EXPLORING CHALLENGES TO THE STUDENTS AND FACULTY IN AN UNDERGRADUATE INTEGRATED DENTAL CURRICULUM; A QUALITATIVE STUDY

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ABSTRACT

OBJECTIVES

To explore challenges to the students and faculty in an Undergraduate Integrated Dental Curriculum.

METHODOLOGY

The qualitative phenomenological study was conducted in Peshawar Dental College, Peshawar from June to October 2023 (05 Months).Dentistry students and faculty who had experienced the integrated curriculum were recruited with consent, by purposive sampling. After the ethical approval, three focus group discussions were held where the interview guide was structured using Sanford's theoretical framework featuring open-ended questions, validated by subject experts. The student's focus group consisted of eight students of basic sciences, (first and second year), and clinical sciences, (third and final year) of Bachelor of Dental Surgery. Whereas the two faculty focus groups consisted of basic sciences and clinical sciences faculty. The focus group discussions were audio recorded and transcribed, using Otter AI and transcribed verbatim, and analyzed using Braun and Clarke's thematic content analysis,

RESULTS

Out of 20, eight students and twelve faculty members belonging to the same institute participated in the focus group discussions. The identified themes were, (a) Challenges of an Integrated System (b) Strategic Assessment Reformation & feedback, (c) Supportive Measures and benefits of an Integrated Curriculum.

CONCLUSION

Several challenges were identified in the integrated dental curriculum. The students' challenges included a heavy workload, rapid pace, and limited revision time. The faculty faced challenges like resistance to change, inadequate infrastructure, and assessment validity concerns. They required comprehensive training in integrated teaching methodologies and effective assessment strategies.

KEYWORDS: *Challenges, Curriculum, Dentistry, Integration*

INTRODUCTION

The recent exponential growth of knowledge and the massive advances in oral health systems have raised demands to redesign dental education to prepare dentists for the modern era of dental practice.[1] The Integrated Curriculum is gaining popularity internationally. Integration aims to dismantle the existing obstacles between basic and clinical sciences that are prevalent in the Traditional Medical Curriculum. The process of integration should enhance the retention of knowledge and development of skills through continual and incremental advancement of concepts and their practical application.[2] The basic sciences are difficult to connect to clinical scenarios; this challenge is overcome by linking basic science material to clinical problems. Medical schools can enhance learning by combining fundamental and clinical knowledge while eliminating unnecessary information. Students trained in the integrated curriculum are sounder in diagnosis compared to the conventional curriculum.[3] In an integrated curriculum, there is an emphasis on small group activities, PBL, and self-directed learning (SDL) in the institution.[4] The aim is to make students self–directed, problem-solving, and lifelong learners.[5] The students use their previous knowledge, and the learning environment based on the philosophy of constructivism. Early clinical exposure is essential in teaching different aspects and helpful in career selection. In an integrated curriculum, there is no fixed teaching schedule, and all the subjects are taught throughout the year depending on the demand and teaching hours.[6] The students link clinical cases and interactions with actual patients to help retain essential knowledge. Curriculum integration is complex; some subjects are integrated more quickly than others. The concept is perceived differently by students and faculty depending upon instructional methods and the

knowledge delivered. Integrated curricula strengthen collaboration among students and teachers, as well as provide students with the opportunity to develop critical thinking and problem-solving skills.[7] This type of instruction is becoming increasingly popular in medical education as its advantages are becoming more widely recognized. The early identification of challenges will help properly implement an integrated curriculum. It is essential to ensure that the students and faculty can take full advantage of the integrated curriculum's opportunities by understanding the challenges in the field. The educators will be able to develop appropriate steps to address the problems and ensure that students have the best possible chance of succeeding in their studies. Several factors affect the student and faculty perception of an integrated curriculum, like the environment of the institution, teachers' ability, and methodology innovation.[8] Knowing the student's perception of the curriculum is essential for designing better modules for improvement at the institutional level. In a study, students rated small group discussion, PBL, as more beneficial regarding different integrated module's teaching and learning methodologies.[9] Some challenges are partially addressed in medicine, but many related issues are still untouched, especially in dentistry.[10] The lack of transparency, inconsistent methodology, and absence of validity criteria point to a gap in qualitative studies that has yet to be overcome.[11]

