

Research Article**Hidden Curriculum and Its Influence on Medical Student Well-Being and Professional Development: A Cross-Sectional Study****Fatima Amin¹, Izza Afzal², Javeria Ashfaq³, Rabia Khurram⁴, Maria Mughal⁵, Rabia Latif⁶**

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Fatima Amin: Corresponding author**Abstract****Background**

The hidden curriculum comprises the unwritten values, attitudes, behaviors, and institutional norms that medical students encounter during their education. These experiences may shape professional identity, ethical decision-making, empathy, and interpersonal behavior beyond the formal curriculum. However, exposure to negative role modeling, excessive hierarchy, discrimination, and inconsistencies between institutional expectations and observed clinical practice may adversely affect student well-being and professional development.

Objective

To investigate the association between perceived hidden curriculum experiences, medical student well-being, and professional development.

Methods

A analytical cross-sectional study include 250 undergraduate medical students from a medical teaching institution. Data were be collected using a structured questionnaire assessing demographic characteristics,

academic year, clinical exposure, perceptions of the hidden curriculum, professional development, and learning environment. Psychological well-being were assessed using the World Health Organization Five Well-Being Index (WHO-5), subject to appropriate use and scoring procedures. Associations between hidden curriculum perceptions, well-being scores, and professional development indicators were be examined using correlation and multivariable regression analyses.

Conclusion

The hidden curriculum is an important dimension of medical education that may influence student well-being and professional development. Understanding these relationships may help medical institutions strengthen positive role modeling, improve psychological safety, and align everyday institutional practices with the professional values taught in formal curricula.

Keywords: Hidden curriculum; medical education; medical students; psychological well-being; professional identity formation;

professionalism; role modeling; learning environment.

1. Introduction

Medical education extends beyond the formal acquisition of biomedical knowledge and clinical skills. It also involves the development of professional values, ethical judgment, empathy, communication, accountability, and a sense of responsibility toward patients and society. Although these attributes are addressed through formal teaching, students also acquire them through everyday interactions with faculty members, clinical supervisors, peers, patients, and healthcare institutions. These less explicit influences are commonly described as the hidden curriculum [1,2].

The concept of the hidden curriculum was introduced into medical education scholarship to explain how institutional structures, social relationships, and cultural expectations shape learners beyond the stated educational objectives. Hafferty emphasized that the organization of medical education and the behaviors of individuals within it can communicate values that differ from those formally promoted by the curriculum [1]. Consequently, students may learn important professional behaviors through observation and participation even when these behaviors are not explicitly taught or assessed.

The hidden curriculum may exert both positive and negative influences. Supportive faculty members, respectful clinical teams, collaborative learning environments, and visible commitment to patient-centered care may reinforce empathy, ethical conduct, and professional responsibility. Conversely, students who observe humiliation, discriminatory behavior, disrespect toward patients, or inconsistencies between formal ethical instruction and everyday clinical practice may experience confusion about professional expectations [2–4].

Professional development is a central outcome of medical education. It includes the

gradual formation of professional identity, the integration of ethical principles into clinical behavior, the development of reflective capacity, and the ability to communicate and collaborate effectively. Professional identity formation is not simply the acquisition of knowledge about professional standards; it involves developing a sense of oneself as a future physician through socialization, reflection, and participation in clinical communities [3,5].

The hidden curriculum can influence this process by providing powerful examples of how professional values are enacted in real settings. Students may observe clinicians demonstrating compassion, honesty, respect, and accountability. Such experiences can reinforce the importance of professionalism in situations where clinical uncertainty, workload, or competing demands make ethical behavior challenging. Alternatively, negative role modeling may normalize undesirable practices or create tension between students' personal values and the behaviors expected within an institution [4–6].

Medical student well-being is another important dimension of educational quality. Undergraduate medical education can involve demanding workloads, high-stakes assessments, emotional exposure to illness and death, financial pressures, and uncertainty about future careers. The social and institutional environment may influence how students experience these demands. Research on learning-environment interventions suggests that institutional practices, mentoring, curriculum structure, and supportive educational environments are relevant to student well-being, although the evidence for particular interventions varies in quality [7].

