Advances in Medical Education and Practice

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REVIEW

Effects of Hidden Curriculum on Medical Education and Strategies to Reshape Hidden Curriculum as a Curriculum Promotor – A Systematic Review

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Objective: The objective of this review is to analyze the hidden curriculum with respect to its potential as a curriculum promotor or inhibitor of medical curricula, and to review the strategies that can help make it one of the curriculum promotors.

Data Sources: We searched PubMed, Cochrane Reviews, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) library, with Google Scholar for grey literature, using specified keywords with a time limit from January 2000 to December 2023. We included original articles, review articles and meta-analyses, book chapters, and books focusing on the hidden curriculum effects on curriculum.

Data Extraction and Synthesis: Three different reviewers independently searched the relevant literature. The Best Evidence Medical Education (BEME) quality criteria were used to assess the quality, the Critical Appraisal Skills Program (CASP) checklists for risk of bias assessment, and the GRADE-CERQual framework for confidence of evidence in each article. Findings were synthesized by using thematic synthesis to identify promotive and inhibitory effects along with recommended strategies.

Results: A total of 23 articles were selected for full review. These articles infer that the hidden curriculum can affect the medical curriculum in both negative and positive ways. A few of the curriculum-promoting effects of hidden curriculum are soft skills (interpersonal, communication, and professional behaviors often labelled as soft skills in the literature) and practical knowledge acquisition, cultural proficiency, moral growth, and professionalism. The negative or inhibitory effects include a detrimental learning environment, learning unprofessional and unethical practices, gender inequities, stress, and burnout. Strategies that should be adopted to overcome the inhibitory effects of the hidden curriculum include raising awareness among the stakeholders regarding the hidden curriculum, aligning the hidden curriculum with the intended curriculum, institutional and administrative policies, role modelling, and mentorship.

Conclusion: Hidden Curriculum plays a very crucial role in medical education. By addressing its due importance, it can highly enhance the competence of future health professionals.

Keywords: hidden curriculum, hidden curriculum in medical education, curriculum promotors and inhibitors, positive and negative effects of hidden curriculum

Introduction

The medical curriculum is an extremely complex part of medical or health education.[1] Hafferty defined hidden curriculum as

> The unspoken academic, social, and cultural messages communicated to students while they are in school. It is the unwritten rules and expectations that shape attitudes, behaviours, and professional identity.[2]

Received: 17 August 2025
Accepted: 7 November 2025
Published: 13 November 2025

Medical education is commonly divided into the formal curriculum, which includes structured teaching delivered in classrooms and lecture halls, and the informal curriculum, which refers to learning that occurs through interactions with peers, faculty, and staff in less structured settings. These forms of curricula are collectively called as Intended Curriculum. Apart from this intended curriculum, there exists another type of curriculum – the one which a medical student acquires by interacting with their environment during their life while studying medicine. This environment includes peers, friends, tutors, workers, patients, and patients' attendants.[3] This environment also includes the non-living things like food, hostel facilities, and lab facilities. This environment also includes abstract things like social values and norms, mood changes, weather changes and their impact on human biology, and so on. This type of curriculum is named by the educationists as the Hidden Curriculum. The intended (formal) curriculum comprises planned learning outcomes, syllabi and assessments; the enacted curriculum is what teachers actually deliver; the hidden curriculum comprises implicit messages transmitted through institutional culture, role modelling, policies, and routine practices. Although not properly noticed, this hidden curriculum plays a crucial role in the success of a medical curriculum and indirectly in the competency of a future healthcare professional.[4] Although the hidden curriculum has a huge impact on all the aspects and domains of learning, including cognitive, psychomotor, and affective domains, its effect on the affective domain and values is more pronounced. This shapes the values and ethical norms of medical students as they observe their peers, seniors, and teachers during their educational process, thus setting their future ethical practices. If an institution has a culture that prioritizes patient-centred care over productivity will teach students that patient care is more important than the generation of capital, and this will be reflected in their future values.[5] On the contrary, if in an institution the students observe discrepancies between what is taught in ethics classes and what is practiced in clinical settings, such as witnessing a disregard for patient autonomy or confidentiality, will have a profound impact on their professional development and future ethical practices. Institutional culture is often reflected in policies, administrative practices, and the overall atmosphere of the educational environment.[6]

Based on this view, the hidden curriculum can affect the curriculum in either way good or bad, depending upon the institutional environment and the other variables discussed above. If the institution has a healthy environment, facilities, and justice and is abiding by the best practice, the hidden curriculum can be a curriculum promotor.[7] On the contrary, if the institution is having an unfavorable environment, and is not obeying the best practices or is involved in malpractice, then in such a case the hidden curriculum will act as a curriculum inhibitor.[8]

This review aims to review the promotors and inhibitors of hidden curriculum in medical education and to find ways how hidden curriculum can be reshaped as a curriculum promotor.