METHODOLOGY

For this qualitative phenomenological study, researchers selected Peshawar Dental College (only for girls), the only institution in the Khyber Pakhtunkhwa Province of Pakistan where an integrated curriculum is fully implemented throughout all four years of dental education. The study was conducted from June to October 2023 with five months duration. A Purposive sampling was employed to collect data. Student Class representative and class topper from each year of BDS program, Male and Female Faculty members of clinical and basic sciences with minimal five years teaching experience and exposed to integrated curriculum were included in the study. In case of top-class position sharing, the second student on the alphabetical order and faculty members who were not willing to participate was excluded. An Interview Guide was designed after an extensive literature search and according to Sanford's theoretical framework.[11] It was designed according to operational definitions of construct, empirical evidence, and theoretical foundations. An effort was made to align the research question and theoretical framework. The interview guide was sent to three medical education experts to improve the research guide's rigor and credibility. Upon obtaining ethical approval (Ref. No. 1-12/IHPER/MHPE/KMU/23-06 dated 13 June 2023) from Institute of Health Professions Education and Research (IHPER)Khyber Medical University, data collection commenced with written consent of students and faculty. Distinct focus groups were organized at scheduled times. Data was collected by conducting Focus Group Discussions (FGDs) using open-ended questions guided by Sanford's theoretical framework on challenge and support. (Table-1)

Table 1: Interview Questions

1. Explain your experience of the integrated dentistry curriculum.
2. What challenges have you faced in the integrated dentistry curriculum?
3. How did you overcome those challenges?
4. What strategies did you use to stay motivated during difficult times?
5. What support systems did you find helpful during your undergraduate studies? (for students) What support system did you find helpful during your service? (For faculty)

The first focus group discussions included students, with a sample size of eight students representing each year. The second focus group consisted of basic sciences faculty with six participants, and the third focus group consisted of clinical sciences faculty with six participants. The focus group discussions were audio recorded and transcribed, using Otter AI and transcribed verbatim, and analyzed using Braun and Clarke's thematic content analysis, Following Braun and Clark's six-step approach to thematic analysis [12], themes were generated(Figure 1). The transcriptions were carefully read and underwent inductive coding through the first cycle with 192 codes and the second coding cycle with 90 codes generated. After completing the second cycle, the identified themes were thoroughly reviewed. An independent observer counterchecked the data analysis process.

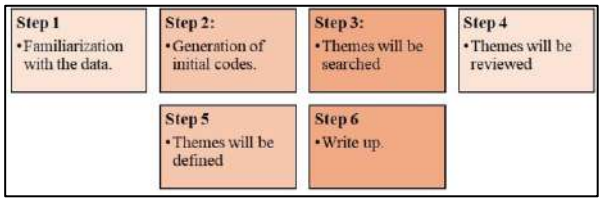

Figure 1: Steps of Braun and Clark Thematic Analysis

RESULTS

Out of 20 study participants, 16 (80%) were female, and 04 (20%) were male. The details about participants & themes are given in Tables 2 &3.

Table 2: Data of Participants. n=20

Participants	n (%)
Students (from first year to final year BDS)	08(40%)
Faculty Members (Teaching Experience in Years)	
Demonstrators (5-7)	03(15%)
Assistant Professor (6-8)	06(30%)
Associate Professor (10)	01(5%)
Professor (15-16)	02(30%)
Faculty Formal Training on Integrated Curriculum	0(100%)

Two coding techniques "descriptive coding" and "in-vivo coding" were employed. The faculty members described their experiences in integrated dental curriculum highlighting the benefits and the drawbacks faced in its implementation.

Table 3: Themes Generated According to Codes and Categories

Theme	Sub Theme	Category
1. Challenges of an integrated system	Challenges faced by Students & Faculty	
	Administrative challenges	Resource and infrastructure challenges Challenges faced due to policy-making bodies University administrative challenge Hospital-based administrative challenges
	Assessment and evaluation challenges	Designing and alignment of assessment Assessment methodology
	Curriculum-related challenges	Subject-related challenges Content-related challenges Schedule/Time-related challenges Procedural challenges Unique challenges faced by dentistry
2.Assessment Reformation & feedback	Feedback and improvement Framework of assessment and transparency Innovations in assessment methods	
3.Supportive Measures and Benefits of Integrated Curriculum	Administrative support Benefits of Integration and learning resources	Curriculum support Faculty development

Theme 1: Challenges of the Integrated System

The Integrated Curriculum introduced several challenges for students and faculty. Students struggled to adapt to the fast-paced learning environment and condensed curriculum, leaving little time for reviewing material. This created frustration, especially for first-year students who lacked proper support systems.