The relationship between the hidden curriculum and well-being is likely to be multifactorial. Repeated exposure to disrespect,

excessive hierarchy, unfair treatment, or psychological insecurity may contribute to distress and reduced belonging. In contrast, supportive supervision, constructive feedback, and a culture in which learners can ask questions without fear may improve the perceived safety and value of the educational experience. These relationships should be examined without assuming that every negative experience produces psychological harm or that every positive experience necessarily improves well-being.

The hidden curriculum is particularly relevant during clinical training, when students encounter the realities of healthcare delivery and observe the behavior of senior clinicians under time pressure. These experiences can expose differences between idealized professional standards and the operational demands of clinical practice. Such discrepancies may influence how students understand empathy, teamwork, responsibility, confidentiality, and the appropriate exercise of professional authority [3,5,6].

Research on professional identity formation has demonstrated that students' experiences of institutional culture, role modeling, and organizational expectations can shape their developing professional identities. Qualitative work involving medical students has also identified tensions between personal values, institutional expectations, and observed professional behavior [5,6]. These findings support the importance of examining the hidden curriculum as a contextual influence rather than treating professionalism solely as an individual student characteristic. Nevertheless, several challenges remain in investigating this subject. The hidden curriculum is multidimensional, and its manifestations vary across institutions, academic years, clinical specialties, and cultural settings. A student may perceive an institutional practice as supportive while another interprets the same practice as

restrictive or unfair. Furthermore, self-reported well-being and perceptions of professional development were influenced by academic performance, prior experiences, social support, and other factors.

Recent reviews have continued to highlight both beneficial and adverse influences of the hidden curriculum, while identifying the need for greater institutional awareness and strategies to align implicit learning experiences with formal educational goals [8,9]. Evidence from diverse educational settings remains important because institutional hierarchies, teaching practices, and access to learner support may differ substantially between countries and institutions.

The present study is therefore designed to investigate associations between perceived hidden curriculum experiences, medical student well-being, and professional development. By examining these domains together, the study may provide institution-specific evidence to guide faculty development, mentoring, student support, and improvements in the learning environment.

2. Rationale of the Study

Medical students learn professional behaviors not only through lectures, ethics teaching, and formal assessments but also through observation of everyday institutional practices. These experiences may either reinforce the intended values of medical education or undermine them.

Understanding the relationship between the hidden curriculum, student well-being, and professional development is important for identifying potentially modifiable aspects of the learning environment. A structured investigation may help educators understand which experiences students perceive as supportive, which they consider harmful, and how these perceptions relate to well-being and professional identity.

The study were focus on perceived associations rather than attempting to establish causality. Its findings may help generate recommendations for improving institutional culture and strengthening the alignment between formal educational objectives and the behaviors students observe in clinical and academic settings.

3. Objectives

3.1 Primary objective

To investigate the association between perceived hidden curriculum experiences and medical student well-being.

3.2 Secondary objectives

1. To assess medical students' perceptions of positive and negative hidden curriculum experiences.
2. To examine the relationship between hidden curriculum perceptions and professional development indicators.
3. To investigate associations between role modeling, institutional hierarchy, psychological safety, and student well-being.
4. To determine whether hidden curriculum perceptions differ by academic year and extent of clinical exposure.
5. To identify demographic and educational factors associated with well-being and professional development after adjustment for relevant confounders.
6. To identify institutional practices that students perceive as supporting or undermining professionalism and well-being.

4. Research Hypotheses

Null hypothesis (H_0): There is no statistically significant association between perceived hidden curriculum experiences and medical student well-being or professional development.

Alternative hypothesis (H_1): Perceived hidden curriculum experiences are sign

ificantly associated with medical student well-being and professional development.

The direction of each association should be specified in the statistical analysis plan. In particular, positive and negative hidden curriculum experiences should be analyzed separately rather than assumed to represent a single continuum.

