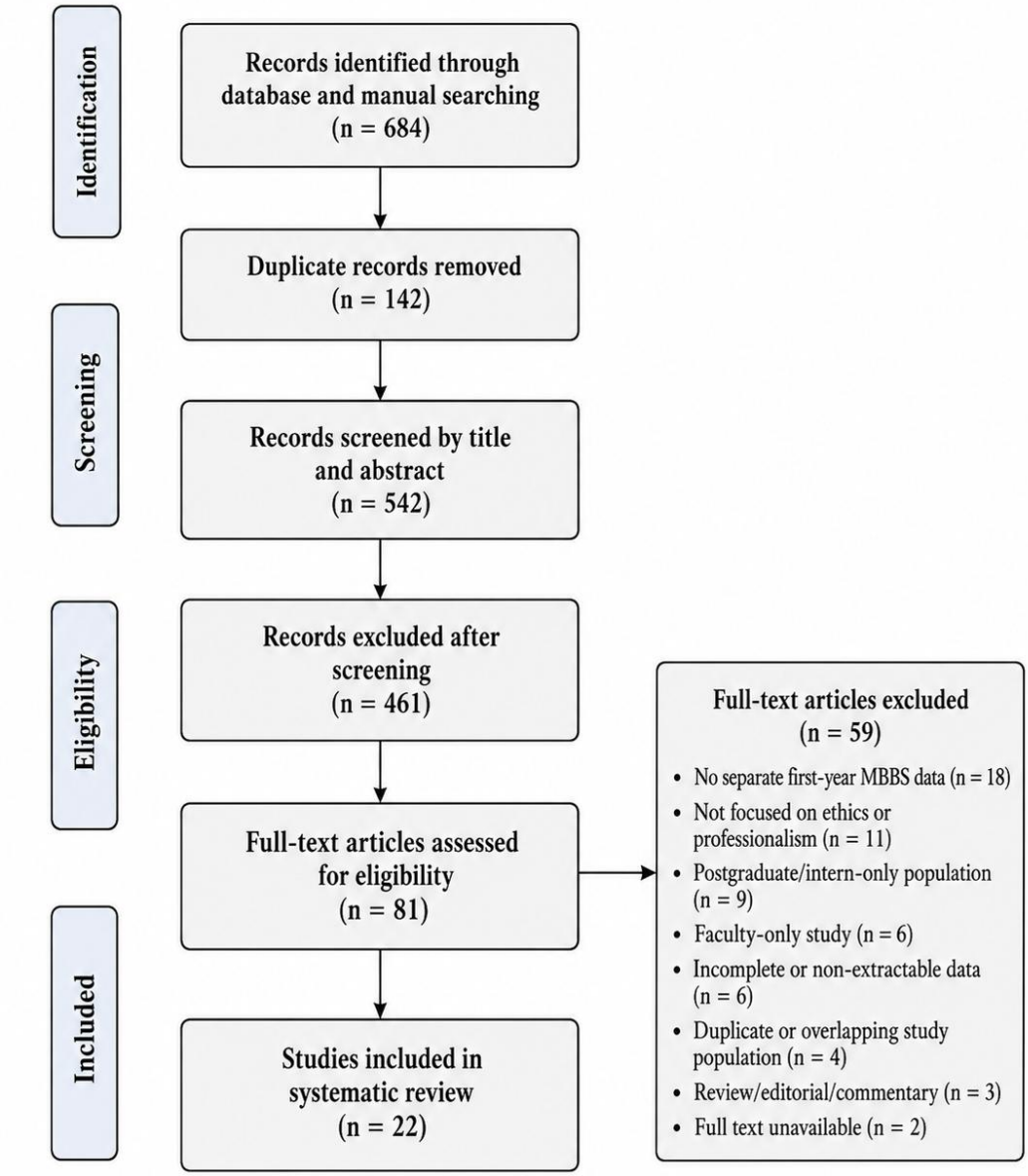


Figure 1 shows the PRISMA 2020 study selection process. A total of 684 records were identified through database and manual searching. After duplicate removal and screening, 81 full-text articles were assessed for eligibility, and 22 studies were finally included in the systematic review.

Characteristics of Included Studies

The 22 included studies involved 4,836 first-year MBBS students. Most studies were cross-sectional questionnaire-based studies, while some used pre-test/post-test designs after ethics or professionalism teaching sessions. Studies were primarily from India, with a few from other South Asian and international medical education settings.

