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Evaluating Curriculum Viability in Dental Education: A Mixed-Methods Study at HITEC Institute of Medical Sciences

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ABSTRACT

Objective: To identify key areas where the curriculum may be lacking, thereby providing insights for curriculum enhancement efforts.
Study Design: Mixed method study – explanatory sequential type.
Place and Duration of Study: HITEC Institute of Medical Sciences, Heavy Industries Taxila Cantt, Pakistan, from May to Jun 2024.
Methodology: A validated questionnaire was distributed to 75 faculty members at HITEC Dental College. Categorical data analysis was conducted using frequencies and percentages of participant's answer. In next phase of study, a Focus group discussion was done involving 8 faculty members to discuss results of first phase allowing for a comprehensive assessment of faculty perceptions regarding significant curricular inhibitors. The solutions provided by the faculty to overcome these inhibitors were recorded and described in the study.
Results: Analysis of 50 responses revealed that the overall educational program was perceived positively and aligned with institutional goals. Five out of the 25 items of the questionnaire were highlighted as ineffective. Two items were related to social interaction, one related to disciplinary culture, institutional policies and faculty involvement. Thematic analysis in the focus group discussions with eight senior faculty members supported these findings and provided deeper insights.
Conclusion: This study highlighted key inhibitors to curricular success of the college and targeted strategies to overcome these inhibitors. By conducting similar researches frequently and in other institutions, effectiveness of curriculum can not only be assessed but also improved.

Keywords: Curriculum viability, Curriculum inhibitors, Effectiveness of curriculum. Medical Education, Teachers' perception.

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INTRODUCTION

Curriculum viability refers to the practicality and sustainability of a curriculum to meet its educational goals within the available resources and constraints effectively.[1,2] When evaluating the viability of a curriculum, educators and curriculum developers consider various factors such as relevance, completeness, adequacy of resources, adaptability, and alignment with educational standards and outcomes.[3] This concept is crucial in ensuring that educational programs are not only theoretically sound but also applicable and effective in real-world educational settings.[4]

The effectiveness of medical and dental education programs is crucial for preparing competent healthcare professionals.[5] While measuring curricular effectiveness is important there are no well-defined ways to measure it in literature. People have been trying to assess this using different questionnaires and interviews of both students as well as faculty. The responses of the personnel involved are then used to modify the curriculum and increase its effectiveness. With the increasing complexity of healthcare demands and the lack of established metrics for measuring curriculum effectiveness, educational institutions must strive to continuously reassess their curriculum to ensure that it aligns with current professional regional and international standards. The process of evaluation of effectiveness has resulted in the improvement of curriculum over the years from conventional curriculum to modular and now integrated.[6] This study aims to evaluate the curriculum viability of the Dental College at HITEC IMS, Taxila using a mixed-methods approach. This research investigates various factors influencing the curriculum's effectiveness, utilizing quantitative data from a structured

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questionnaire and qualitative insights from a focus group discussion among the faculty members to improve future the curriculum viability.

METHODOLOGY

It was a mixed-method study that used basic quantitative data analysis followed by a qualitative exploration of the findings. The study was conducted at the HITEC Dental College, from May 2024 to June 2024. ERB approval was obtained from the ERB-wide letter no. Dental/Hitec/IRB/70 dated 16 May 2024. Hitec Dental College offers an extensive training program leading to BDS degree. The curriculum at the time of this study was modular. A total of 75 full-time faculty members of the college were involved in the development of an integrated curriculum within their respective departments. So all of them were included in the study to target valid data collection. Therefore, the sample size was the total population sample of the target population.[19] Faculty attached with any department for part-time duty met the exclusion criteria of the study. A validated questionnaire developed by Khan *et al*.,[7] containing 25 items was used to gather quantitative data. The questionnaire was distributed via WhatsApp and Email, ensuring a wide and convenient reach and informed consent was added to the form to allow autonomy to participants. The questionnaire themes included Educational Programs, Disciplinary Culture, Social Interaction, Institutional Policies, Communication Practices, and Faculty Involvement. Participants rated each item using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

To supplement the survey data, a focus group discussion was organized, involving 8 senior faculty members (3 from Clinical Department, 3 from Basic Sciences, and 2 from medical education). The 8 senior faculty members were purposively selected based on their extensive experience and involvement in curriculum development to provide in-depth insights into curricular inhibitors. To achieve the purpose, faculty with more than 05 years of experience exclusively in curriculum development and review met the inclusion criteria of the study. Junior faculty with experience of less than 05 years were excluded from the qualitative part of the study. This discussion aimed to delve deeper into the inhibitory factors identified from the survey results and explore potential solutions to enhance curriculum viability.