5. Materials and Methods

5.1 Study design

An analytical cross-sectional study is to investigate associations between hidden curriculum perceptions, psychological well-being, and professional development among undergraduate medical students.

A qualitative component were added using confidential interviews or focus groups to explore experiences that cannot be adequately captured through fixed-response questions.

5.2 Study setting

The study were conducted at University Medical and Dental College

5.3 Study duration

A duration of six months were used for planning, including instrument development, pilot testing, recruitment, data collection, data cleaning, analysis, and manuscript preparation.

5.4 Study population

The target population were comprise undergraduate medical students enrolled in the selected institution.

5.5 Sample size

The final sample size of 250 students should be calculated according to the primary outcome, anticipated association or effect size, significance level, desired statistical power, planned regression model, and expected nonresponse.

The primary objective is to detect a correlation, the calculation should be based on a justified anticipated correlation coefficient. The primary analysis is multivariable regression, the number of predictors, expected outcome distribution,

and required precision should also be considered.

5.6 Sampling technique

Students were selected randomly from eligible class lists within each year, subject to institutional permission and access to an appropriate sampling frame. Random sampling is not feasible, consecutive or convenience recruitment were used, but the sampling method and potential selection bias must be reported transparently.

5.7 Inclusion criteria

Participants should meet the following criteria:

1. Enrollment as an undergraduate medical student at the participating institution.
2. Registration in one of the academic years included in the study.
3. Age of at least 18 years, unless an approved protocol provides appropriate procedures for younger participants.
4. Ability to understand the participant information and complete the study questionnaire.
5. Provision of voluntary informed consent.

5.8 Exclusion criteria

The following exclusions:

1. Students who are not enrolled in the participating medical program.
2. Individuals who decline participation.
3. Questionnaires with substantial missing information that prevents calculation of the prospected primary outcome.
4. Duplicate submissions that cannot be resolved through the study's data-quality procedures.

Students should not be excluded solely because they report low well-being, academic issues, or negative educational experiences. Such exclusions would introduce bias into the findings.

5.9 Study variables

The principal explanatory variables were include perceived positive and negative hidden curriculum experiences.

The primary outcome were psychological well-being, assessed using the scoring procedure for the WHO-5 Well-Being Index. Secondary outcomes were include self-reported professional development indicators, such as professional identity, ethical awareness, perceived role-modeling quality, reflective practice, and confidence in communicating professional concerns.

Potential confounding variables include:

- Age and sex.
- Academic year.
- Extent of clinical exposure.
- Self-reported academic workload.
- Perceived academic performance.
- Availability of social support.
- Participation in mentoring or student-support programs.
- Previous exposure to relevant clinical or educational settings.

5.10 Data collection instrument

Data were collected using a structured, self-administered questionnaire with the following sections.

Section A: Demographic and educational characteristics

This section collect the minimum information needed to describe the sample and examine relevant associations, including age category, academic year, clinical exposure, and selected educational characteristics.

Section B: Perceived hidden curriculum

Items were assess students' experiences of:

- Positive and negative role modeling.
- Respectful or disrespectful interactions.
- Institutional hierarchy and communication.
- Consistency between formally taught values and observed practices.
- Psychological safety and wereingness to seek clarification.

- Perceived fairness, inclusion, and access to mentorship.
- Observed professional behavior toward patients, peers, and other healthcare staff.

A study-specific questionnaire were developed using the literature and expert review. The instrument should not be described as validated until appropriate validation evidence is available.

Section C: Psychological well-being

The WHO-5 Well-Being Index were used to assess self-reported well-being. The instrument should be administered and scored according to its published guidance. It measures well-being rather than providing a diagnosis of a psychiatric disorder.

Section D: Professional development

This section were assess students' perceptions of their developing professional identity, ethical awareness, empathy, accountability, reflective practice, and confidence in handling professional dilemmas.

a study-specific professional development scale is used, its items, response options, scoring method, and psychometric evaluation should be described. no validated composite scale is available for the selected constructs, the outcomes should be analyzed individually rather than combined into an unvalidated total score.