Methodology

Data Sources

We (S.H; H.U; G.Y) searched different databases, including PubMed, Cochrane Reviews, and CINAHL library, using keywords as "hidden curriculum", "curriculum promotors and inhibitors", "hidden curriculum in medical education", and "positive and negative effects of the hidden curriculum" from January 2000 to December 2023. No language restrictions were applied during the selection process, and articles published in languages other than English were translated for screening. We also searched Google Scholar for any unpublished grey literature. The inclusion criteria were original articles, review articles and meta-analyses, book chapters, and books focusing on the hidden curriculum effects on curriculum. The exclusion criteria were editorials, incomplete articles, commentaries, and the literature not specifically focusing the effects of the hidden curriculum. The full search strategy can be assessed in Supplementary File 1.

Data Extraction

The initial search yielded 3489 resources, which were screened by three different reviewers (S.H; H.U; G.Y), excluding 3421 articles not related to the study question. The remaining 68 articles were reviewed by reading the titles and the abstracts. By applying the inclusion and exclusion criteria, we excluded the articles that were not specific to our study. We extracted data related to the hidden curriculum's promotors and inhibitors, focusing on outcomes such as changes in learner behavior, institutional culture, and formal curriculum development. A curriculum promotors was referred to as

any factor that actively improves or enhances the formal curriculum, while an inhibitor to a factor that undermines or negatively affects the intended curriculum. The variables of interest included study design (qualitative, quantitative, or mixed methods), year of publication, target population (eg, medical students, faculty, other stakeholders), and positive and negative effects of the hidden curriculum on students and medical graduates. The mentioned reviewers independently coded the text segments (related to positive, negative effects and improvement strategies) using NVivo 14 (QSR International), a qualitative data analysis software designed to support the coding, organization, and synthesis of unstructured textual data. These codes were then grouped into the subthemes and themes (curriculum promotors, curriculum inhibitor, and reshaper). Each article was assessed independently by the mentioned reviewers for risk of bias using the Critical Appraisal Skills Programme (CASP) checklists.[9] Any disagreement among the authors was resolved through thorough discussion.

Data Analysis

The data extracted from the selected articles was noted by the reviewers separately, highlighting the key features related to the hidden curriculum that were of interest to our research, like positive and negative effects of hidden curriculum and improvement strategies. The quality of the research was assessed by applying Best Evidence Medical Education (BEME) quality criteria by Buckley et al.[10] We used relevance, methodology, clarity, applicability, and strength of evidence as quality predictors of BEME, with a maximum score of 5 and a score lower than 3 considered as low quality, resulting in the exclusion of that study from the final analysis. These articles were analyzed using thematic synthesis, which allowed us to identify recurring themes related to the hidden curriculum. Strategies to reshape the hidden curriculum as a promotors were identified through thematic synthesis of interventions proposed in included articles and evaluated for feasibility and evidence of impact. No statistical methods were applied to formally assess publication bias due to the nature of the articles included. The results were presented as tables and figures.

Results

Among 3489 articles yielded through the first search, screening excluded 3421 articles since not fit the study objective, with duplications, and were not according to the inclusion criteria. Sixty-eight (68) articles were assessed for quality standards by applying Best Evidence Medical Education (BEME) quality criteria, which further narrowed the review by excluding 45 articles, leaving us with 23 articles to be included in the full review. Figure 1 shows the search methodology and results according to the PRISMA flowchart.

Among these articles 12 were reviews,[5,10–20] 10 original articles,[21–30] and one essay[31] The characteristics and overview of each study are tabulated in Table 1.

Most of the articles (n=17) received a BEME score of 4 or higher, indicating strong methodological transparency and relevance to medical education. The risk of bias assessments using CASP criteria revealed that 9 articles were rated as low risk of bias, 14 articles were rated as moderate risk, and no study was rated as high risk, showing the robustness of the included evidence. The details are tabulated in Supplementary Table S1. The articles excluded based on the BEME score are tabulated in Supplementary Table S2. For the certainty of evidence, we applied the GRADE-CERQual framework to assess the confidence in each of the review's key qualitative findings. The majority of findings were rated as moderate confidence, with minor to moderate concerns regarding methodological limitations and data adequacy. Detailed domain-level assessments and justifications are provided in Supplementary Figure SF1.