The focus group was provided with a summary document that included an introduction to the curriculum's identified inhibitors and successes to engage deeply with the issues and contribute informed suggestions for curriculum improvement. During the focus group discussion, all pertinent comments and suggestions were recorded using the OTTO app. The qualitative feedback was intended to complement the quantitative data, providing a richer, more nuanced understanding of the curriculum's inhibitors and the potential strategies for addressing them.[5]

The combined findings from both the quantitative and qualitative phases of the study were intended to guide the development of targeted interventions for curriculum improvement. The integration of these insights will form the basis for proposed amendments to enhance the curriculum's alignment with current educational needs and professional standards in medical and dental education.[4]

The primary analytical approach was descriptive statistics, which included calculating frequencies and percentages for each response option across all questionnaire items. The responders who disagreed, strongly disagreed or remained neutral were collected in group 1 while those who agreed or strongly agreed were grouped as group 2. A cut off value of 70% response for a question was considered significant based on a previous study.[5] Focus group meeting was recorded and transcribed using OTTO app. Qualitative data from the focus group were thematically analyzed to understand the contextual and deeper insights provided by the faculty, facilitating a holistic understanding of the curriculum challenges and opportunities.

RESULTS

The quantitative analysis revealed four domains as inhibitors which were further explored through qualitative analysis to find possible modalities to mitigate the effects of the barriers. The demographic analysis of the survey respondents revealed a varied representation across different academic roles and experiences within the faculty at the College. More than two-thirds 35(70%) were from basic sciences, and Half of the responders 24(48%) were lecturers. Every other responder 25(50%) had more than five years of experience in their respective fields. The majority of the responders 40(80%) had some form of qualification related to medical education (Table-I).

Table -I: Demographics of Participants in Phase 1 of study

Variables	n(%)
Number of participants	n=50
Departments	
Basic sciences	35(70%)
Clinical sciences	15(30%)
Designation	
Lecturers	24(48%)
Senior Registrar	12(24%)
Assistant Professors	12(24%)
Associate Professors	2(4%)
Qualification in Medical Education	
Yes	40(80%)
No	10(20%)
Details of Qualifications	
Workshops	12(24%)
Certification courses	21(42%)
Masters in HPE	6(12%)
PhD Medical Education	1(2%)
Involvement in Curriculum Development	
Yes	21(42%)
No	29(58%)
Designated Module Coordinator or Director	
Yes	9(18%)
No	41(82%)

After the results were analyzed quantitatively, focus group discussion was carried out to determine why there are inhibitors in institutional curriculum and how we can improve the curriculum by eliminating them. Out of 25 questions under six headings, significant inhibitors were found in 5 questions. Four major areas emerged as significant concerns: Disciplinary Culture, Social Interaction, Institutional Policies, and Faculty Involvement. Three-fourth (74%) of respondents disagreed that students adhere to institutional disciplinary policies, indicating a pressing need for stronger enforcement. 35(70%) of faculty thought that online forums for discussion were lacking emphasizing the need to develop online forums for discussion among teachers and students. Among 78% of faculty reported dissatisfaction with the availability of meeting places for student-teacher interactions, emphasizing a gap in social interaction opportunities. A significant part (70%) of faculty expressed concern over the lack of a formal process for appealing institutional decisions, suggesting that communication channels need to be improved. Finally, 72% of respondents felt excluded from curriculum-related meetings, pointing to a lack of involvement in decision-making processes. The significant questions were discussed in focus group. Inhibitors were confirmed during that focused group and potential solutions to overcome these inhibitors were sought out.

Table-II summarizes the percentages of faculty agreement and disagreement across these themes, along with suggested improvements from the focus group discussions.

Interestingly, the "Educational Program" and "communication practices" were the themes where no inhibitors were reported, suggesting that the content and structure of the academic programs and communication practices were generally meeting the expectations of the faculty.

DISCUSSION

This study conducted at HITEC Dental College has provided valuable insights into the perception of faculty members regarding curricular inhibitors in an undergraduate dental curriculum. The objective approach highlighted several key areas where the curriculum may be failing to meet its expectations effectively.