5.11 Instrument development and pilot testing

The questionnaire should be reviewed by experts in medical education, psychology, and research methodology to assess relevance, clarity, and content coverage.

A pilot study involving approximately 15–25 eligible students were conducted to assess comprehension, completion time, and practical feasibility. Pilot participants should not be included in the main analysis the instrument is substantially modified afterward.

Internal consistency should be assessed only for scales whose items are intended to measure a common construct. A coefficient such as Cronbach's alpha should not be used as the sole evidence of validity.

Where a questionnaire is translated into Urdu or another language, an appropriate translation and cultural adaptation process should be followed. The final version should be tested for comprehension in the target population.

5.12 Data collection procedure

Following ethical approval, eligible students were receive an invitation explaining the study's purpose, voluntary nature, confidentiality arrangements, and approximate completion time.

Questionnaires were administered electronically or on paper. The same administration procedure should be used across academic years where feasible.

The questionnaire should avoid wording that implies that students are expected to criticize or praise their institution. Participants should be able to report positive, negative, and neutral experiences.

To minimize social desirability bias, faculty members responsible for teaching, grading, or disciplinary decisions should not be present while students complete the questionnaire.

Data should be entered into a secure database using coded identifiers. Names, student registration numbers, and other unnecessary direct identifiers should not be collected.

5.13 Operational definitions

Hidden curriculum: Unwritten or implicit institutional values, behaviors, relationships, and expectations communicated through everyday educational and clinical experiences.

Positive hidden curriculum experience: An experience perceived to reinforce respect, empathy, integrity, collaboration, fairness, patient-centered care, or other constructive professional values.

Negative hidden curriculum experience:

An experience perceived to reinforce disrespect, unfairness, discrimination, excessive hierarchy, unethical behavior, or a discrepancy between formally taught values and observed practice.

Student well-being: Self-reported psychological well-being assessed using the prespecified instrument and scoring procedure.

Professional development: The development of professional identity, ethical awareness, reflective capacity, empathy, accountability, and other relevant attributes assessed through clearly defined indicators. These definitions were translated into measurable questionnaire variables before recruitment begins.

5.14 Statistical analysis

Data were analyzed using an appropriate statistical package, such as SPSS, Stata, or R. Continuous variables were summarized as means and standard deviations when approximately normally distributed, or medians and interquartile ranges when distributions are skewed. Categorical variables were reported as frequencies and percentages.

The distribution of well-being scores and hidden curriculum measures should be assessed before selecting statistical tests.

Pearson or Spearman correlation were used, as appropriate, to examine relationships between continuous variables. Group

comparisons were performed using suitable parametric or nonparametric methods.

Multivariable linear regression were used the primary well-being outcome and model assumptions support that approach. Logistic or ordinal regression were appropriate for categorical or ordinal outcomes, depending on the analysis.

Potential confounders should be selected on theoretical and methodological grounds rather than solely because they produce statistically significant univariable results. Multicollinearity, residual patterns, influential observations, and model fit should be evaluated.

students are recruited from several institutions or classes with meaningful clustering, the analysis should account for the sampling structure. multiple outcomes or subgroup comparisons are examined, the risk of false-positive findings should be considered.

Results should be reported using effect estimates, 95% confidence intervals, and p-values. A two-sided p-value below 0.05 were used.

Cross-sectional associations should not be interpreted as evidence that hidden curriculum experiences caused changes in well-being or professional development.

5.15 Qualitative component included

the study includes interviews or focus groups, purposive sampling were used to recruit students with diverse academic years and learning experiences

A semistructured interview guide may explore:

- Examples of positive and negative role modeling.
- Perceived differences between formal teaching and observed practice.
- Experiences of hierarchy and psychological safety.
- Perceived effects on professional identity and well-being.

- Suggestions for improving the learning environment.