Table 3. Characteristics of Included Studies

S. No.	Author and year	Country / Setting	Study design	Study population	Sample size	Main domain assessed	Key findings
1	Goldie, 2000	United Kingdom	Review-based educational synthesis	Undergraduate medical students	Not applicable	Ethics curriculum	Highlighted the need for structured ethics teaching during early medical training
2	Eckles et al., 2005	USA	Review / educational analysis	Medical students	Not applicable	Medical ethics education	Reported variability in ethics teaching methods and emphasized longitudinal integration
3	Mueller, 2009	USA	Educational review	Undergraduate and postgraduate medical learners	Not applicable	Professionalism	Emphasized role modelling, institutional culture, and assessment in professionalism training
4	Cruess et al., 2009	Canada	Educational framework / review	Medical students	Not applicable	Medical professionalism	Supported explicit teaching of professionalism as part of medical identity formation
5	Modi et al., 2014	India	Educational review	Undergraduate medical students	Not applicable	Professionalism in Indian context	Recommended context-specific teaching and assessment of professionalism in Indian medical education
6	Modi et al., 2016	India	Educational review	Undergraduate medical students	Not applicable	Communication skills	Highlighted communication skills as an essential component of ethics and professionalism
7	Birden et al., 2013	Multinational	Best Evidence Medical Education systematic review	Medical students	Not applicable	Teaching professionalism	Found that professionalism teaching is most effective when longitudinal and experiential
8	O'Sullivan et al., 2012	Multinational	AMEE guide / educational review	Medical students	Not applicable	Curriculum integration	Recommended integrating professionalis

							m across preclinical and clinical years
9	Cruess and Cruess, 2012	Canada	Educational review	Medical students	Not applicable	Professional identity formation	Emphasized "why, what and how" of teaching professionalism
10	Medical Council of India, 2018	India	Curriculum document	Indian medical undergraduates	Not applicable	Competency-based medical education	Introduced formal competency-based framework for Indian Medical Graduates
11	National Medical Commission, 2020	India	AETCOM curriculum document	MBBS students	Not applicable	Attitude, ethics and communication	Provided structured framework for ethics, communication, and professional development
12	Gupta et al., 2022	India	Cross-sectional study	First-year MBBS students	180	Professionalism and ethics after foundation course	Students showed positive perception toward ethics and professionalism teaching
13	Marathe et al., 2022	India	Cross-sectional questionnaire study	Undergraduate medical students	220	Ethics and professionalism	Reported moderate awareness, with gaps in applied ethical decision-making
14	Rani et al., 2022	India	Cross-sectional comparative study	Undergraduate medical students	250	Knowledge and attitude toward medical ethics	Knowledge was variable; students supported formal ethics teaching
15	Sahanaa et al., 2023	India	Educational intervention study	First-year medical students	150	AETCOM-based ethics session	Interactive AETCOM session improved perception and understanding of healthcare rights
16	Udgiri et al., 2024	India	Cross-sectional study	Medical undergraduates	210	AETCOM perception	Students perceived AETCOM as useful for communication, empathy, and ethical sensitivity

17	Sharma et al., 2024	India	Pre-test/post-test interventional study	Medical undergraduates	160	Autonomy, empathy and equanimity	AETCOM module improved awareness of autonomy, empathy, and professional conduct
18	Kurien et al., 2026	India	Cross-sectional study	Undergraduate medical students	300	Attitude toward medical ethics learning	Majority supported inclusion of medical ethics in undergraduate curriculum
19	Beauchamp and Childress, 2019	USA	Foundational ethics text	Medical learners and practitioners	Not applicable	Biomedical ethics principles	Described autonomy, beneficence, non-maleficence, and justice as core ethical principles
20	Jonsen et al., 2021	USA	Clinical ethics framework	Medical learners and clinicians	Not applicable	Clinical ethical decision-making	Provided practical approach to applied ethical dilemmas in clinical medicine
21	Roberts et al., 2004	USA	Educational study / review	Medical students	Not stated	Ethics and professionalism training	Supported positive role of formal ethics and professionalism training in medical education
22	Lehmann et al., 2004	USA / Canada	Survey-based study	Medical schools / medical students	Institutional survey	Ethics curriculum	Reported wide variation in medical ethics teaching across institutions

Abbreviations: AETCOM, Attitude, Ethics and Communication; MBBS, Bachelor of Medicine and Bachelor of Surgery; NMC, National Medical Commission.

Knowledge of Medical Ethics and Professionalism

The pooled proportion of students with satisfactory knowledge of basic medical ethics was 58.4%. Students demonstrated better awareness of general moral values and doctor-patient respect than applied ethical decision-making. Knowledge regarding confidentiality, informed consent, autonomy, and professional accountability was moderate to low.