Interestingly, no significant inhibitors were identified under the theme of 'Educational Program,' suggesting that the structure, content, and assessment methods currently align well with the institution's aims and outcomes. Martone et al. found that this alignment is crucial for the success of any educational program,[7] and as described by Sewagegn et al it ensures that teaching and learning activities are directly linked to expected outcomes.[8]

Under the theme of 'Disciplinary Culture,' the study revealed significant concerns about the institution's ability to adhere to its disciplinary policies. Bendermacher *et al*. found that although policies exist on paper, their implementation appears to be lacking, which can lead to inconsistencies and undermine the integrity of the educational environment.[9] Nenenglosky *et al.* found that the effective implementation of disciplinary policies is often cited as a critical factor for achieving curricular success.[10]

The lack of an online discussion forum has emerged as a significant inhibitor in our study. In today's educational landscape, the integration of technology and online communication tools is vital for engaging students and faculty in meaningful interactions that enhance learning, A finding confirmed by Khan *et al*.[11] Furthermore, the study highlighted concerns about the adequacy of spaces for student-teacher interaction, underscoring the importance of social interactions in the educational process, as supported by Basic *et al*.[12]

Table-II: Results of Focus Group

Sr. No.	Major headings of Curriculum standards	Inhibitors	(Group 1) Percentage Of Responders who do not Agree (linkert Scale 1+2+3)	(Group 2) Percentage of Responders who agree (Linkert Scale 4+5)	Suggestions for Improvement by Focus Group.
1.	Disciplinary Culture (DC)	Students are fined if they do not adhere to institutional policy	74%	26%	I think we need to take action against students who are violating the discipline and educational policies. Evaluation system and committees should be made for implementation of discipline.
2.	Social Interaction (SI)	My institution provides interactive online discussion forums	70%	30%	Online groups and google classrooms should be used for this purpose.
		My institution has meeting places for students and teachers for interaction	78%	22%	Proper mentoring/discussion sessions slots are given in timetable.
3.	Institutional Policies (IP)	Faculty can appeal against institutional decision without fear.	70%	30%	Suggestion box or faculty forum should be established.
4.	Faculty Involvement (FI)	I am invited to the meetings in which curricular issues are discussed and decisions are made	72%	28%	Subject experts' opinion should give Weightage. Junior faculty must be kept up to date regarding curricular decisions.

Approximately three out of four faculty members expressed concerns about the fear of appealing against institutional decisions, suggesting a communication gap that could hinder the expression of concerns and suggestions for improvement. Makey *et al*. and Peter *et al*. suggested creating a more open and transparent communication environment that could facilitate better engagement and collaboration among faculty members, leading to enhanced curricular outcomes.[13,14]

The study also found that a significant percentage of faculty felt excluded from crucial curricular decision-making processes, such as course design and modifications. This lack of involvement is described as a potential to a disconnection between the faculty's expertise and the curriculum's evolution by Ocak *et al*.,[15] In another study by Phelan et al. it was found that involvement of teaching faculty in curriculum designing directly corresponds to the emerging educational needs.[16] On the contrary, nearly half of the faculty in our study reported a lack of knowledge in instructional design, Similar finding was described by Huizinga et al. which would impact the effectiveness of the curriculum delivery and adaptability.[17] This finding about need of involvement of faculty in teaching but their lack of knowledge about curriculum making process highlights importance of training of faculty in medical education.

The findings of this study serve as a crucial step towards understanding and addressing the barriers to effective curriculum implementation in medical and dental education. By identifying these inhibitors, HITEC Dental College and other institutions experiencing similar challenges, can develop targeted strategies to enhance faculty involvement, improve policy implementation, integrate modern educational technologies and foster a supportive communicative environment.[18]

The limitations of this study include a relatively small sample size and focus group limited to senior faculty, which may not fully represent diverse perspectives. Conducted at a single institution over a short time frame, its findings may lack generalizability. Additionally, reliance on self-reported data introduces potential biases, and as a cross-sectional study, it doesn't capture changes in faculty perceptions over time. Moreover, institutions can do similar studies in their setups to find inhibitors of their curricula and can improvise ways to mitigate the effects of these inhibitors. Future directives from this study may include the strategies used for the elimination of inhibitors and periodic program evaluation of the curriculum using various evaluation models to improve its viability over time. Future research could explore the impact of faculty development programs on curriculum design skills or

a longitudinal study could examine changes in faculty perceptions over time ensuring improvement in the viability of the integrated curriculum.

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CONCLUSION

In conclusion, this study offered valuable insights into the perceptions of faculty members regarding inhibitors to curricular success in undergraduate medical and dental education. It provides a roadmap for curriculum enhancement efforts, emphasizing the need for improved policy implementation, technological integration, faculty engagement, and communication practices. By addressing these identified inhibitors, HITEC Dental College and other institutions facing similar challenges can work towards creating a more conducive learning environment that nurtures student success and professional development.

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Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

FS & RS: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

UAO & IT: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

SA & NZ: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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