Discussion

Hidden Curriculum as a Curriculum Promotor

Role Modelling and Mentoring

Cruess et al postulated in their research regarding hidden curriculum that medical students gain professional behaviors, attitudes, and values by watching and interacting with their seniors and mentors.[5] During this process of interaction, these young medical students and graduates start understanding the delicacies of medical practice, including patients' and attendants' interactions, decision-making, and interdepartmental collaboration. Over a period of time, these values are internalized by these young

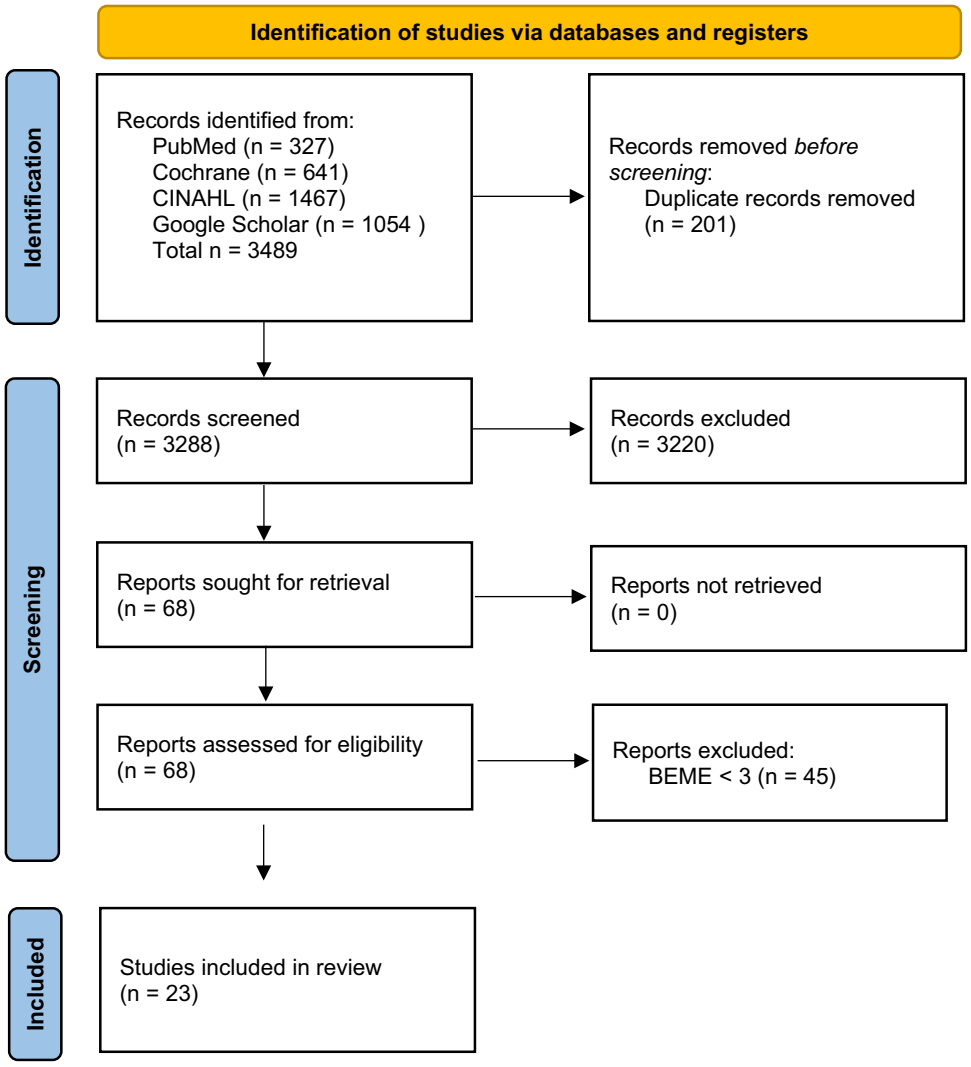

Figure 1 PRISMA Flow Diagram of the Literature Search and Selection Process. Database search strategy and selection process based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Database searches (PubMed, Cochrane, CINAHL, Google Scholar) identified 3489 articles; duplicate (201), unrelated (3220) and low quality (BEME score <3) (45) were removed, leaving 23 articles for review.

graduates, nurturing a feeling of responsibility and empathy in them. This type of informal learning directs their formal curriculum and professional practice towards the "best practice", which is based on honesty, confidentiality, and patient-centeredness. Informal mentorship is formed naturally during clinical exposure. This connection between mentor and mentee not only provides

Table 1 Overview of the Articles

S.No	Topic	Articles	Type	Year
Hidden Curriculum as Curriculum Promotor				
1.	Role Modelling/Mentoring	Cruess SR et al[5] Hill S et al[11]	Review Review	2008 2022
2.	Acquisition of Soft Skills	Branch WT et al[21] Wear D et al[22]	Review Original Article	2000 2008

(*Continued*)

Table 1 (Continued).