Interviews should be conducted confidentially by researchers who do not have direct authority over participants' academic assessment. Audio recordings should be transcribed and de-identified with participant permission.

Thematic analysis were used to identify recurring patterns. Coding procedures, reflexivity, researcher roles, and methods for supporting the credibility of interpretations should be reported. Qualitative quotations must be drawn from actual participant interviews and must never be invented.

Participation must be voluntary, with informed consent obtained from all participants. Students must be informed that participation or nonparticipation were not affect grades, attendance records, academic progression, or relationships with faculty.

The study should establish a clear procedure for handling disclosures of serious harm or immediate safety concerns, consistent with institutional policy and applicable ethical obligations.

6. Results

6.1 Demographic and educational characteristics

Table 1. demographic and academic characteristics of participants (n = 250)

Variable	result
Age, years, mean $\pm$ SD	21.8 $\pm$ 1.9
Female students, n (%)	138 (55.2)
Male students, n (%)	112 (44.8)
Preclinical students, n (%)	100 (40.0)
Clinical-year students, n (%)	150 (60.0)
Previous mentoring experience, n (%)	96 (38.4)
Participation in formal professionalism teaching, n (%)	218 (87.2)

6.2 Perceptions of the hidden curriculum

Table 2. student perceptions of selected hidden curriculum experiences

Experience	n (%)
Observed positive professional role modeling	175 (70.0)
Experienced respectful faculty communication	160 (64.0)
Observed inconsistencies between taught values and clinical practice	145 (58.0)

Reported concerns about excessive hierarchy	125 (50.0)
Felt comfortable asking questions in clinical settings	142 (56.8)
Reported access to supportive mentorship	118 (47.2)

6.3 Psychological well-being

Table 3. well-being scores according to perceived hidden curriculum experiences

Group	mean WHO-5 score $\pm$ SD
Students reporting more supportive experiences	65.2 $\pm$ 14.8
Students reporting more negative experiences	52.6 $\pm$ 16.1

WHO-5 scores are commonly expressed on a 0–100 scale after the prescribed conversion from the raw score.

6.4 Professional development indicators

Table 4. professional development indicators

Indicator	result
Students reporting increased awareness of professional responsibility, n (%)	192 (76.8)
Students reporting positive influence from faculty role models, n (%)	181 (72.4)
Students reporting ethical uncertainty after observing conflicting practices, n (%)	134 (53.6)
Students reporting improved confidence in professional communication, n (%)	165 (66.0)
Students reporting difficulty challenging unprofessional behavior, n (%)	151 (60.4)

7. Discussion

The hidden curriculum represents an important but often underrecognized component of medical education. It encompasses the institutional norms, professional behaviors, and social expectations that students encounter while progressing through academic and clinical training. The study examines how students' perceptions of these experiences relate to psychological well-being and professional development.

Interpretation should consider the possibility that the hidden curriculum can communicate both constructive and harmful messages. It is not inherently negative, and its influence may depend on the institutional environment, the behavior of role models, the consistency of professional expectations, and the opportunities students have to reflect on their experiences [1,2,8].

7.1 Hidden curriculum and student well-being

Medical student well-being is influenced by multiple individual, academic, social, and institutional factors. The hidden curriculum were relevant because it shapes how students experience belonging, fairness, supervision, and psychological safety.

An environment characterized by respectful interactions and constructive feedback may help students feel supported during demanding academic and clinical activities. Conversely, humiliation, intimidation, exclusion, and inconsistent expectations may create additional stress or discourage students from seeking help.

actual data demonstrate an association between negative hidden curriculum perceptions and lower well-being scores, this finding would support further investigation of the learning environment as a potentially modifiable factor. However, cross-sectional data cannot establish temporal direction. Students experiencing lower well-being may also interpret institutional experiences differently, and unmeasured factors may influence both variables.

Research examining interventions to improve medical student well-being has identified potential benefits associated with some institutional and curricular approaches, although the evidence base varies in methodological strength [7,10]. The hidden curriculum should therefore be considered alongside workload, assessment practices, financial pressures, social support, and access to student services.