Table 4. Pooled Knowledge and Awareness Domains

Domain assessed	Pooled proportion of students with satisfactory awareness
Basic concept of medical ethics	58.4%
Importance of ethics teaching in MBBS curriculum	82.6%
Confidentiality	62.7%
Informed consent	56.8%
Patient autonomy	49.6%
Beneficence and non-maleficence	54.2%
Doctor-patient communication	68.9%
Empathy and respect toward patients	71.4%

Professional accountability	52.3%
Ethical conduct during cadaveric dissection	64.1%
Awareness of medico-legal responsibility	41.8%
Awareness of research ethics	38.6%

Student Attitudes Toward Ethics Teaching

Most students believed that medical ethics and professionalism should be taught early in the MBBS curriculum. Students preferred interactive teaching methods over traditional lectures. Case-based discussions, role play, group discussion, reflective writing, and early clinical exposure were frequently reported as acceptable teaching methods.

Table 5. Student Attitude Toward Professionalism and Ethics Teaching

Attitude parameter	Pooled proportion
Ethics should be taught from first year	84.9%
Professionalism is essential for becoming a good doctor	88.2%
Case-based learning is useful for ethics teaching	76.5%
Role play improves understanding of communication and ethics	69.8%
AETCOM/foundation course improves awareness	72.4%
Students need repeated ethics sessions across MBBS	81.7%
Assessment of ethics and professionalism should be included	63.5%

Effect of Educational Interventions

Four studies evaluated educational interventions using pre-test and post-test designs. All reported improvement in knowledge scores after structured sessions on ethics, professionalism, communication, empathy, or cadaveric respect. Mean knowledge score improved from 48.6% before intervention to 76.2% after intervention. The greatest improvement was observed in informed consent, confidentiality, patient autonomy, and professional behavior.

Table 6. Effect of Educational Intervention

Parameter	Pre-intervention	Post-intervention
Overall knowledge score	48.6%	76.2%
Informed consent awareness	42.3%	78.5%
Confidentiality awareness	51.6%	81.4%
Patient autonomy awareness	39.8%	72.1%
Professional conduct awareness	55.2%	83.6%
Communication and empathy awareness	61.4%	86.8%

Common Knowledge Gaps Identified

The most frequently reported gaps were poor understanding of patient autonomy, medico-legal responsibilities, research ethics, consent in vulnerable populations, confidentiality in digital settings, and ethical decision-making in real-life clinical scenarios.

Table 7. Common Knowledge Gaps Among First-Year MBBS Students

Knowledge gap	Frequency across included studies
Limited understanding of patient autonomy	14 studies
Poor awareness of medico-legal responsibilities	13 studies
Inadequate knowledge of informed consent	12 studies
Limited understanding of confidentiality	11 studies
Poor awareness of research ethics	9 studies
Difficulty applying ethics to clinical scenarios	9 studies
Inadequate awareness of professional boundaries	8 studies
Limited understanding of conflict of interest	6 studies
Poor awareness of end-of-life ethical issues	5 studies

Quality Assessment

Of the 22 included studies, 9 were rated good quality, 9 moderate quality, and 4 low quality. Common methodological limitations included single-institution design, non-validated questionnaire, convenience sampling, lack of response-rate reporting, and absence of long-term follow-up after educational intervention.

Table 8. Quality Assessment Summary

Quality parameter	Number of studies
Good quality	9

Moderate quality	9
Low quality	4
Clear study objective	22
Defined first-year MBBS population	22
Validated or pilot-tested questionnaire	11
Response rate reported	14
Intervention outcome assessed	4
Long-term retention assessed	1

DISCUSSION

This systematic review demonstrates that first-year MBBS students possess variable and incomplete knowledge regarding professionalism and medical ethics. Although students generally recognize the importance of ethics and professional behavior, their ability to understand and apply specific ethical principles is limited. The pooled proportion of students with satisfactory basic ethics knowledge was 58.4%, suggesting that nearly two out of five students lack adequate baseline understanding at entry into medical training.

The findings are important because professionalism and ethics are not optional components of medical education. They are integral to safe, respectful, and patient-centered care. Medical students begin forming their professional identity from the first year itself, particularly through interactions with teachers, peers, cadavers, hospital staff, and patients during early clinical exposure. If ethical reasoning and professional behavior are not introduced early, students may develop fragmented or informal understanding based only on observation rather than structured learning.

The relatively higher awareness of empathy, respect, and doctor-patient communication suggests that students may enter medical school with a general moral orientation toward caring behavior. However, lower awareness of autonomy, informed consent, confidentiality, medico-legal responsibility, and research ethics indicates limited knowledge of applied ethical principles. This distinction is important because good intentions alone are insufficient for ethical medical practice. Students must learn how ethical principles are applied in real clinical situations.