S.No	Topic	Articles	Type	Year
3.	Practical Knowledge and Skills	Ruczynski L et al[23] Balboni MJ et al[24]	Original Article Original Article	2022 2015
4.	Cultural Proficiency	Mossop L et al[12] Nair L et al[25]	Original Article Review	2013 2019
5.	Moral and Ethical Growth	Lempp H et al[26] Gaufberg E et al[13]	Original Article Original Article	2004 2010
6.	Adaptability and Resilience	Branch WT et al[21] Dunn LB et al[31]	Review Review	2000 2008
7.	Professional Cooperation and Leadership	Austin JP et al[14] Swick HM et al[15]	Essay/Review Review	2015 2000
8.	Institutional Culture	Lempp H et al[26]	Original Article	2004
Hidden Curriculum as Curriculum Inhibitor				
1.	Damage to Professional Idealism	Hill S et al[11] Paice E[27]	Review Review	2022 2002
2.	Learning Unprofessional Behavior	Mossop L et al[12] Fayez R et al[16]	Original Article Original Article	2013 2013
3.	Gender Inequalities and Reinforcement of Hierarchies	Losioki BE et al[28]	Review	2023
4.	Unethical Practices	Lempp H et al[26] Jafree S R et al[17]	Original Article Original Article	2004 2015
5.	Stress and Burnout	Dyrbye LN et al[18] Dunn LB et al[31]	Review Review	2005 2008
6.	Detrimental Learning Environment	Martimianakis et al[19]	Review	2009
Strategies to Reshape Hidden Curriculum as Curriculum promotors				
1.	Awareness Regarding Hidden Curriculum	Gaufberg E et al[13]	Original Article Review	2010 2023
2.	Aligning and Incorporating Hidden Curriculum into the Formal Curriculum	Lawrence C et al[30]	Review	2018
3.	Administrative Policies and Institutional Practices	Lehmann LS et al[32] Lind KT et al[33]	Review Original Article	2018 2019
4.	Role Modelling and Mentorship Programs	Cruess SR et al[5] Burgess A et al[34]	Review Original Article	2008 2015

educational support to the students but also provides emotional support and professional guidance as well. This guidance and mentorship develop a holistic behavior towards the profession and life, training them how to balance professional demands with personal demands, thus promoting both professional and personal development.[11]

Acquisition of Soft Skills

Soft skills like communication skills, team building skills, conflict resolution skills, etc. are not part of the formal curriculum rather are taught via informal interactions with peers, patients, and healthcare team members. These abilities are essential for both collaboration and patient care.[21] A medical student during ward rotation observes different scenarios while having rounds with the senior doctors. These include patient and peers interactions like explaining a difficult diagnosis to the patients according to his understanding, handling difficult situations with the aggressive

attendants, presenting cases in clinicopathological conferences and mortality meetings, training the junior faculty members and building a medical team, etc. According to Wear and Zarconi, students' empathy and compassion are reinforced by hearing about patient experiences and seeing how experienced clinicians manage delicate circumstances.[22] A student while observing a senior doctor discussing end-of-life care with a stage 4 cancer patient and his family, will internalize how to show empathy along with professional honesty and patients' right to know. Similarly, a student observing a senior surgeon resolving a conflict with an anesthetist who is refusing to give anesthesia to a patient on some clinical grounds. Through all such informal experiences, the student learns how to communicate with different stakeholders and acquire multiple soft skills. These qualities are critical for a competent healthcare professional in specific and a patient-centered healthcare system in general.

Practical Knowledge and Skills

Students learn clinical reasoning, decision-making techniques, and problem-solving techniques through practical experience and by watching experienced clinicians.[23] These real-life patient encounters supervised by seasoned clinicians enhance self-reflection and thought process in students, nurturing decision-making qualities in them. While observing their seniors and mentors dealing with different cases in the outpatient or emergency departments, students learn how to synthesize history, organize clinical findings, and make management plans. Most of the time they are also a part of the management and support team actively participating in the patients' management. Balboni et al narrated that subjecting medical students to a problem enhances their problem-solving skills, necessary for their professional growth.[24] Such problem-solving practices build confidence in students, produce clinical acumen, and help students evolve into independent, skilled clinicians capable of making complex decisions in the future.

Cultural Proficiency

Cultural proficiency is an integral part of social services in general and health services in particular. Researchers in the field of medical education and healthcare state that informal encounters with a variety of patient groups and healthcare professionals enhance students' capacity to understand cultural differences and become culturally competent and sound.[12,25] Medical students, while on their clinical rotations, are exposed to individuals from various ethnic, social, and cultural backgrounds. During these encounters, students observe different cultural, ethnic, and religious beliefs regarding different diseases and their treatment. By observing how experienced clinicians professionally navigate these cultural differences, students learn the importance of adjusting communication styles, treatment plans, and patient interactions to align with the patients' cultural values and religious beliefs. Another aspect of cultural proficiency on the part of a medical student is interaction with multicultural healthcare professionals as well. These diverse team dynamics help students to learn how to develop an environment of collaboration and mutual respect in a multicultural field of practice.