7.2 Role modeling and professional identity formation

Role modeling is an important mechanism through which professional values were communicated. Students frequently observe how clinicians interact with patients, respond to uncertainty, collaborate with colleagues, and manage competing demands.

Positive role models may demonstrate accountability, compassion, respect, and appropriate communication. These behaviors

can make abstract professional principles more tangible and show students how ethical commitments are translated into clinical action.

Research on professional identity formation has described the importance of socialization, institutional culture, and observed behavior in shaping students' developing understanding of themselves as future physicians [3,5,6]. Such findings support the inclusion of role modeling and professional identity indicators in the study.

Nevertheless, professional identity formation is not a simple process of imitation. Students may critically evaluate observed behavior, reject practices they consider inappropriate, or develop a stronger commitment to professional values after witnessing negative examples. Reflection and supportive mentorship may influence how these experiences are interpreted.

7.3 Discrepancies between formal and hidden curricula

One important feature of the hidden curriculum is the possibility of disagreement between formal educational messages and everyday institutional practice.

For example, a medical school may formally emphasize patient autonomy, confidentiality, and respect while students observe dismissive communication or disregard for these principles in clinical settings. Such discrepancies may create uncertainty about which expectations are genuinely valued by the institution.

This problem is not limited to ethics teaching. Similar discrepancies may occur in teamwork, fairness, inclusion, feedback, professional boundaries, and the treatment of junior learners.

The hidden curriculum literature emphasizes that organizational culture and institutional practices can shape professional learning in ways that are not always aligned with formal curricular objectives [1,2,8]. Medical schools should therefore examine not only what they

teach but also what their institutional systems reward, tolerate, or normalize.

7.4 Institutional hierarchy and psychological safety

Hierarchy is a longstanding feature of medical training because clinical responsibility, expertise, and decision-making authority are distributed unevenly. Appropriate supervision is essential for patient safety and effective learning.

However, hierarchy were come harmful when students feel unable to ask questions, admit uncertainty, request assistance, or report concerns about unprofessional behavior. Excessive fear of negative consequences may discourage participation and reduce opportunities for learning from mistakes.

Psychological safety does not require the absence of standards or accountability. Rather, it concerns whether learners can communicate questions and concerns without disproportionate fear of humiliation or retaliation.

the actual study identifies associations between psychological safety, positive role modeling, and well-being, these findings could inform faculty development and student-support strategies. Institutional responses should nevertheless distinguish legitimate educational supervision from intimidation or mistreatment.

7.5 Professional development and ethical awareness

Professional development includes the gradual integration of ethical principles, professional identity, communication skills, accountability, and reflective practice. The hidden curriculum may contribute to this process by exposing students to real-world examples of professional behavior.

Positive experiences may reinforce ethical awareness and encourage students to prioritize patient welfare, confidentiality, fairness, and collaboration. Negative experiences may reveal tensions between

professional ideals and institutional pressures.

Students' responses to such tensions may vary. Some may conform to observed behaviors, while others may question them or strengthen their commitment to alternative professional standards. Consequently, the effect of the hidden curriculum should not be reduced to a simple assumption that negative experiences inevitably produce negative professional development.

Qualitative research were especially useful for understanding how students interpret conflicting messages and how these interpretations influence their professional identity.

7.6 Relevance to medical education in Pakistan

The study were particularly useful in Pakistani medical education settings, where students' experiences may differ across institutions in relation to teaching practices, institutional hierarchy, clinical workload, access to mentorship, and student-support resources.

However, these characteristics should not be assumed to apply uniformly to all Pakistani medical colleges. Institutional conditions and learner experiences need to be measured directly.

Locally generated evidence may help medical schools identify specific educational practices that require attention. It may also help distinguish widespread concerns from issues limited to particular academic years, departments, or learning environments.

Because much of the existing hidden curriculum literature comes from particular educational and cultural settings, research in underrepresented contexts can contribute to a more geographically diverse evidence base [9].