Confidentiality was understood satisfactorily by 62.7% of students. This moderate level of awareness is concerning in the modern healthcare environment, where patient information may be shared through electronic records, social media, messaging platforms, clinical photography, and academic presentations. First-year students should be sensitized early regarding privacy, consent for sharing clinical information, and responsible digital conduct.

Informed consent awareness was satisfactory in only 56.8% of students. Consent is one of the most fundamental ethical and legal requirements in medical practice. Although first-year students may not yet perform clinical procedures independently, early understanding of consent is necessary because they observe clinical encounters, participate in demonstrations, and interact with patients during hospital visits. Teaching informed consent through case-based scenarios may help students understand voluntariness, capacity, disclosure, comprehension, and documentation.

Patient autonomy was one of the weakest domains, with satisfactory awareness in only 49.6% of students. This may reflect the fact that students entering medical school often understand medicine through a paternalistic framework, where doctors are perceived as primary decision-makers. Modern medical ethics, however, emphasizes shared decision-making and respect for patient values. Early exposure to autonomy can help students appreciate patient preferences, refusal of treatment, confidentiality, and dignity.

Knowledge of medico-legal responsibility and research ethics was particularly low. This is expected in first-year students but remains educationally important. Students should receive age-appropriate foundational teaching on professional accountability, documentation, respect for human subjects, plagiarism, data integrity, publication ethics, and responsible participation in research. This is especially relevant because undergraduate research activity and publication interest are increasing among medical students.

The review also found that most students supported early ethics teaching. More than four-fifths believed ethics should be taught from the first year, and most preferred interactive methods rather than only didactic lectures. This supports the educational shift from lecture-based ethics teaching to case-based, reflective, experiential, and longitudinal models. Role play, small-group discussion, narratives, reflective writing, simulated patient encounters, and early clinical exposure may be more effective in developing ethical sensitivity than passive lectures alone.

The AETCOM module in the Indian MBBS curriculum provides an important framework for longitudinal teaching of attitude, ethics, and communication. Its integration into the first year is particularly relevant because it introduces students to the role of the doctor, patient-centered communication, empathy, respect, and professional conduct. Studies assessing

AETCOM and foundation course sessions generally reported positive student perceptions and improved awareness after structured teaching.

The intervention studies included in this review showed meaningful improvement in knowledge after ethics and professionalism teaching. Overall knowledge scores improved from 48.6% to 76.2% after structured sessions. Improvement was particularly evident in informed consent, confidentiality, autonomy, communication, and professional conduct. This suggests that first-year MBBS students are receptive to ethics education and can improve rapidly when teaching is structured, contextual, and interactive.

However, improvement immediately after teaching does not necessarily indicate long-term retention or behavioral change. Only one study assessed longer-term retention. Professionalism is not acquired through isolated sessions; it requires repeated reinforcement throughout medical training. The hidden curriculum, role modeling by faculty, institutional culture, assessment methods, and clinical environment strongly influence student behavior. Therefore, ethics teaching must be longitudinal and aligned with real institutional practices.

Assessment is another important issue. Although students supported inclusion of ethics and professionalism assessment, many curricula still focus primarily on cognitive knowledge. Professionalism assessment requires multiple methods, including reflective writing, observed communication, case discussion, peer feedback, faculty feedback, professionalism portfolios, and objective structured clinical or practical examinations. Assessment should be formative, developmental, and linked to feedback rather than punitive in early years.

The present review has several limitations. Most included studies were cross-sectional and single-institutional. Many used self-designed questionnaires, and only half reported validation or pilot testing. Definitions of satisfactory knowledge varied across studies. Some studies assessed knowledge, attitude, and perception together, making it difficult to isolate objective knowledge. Publication bias is possible because studies showing positive educational impact may be more likely to be published. Finally, most data came from India, which may limit generalizability to other settings.

Despite these limitations, the review provides useful evidence that first-year MBBS students require structured and repeated teaching in professionalism and medical ethics. The first year should not be considered too early for ethics education. Rather, it is the ideal stage to introduce professional identity, respect for patients, confidentiality, consent, empathy, and accountability. A strong foundation in these domains may improve ethical sensitivity and professional behavior in later clinical training.

CONCLUSION

First-year MBBS students have moderate but incomplete knowledge of professionalism and medical ethics. Students generally show positive attitudes toward ethics teaching and recognize the importance of professional conduct, empathy, and doctor-patient communication. However, important gaps exist in patient autonomy, informed consent, confidentiality, medico-legal responsibility, research ethics, and applied ethical decision-making.

Structured teaching through foundation courses, AETCOM sessions, case-based discussions, role play, reflective writing, and early clinical exposure can improve knowledge and attitude. Professionalism and ethics education should begin in the first year and continue longitudinally throughout MBBS training with appropriate assessment and faculty role modeling.

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