Moral and Ethical Growth

The hidden curriculum reinforces essential medical values, including compassion, honesty, and respect for patient autonomy.[26] While on clinical rotations, a medical student observes how his senior or mentor deals with different patients with sympathy and kindness, but at the same time being honest and not withholding any relevant information regarding his/her diseases or giving false hopes. The student may observe how a senior doctor deals with a patient who is reluctant to undergo necessary tests or treatment, or breaks bad news to a patient, and learn how humanely he manages this situation, and not just force the patient for the needful or dismiss him as such. In another scenario, he may observe how a senior doctor discloses a disease with social taboos to a patient, keeping privacy and autonomy, and at the same time not affecting his and others' right to information. Gaufberg et al narrate that, by following the ethical footsteps of their seniors and teachers, students are able to establish a solid moral framework.[13] In this way, by observing his seniors and mentors, students learn that ethical medical practice is not just about following the rules, rather is a combination of a deep commitment to the well-being and dignity of every patient, which is often taught more effectively through these real-life examples than through textbooks or lectures.

Adaptability and Resilience

Adaptability is a necessary skill for success in the fast-paced world of medicine. Branch and colleagues state that knowing the thick and thin of a healthcare system teaches medical students and doctors' adaptability. Medical students and doctors are

frequently exposed to diverse, unpredictable situations that require quick thinking and the ability to adjust accordingly. A medical student experiences a different environment while in an emergency department, where the stress of quick decisions regarding treatment is greater than while in a general ward, where the stress of complexity and diagnosing a disease is greater. So, each situation demands a different approach, which the students learn while they are interacting with these diverse environments. This knowledge enables the students to adjust accordingly, keeping in mind the priorities of the situation and the policies of that specific healthcare system. Such a type of conclusion is drawn by Dunn et al that students learn how to adapt to the hostile and complex environments when they are exposed to stress and the burden of patient care, essential for their professional growth.[21,31]

Professional Cooperation and Leadership

One of the curriculum-promoting effects of hidden curriculum is that it helps the students to learn the importance of cooperation and collaboration among other healthcare professionals by taking part in interdisciplinary teams.[14] While participating in multidisciplinary teams, medical student learns how to perform collaborative tasks in a team comprising a variety of disciplines, including doctors, nurses, pharmacists, and even orderlies. During the process, he gains skills of being an active member of a team, communicating with peers, facilitating the seniors, and leading the juniors. This instills the importance of teamwork and collaboration, and qualities of leadership in him, which in the long run, help him to become a better and competent healthcare professional. Swick et al, in their research, state that working in such multi-disciplinary teams polishes leadership abilities in medical students, including delegation, dispute resolution, and teamwork.[15]

Institutional Culture

According to Lempp et al, a good community inside an educational institution imparts happiness and a sense of belongingness in the students. This motivates the students to achieve the learning objectives (L.Os) as these objectives are aligned with the institutional culture, vision, mission, and goals.[26] An institution with a culture of cooperation, belongingness, and respect among different stakeholders, including students, teachers, and administrators, will nurture a collaborative learning environment and motivation in the students. This will help them concentrate on the desired personal and institutional objectives and goals, striving to achieve these goals without any distractions. At the end of the session, the product of such an institution will be professionally sound and competent healthcare workers.

Hidden Curriculum as Curriculum Inhibitor

Damage to Professional Idealism

Many medical students enter training with strong professional ideals; qualitative and longitudinal studies document that due to repeated exposure to conflicting clinical practices by their seniors and mentors, these students may become doubtful and confused regarding the profession, and lose their idealism and zeal.[11] Paice et al state that students and young doctors may get disappointed when they observe unethical practices by their seniors.[27] In the formal curriculum, students are taught about patient autonomy and confidentiality, but when in real practice, they observe a senior making decisions regarding patients on his own and not consulting the patients, or disclosing their medical secrets unethically, creates doubts regarding the dignity of the profession in their minds. With the passage of time, these young professionals lose their zeal for the medical profession and may indulge in the same practice.

Learning Unprofessional Behavior

According to Mossop et al, an institution with an environment in which the students are prone to abuse can have a devastating effect on the overall growth of the students, physically, psychologically, and professionally.[12] Such type of setting develops fatigue, anxiety, depression, and erosion of self-esteem in medical students, which leads to professional and moral retardation. If students observe and face unethical practices from their seniors, peers, and other staff members, they may unintentionally or intentionally adopt such practices.[16] This can happen either unintentionally, as they internalize and normalize such practices, or intentionally, as they seek to fit into the institutional culture. This practice not only harms individuals but also the reputation of the medical field overall by encouraging unprofessional behavior.