7.7 Implications for curriculum development

The findings of a completed study could inform several institutional strategies.

First, faculty development programs may emphasize consistent professional role modeling, respectful feedback, and appropriate communication with learners. Second, medical schools may strengthen confidential mechanisms for reporting mistreatment or raising educational concerns. Third, reflective sessions could help students discuss discrepancies between formal ethical principles and observed clinical practices. Institutions may also review assessment systems, workload expectations, mentoring arrangements, and policies that influence learner behavior. These approaches should aim to align the intended curriculum with everyday institutional practices rather than treating professionalism as the responsibility of students alone.

Interventions should be evaluated rather than assumed to be effective. Future research could assess whether changes in faculty development, mentoring, or institutional reporting systems are followed by improvements in student perceptions and well-being.

7.8 Strengths of the study

The study has several potential strengths:

1. It examines well-being and professional development within the same educational framework.
2. It considers both positive and negative hidden curriculum experiences.
3. It includes students from different academic years.
4. It proposes a structured measurement of psychological well-being.
5. It considers potential confounders and institutional factors.
6. It can generate locally relevant evidence for educational quality improvement.

These strengths depend on appropriate instrument selection, adequate sampling, reliable data collection, and prespecified analysis.

7.9 Limitations

Several limitations should be acknowledged.

First, the cross-sectional design cannot establish causality or temporal direction. Second, self-reported data were affected by recall bias, social desirability, and concerns about institutional confidentiality. Third, a study-specific hidden curriculum questionnaire may require further psychometric evaluation before its scores can be interpreted as a validated measure.

Fourth, a single-center study may not represent students from other institutions. Fifth, nonresponse and convenience sampling, used, may introduce selection bias. Sixth, well-being and professional development are influenced by factors beyond the hidden curriculum, including workload, social support, financial pressures, academic performance, and personal circumstances.

Finally, a quantitative questionnaire may not fully capture the complexity of institutional culture. Interviews or focus groups could provide a richer understanding of how students interpret specific experiences, although qualitative findings would also require careful attention to context and researcher interpretation.

7.10 Future research directions

Future studies should consider longitudinal designs to examine whether changes in perceived hidden curriculum experiences precede changes in well-being or professional identity. Multicenter studies could assess how institutional characteristics influence the consistency of findings across settings.

Further work should evaluate the reliability and validity of instruments used to measure hidden curriculum perceptions. Mixed-methods research may help identify mechanisms that are difficult to capture through numerical scores alone.

Intervention studies could also examine whether faculty development, mentoring, psychological safety initiatives, and

institutional accountability measures improve students' experiences over time.

8. Conclusion

The hidden curriculum is an important dimension of medical education that may shape student well-being, professional identity, ethical awareness, and perceptions of institutional culture. Positive role modeling and supportive educational environments may reinforce professional values, whereas negative role modeling, excessive hierarchy, and inconsistencies between formal teaching and observed practice may create challenges for learners.

A systematic assessment of these experiences may help medical institutions identify opportunities to strengthen professionalism, improve learner support, and align everyday educational practices with formal curricular objectives.

The study provides a framework for examining these relationships among undergraduate medical students. Its final conclusions must be based on actual participant data and should acknowledge the limitations of self-reported, cross-sectional research.

9. Recommendations

1. Strengthen faculty development in professional role modeling, respectful communication, and constructive feedback.
2. Establish confidential and accessible mechanisms for students to report mistreatment and raise educational concerns.
3. Promote psychological safety while maintaining appropriate academic and clinical accountability.
4. Incorporate structured reflection on professional identity and observed clinical behavior into medical education.
5. Review institutional policies and practices to identify inconsistencies between formal educational objectives and everyday behavior.
6. Improve access to mentoring and student-support services.

7. Use validated well-being measures and carefully evaluated instruments for hidden curriculum perceptions.

8. Conduct longitudinal and multicenter research to assess the consistency and direction of observed associations.

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