Gender, Hierarchical, and Minority Prejudice

Some of the inhibitory effects of an unhealthy institutional environment are gender inequalities, hierarchical reinforcement, and prejudice against minorities.[28] This leads to favoritism, suppression and discouragement of talent, fear, and a strangulated educational and professional environment. Hierarchical structures inhibit open communication between peers, teachers, and other stakeholders of the institution, making it difficult for the students to participate in productive discussions and the creation of new ideas, thus hindering creativity. Additionally, prejudice against minorities marginalizes students with such backgrounds, inhibiting them from being a useful part of the institution and community. So, all these have a detrimental effect on educational collaboration, open questioning, peer/teacher communication, development of intellectual creativity and innovation, and act as inhibitors to a healthy curriculum, hindering the progress in both personal and professional development.

Unethical Practices

The institutional practices that put personal gains over patient care cause serious damage to the ethical growth of their students.[26] According to Jafree et al, an institution with unethical practices, such as pharmaceutical firms' influence on clinical practice, may infiltrate the students and young doctors with unethical practices.[17] Medical students and young doctors observing their seniors and administrators prioritizing their benefits over the institution and patients', consider these malpractices as acceptable and legal. This not only compromises patient care and institutional repute but also distorts the values of honesty, integrity, and compassion that are the pillars of the medical profession. This aspect also applies to unethical practices in scientific research; hence, young doctors who are scientific researchers as well may adopt unethical practices like plagiarism, improper authorship, and misuse of research funds from their seniors as a part of the hidden curriculum.

Stress and Burnout

Excessive stress and burnout are sometimes implicitly accepted as a typical aspect of medical training in hidden curriculum programs, which can have a detrimental effect on students' physical and mental health.[18] Long duty hours without any rest lead to exhaustion, which can cloud the decision-making in such a high-stakes profession as healthcare. Superimposed on this is the culture of stoicism and self-reliance, in which students and young doctors are discouraged from asking for assistance or showing vulnerability, which can exacerbate stress and burnout.[31] This aspect of the hidden curriculum damages students' mental well-being, making it harder for them to cope with the pressures of the profession, affecting both personal growth and patient care.

Detrimental Learning Environment

A culture that does not accept the mistakes of the learners and deals with them through stigmatization creates fear in them, thus inhibiting their educational and mental growth. Students and young doctors are always prone to committing mistakes, and these are motives for learning for them. If they are penalized for their mistakes, rather than guided and improving upon them, they will lose the initiative that is necessary for their learning and professional growth. On the other extreme, if students observe that misconduct or injustice is overlooked or normalized, with the passage of time, they become desensitized to such behaviours and adopt a passive stance toward unethical practices. Martimianakis et al, in their work, conclude that an unhealthy institutional environment can corrupt the students ethically and morally in a way that they do not resist misconduct and injustice, impeding the quality of learning.[19]

Strategies to Reshape the Hidden Curriculum as a Curriculum promotors

Having discussed the crucial role of the hidden curriculum in medical education, it is clear that it plays an important role in the success or failure of an educational program. Hence, it is pivotal in planning a medical curriculum to develop strategies to overcome the inhibitory effects of the hidden curriculum, rather than make it a curriculum promotors. While previous literature has examined the hidden curriculum's influence within specialized fields, such as the work of Martins et al, which highlights the need for curricular development and ethics in surgical trainees, our systematic review appraises and synthesizes evidence from a wider medical education context using validated BEME criteria.[20] This allows generalizability and methodological robustness. Some of the curriculum-promoting strategies in the context of hidden curriculum discussed by medical educationists are:

Awareness Regarding Hidden Curriculum

The first step in addressing the hidden curriculum is to raise awareness among the stakeholders of an educational program regarding the existence and importance of the hidden curriculum. This will help them plan to overcome its inhibitory effects at the start of the program and also guide them throughout the whole process. The experts in the field of medical education suggest that this can be done through open discussions, reflective practices, and workshops on the importance of the hidden curriculum.[13] Open discussions provide an opportunity to all the stakeholders generally, and the students, tutors, and curriculum developers specifically, to explore ethical issues, attitudes, and values that cannot be fully covered by the formal curriculum. This will help the students to identify and raise these hidden issues, thus finding a way out. Hosseini et al, in their scoping review, explored approaches to improve the hidden curriculum across both medical and nursing education. Awareness of the hidden curriculum, especially through faculty development programs, reflective practices, curriculum alignment, and institutional policy alignment, was the main strategy for improving the hidden curriculum.[29]

Reflective practices are another tool that helps students to analyze themselves critically focusing on their attitudes, ethics, and values, while observing or facing real-life medical practice. This promotes the self-awareness and moral growth of the students, which helps them mitigate the negative effects of the hidden curriculum.

Workshops arranged specifically on the subject of hidden curriculum in medical education should involve all the stakeholders, especially medical students and teachers. This will train the students to recognize the subtle inhibitory effects of the hidden curriculum, thus countering them to groom as ethically and professionally sound healthcare workers.

Aligning and Incorporating Hidden Curriculum into the Formal Curriculum

The curriculum designers should address the hidden curriculum while designing the formal curriculum and try to incorporate it into the main curriculum. This may include adding courses of medical and professional ethics to the curriculum, which directly address the ethical issues regarding medical professionalism, including autonomy, confidentiality, and patient and community-centredness. Hands-on workshops should also be arranged for all the stakeholders of the program, including patients. These workshops should cover ethical scenarios, problems and dilemmas of medical practice, by practically involving the participants and giving solutions to these problems. After these workshops, the narrative of all the stakeholders should be taken into consideration while planning a medical curriculum. This will develop a sense of responsibility, empathy, and care among the students as well as other stakeholders of the institution, thus facilitating ethical growth and morality.[30]

Administrative Policies and Institutional Practices

Institutional administration is one of the powerful pillars and stakeholders of an educational program and plays a huge role in the hidden curriculum. As one of the most influential stakeholders, they can shape the hidden curriculum either way, as a promotor or inhibitor. Administration should make policies and rules that enforce and promote acceptance, dignity, and support within the learning environment. All the stakeholders should be assigned their specific roles, and during these roles, they should be dealt with due respect and dignity. Ethical practices should be enforced, and reward and punishment policies should be applied where suitable, regardless of any prejudice, to counter the practices that have a negative impact on the curriculum. Additionally, implementing policies that address issues such as mistreatment, discrimination, and workload distribution can contribute to a more supportive educational environment.[32,33] By employing these policies and procedures, the administration can lay a foundation to a hidden curriculum that will be a curriculum promotor and not an inhibitor.

Role Modelling and Mentorship Programs

Since role modeling can affect the curriculum both ways – negatively by exposing students to unprofessional behaviors or unethical practices by the seniors, and positively by guiding and facilitating them both ethically and professionally – positive role modeling and mentorship programs should be adopted to shape this important aspect of hidden curriculum as a curriculum promotor. Positive role modeling and mentorship not only provide academic support to the students, affecting the formal curriculum, but also help students to adopt values and professionalism. Students under the mentorship of experienced doctors inherit values and skills like empathy, communication, compassion, autonomy, and best medical practice. This supportive relationship not only provides continuous guidance to the student throughout the whole program by engagement and motivation, thus improving formal learning, but also provides psychological support that indirectly affects the formal curriculum and the student's performance.[5,34]

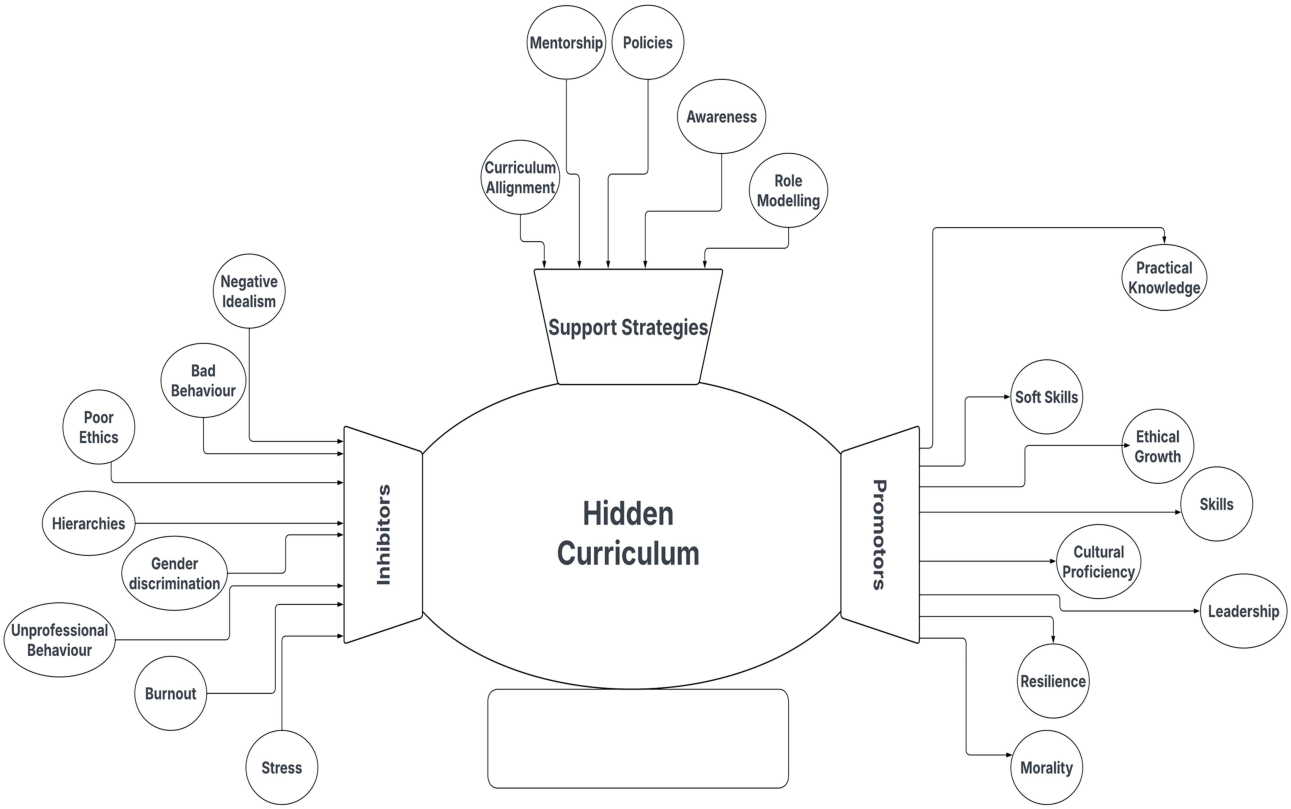

Figure 2 Schematic Representation of Hidden Curriculum Effects and Improvement Strategies: Highlights of the hidden curriculum as either a promotors or an inhibitor of the curriculum, outlining the supportive strategies to render the hidden curriculum as a curriculum promotors.

Figure 2 is the schematic representation of the discussion and conclusion drawn from the review.

Strengths and Limitations

This review offers a more comprehensive overview of the ways in which the hidden curriculum might influence the formal curriculum in both positive and negative ways. It also emphasizes key aspects and components of the hidden curriculum, such as professionalism, ethics, empathy, respect, and socialization. It also discusses the strategies that might positively shape the hidden curriculum as a curriculum promotors. The study's biggest limitation is its generalizability, as it focuses mostly on medical education, and even within medical education, various institutions may have different perceptions of the hidden curriculum. Another disadvantage is that it focuses on the literature rather than quantifiable results, which can be expected in the field of medical education. Another limitation of this study is that although we applied BEME and CASP criteria to include the quality articles and minimize the risk of bias, the heterogeneity in institutional culture, study populations, and various definitions of hidden curriculum may still affect the thematic interpretation. Hence, findings should be viewed on contextual grounds and used for hypothesis-generation rather than being universally generalizable.

Another limitation is that the majority of studies included in this review originated from high-income countries. This imbalance reflects a geographical bias commonly observed in medical education research, where most empirical work is produced in resource-rich academic environments. Hence, some findings, such as those related to institutional culture, professionalism, and hidden curriculum interventions, may not be fully transferable to low- and middle-income countries. Future research should therefore prioritize investigating the hidden curriculum and its reshaping strategies in under-represented regions to enhance global relevance and contextual applicability.

Conclusion

This comprehensive review underscores the critical role of the hidden curriculum in shaping the professional development of medical students. The hidden curriculum, while often overlooked, exerts a profound influence on students' attitudes, behaviors, and identities as future healthcare providers. Recognizing and addressing the hidden curriculum is essential for fostering more equitable, inclusive, and supportive learning environments that align with the goals of holistic student development and social justice in medical education.

Medical educators and institutions must take proactive steps to engage with the hidden curriculum. By promoting critical reflection, positive role modeling, and implementing supportive policies, the hidden curriculum can be harnessed to reinforce the formal curriculum's aims, rather than undermine them. Ultimately, addressing the hidden curriculum is not only a matter of improving medical education but also a crucial step toward advancing equity and justice in the broader healthcare system. Although awareness of the hidden curriculum has increased, significant gaps still exist within the literature, particularly regarding the studies evaluating interventions, and data from low- and middle-income countries. Future research should employ longitudinal and context-sensitive studies to explore how reshaping strategies influence professional identity formation and learning outcomes across diverse educational settings.

Data Sharing Statement

Available from the corresponding author and will be provided on authorized request.

Ethical Approval

This review article does not require any ethical approval.

Informed Consent Statements

Not required for this article.

Acknowledgment

The authors would like to thank the Deanship of Scientific Research at Shaqra University for supporting this work.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

No funding was provided for this article.

Disclosure

The authors report no conflicts of interest in this work.

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