"When I joined first year, I encountered a new system and had no support." (Speaker 3, FGD 1)

When comparing the system to traditional methods, one participant highlighted the theoretical focus of the latter, and the risks associated with comprehensive exams.

"In the traditional system, students primarily engage in theoretical learning throughout the year and face comprehensive exams with 5-8 questions. Unexpected issues like illness can lead to a complete loss of performance." (Speaker 5, FGD 2)

Faculty faced infrastructure challenges, especially in implementing active learning strategies such as Problem-Based Learning (PBL) and conducting OSCEs.

"For PBL, we need different rooms and an OSCE exam center. We're just making shift arrangements, which are lacking." (Speaker 3, FGD 3)

Policy-related constraints and inadequate administrative support further complicated implementation.

"Their policies are toward the conventional system." (Speaker 1, FGD 2)

Faculty resistance to change was another hurdle, stemming from a preference for traditional teaching and fear of the unknown.

"Faculty members resist because they prefer staying in their comfort zones rather than adapting to a new system." (Speaker 4, FGD 2)

Assessing students' abilities under the integrated system posed difficulties. Faculty could not identify specific weaknesses in their subjects due to the combined structure.

"Since the exam is integrated, I, as a subject specialist, cannot know which student is weak in my subject." (Speaker 4, FGD 3)

Frequent assessments created stress for students, as the rapid cycle left little time for revision and consolidation of knowledge.

"This constant cycle of assessments places students under continuous stress, making it difficult for them to concentrate." (Speaker 2, FGD 2)

The blueprinting process also caused confusion, leading students to neglect less-weighted topics.

"Some students questioned studying a chapter when it was only worth 2-3 multiple-choice questions." (Speaker 3, FGD 2)

The integration of vastly different subjects such as medicine and dentistry posed challenges in aligning content effectively.

"Initially, we encountered a clash between face value and content of the subjects, creating alignment challenges." (Speaker 6, FGD 2)

Limited curriculum time often led to concise, rather than comprehensive, coverage of topics.

"Given the limited time, we focus on delivering concise and to-the-point information rather than extensive coverage." (Speaker 5, FGD 2)

In resource-constrained countries like Pakistan, fully integrated systems face practical challenges, leading to hybrid models blending traditional and integrated methods.

"A lot of integrated systems in Pakistan are essentially conventional systems with a paint-up of integration." (Speaker 2, FGD 2)

Theme 2: Strategic Assessment Reformation and Feedback

Timely feedback was identified as critical for student improvement. Delayed feedback, often given at the end of sessions, hindered students' ability to address weaknesses.

"Previously, feedback was given at the end of the session. Without timely feedback, students can't improve on their shortcomings." (Speaker 3, FGD 2)

Faculty advocated for regular feedback through methods like peer review, self-assessment, and instructor guidance. Targeted remediation was also emphasized for struggling students.

"If students are poor in theory, we provide remedial measures or remediation." (Speaker 2, FGD 3)

Providing clear performance indicators was suggested to help students allocate study time effectively.

"Students can prioritize their focus by knowing the number of MCQs and SAQs beforehand." (Speaker 4, FGD 2)

"At least the minimum indicators should be known for good performance in basic dental sciences in the integrated curriculum." (Speaker 2, FGD 2)

To create a balanced assessment system, a weighted approach was proposed, with the final year exam comprising 50% of the assessment and earlier years contributing 25% each.

"To achieve fair assessment, distribute 50% to the final assessment, 25% to earlier assessments, and 25% to the final year." (Speaker 3, FGD 3)

Theme 3: Supportive Measures and Benefits of the Integrated Curriculum

Faculty emphasized integrating content into single textbooks for better student understanding while preserving subject autonomy.

"Textbooks for undergraduates should be coded in different systems for easier comprehension." (Speaker 2, FGD 2)

Hybrid systems combining modular and annual exams create inconsistency, highlighting the need for a clear approach.

"It should either be a truly integrated system based on modules or remain traditional. Mixing both creates inconsistency." (Speaker 4, FGD 2)

Faculty development programs were deemed essential to equip educators with the necessary skills for delivering high-quality integrated education.

"We should develop our faculty according to our own needs, with support from the Department of Medical Education." (Speaker 4, FGD 2)

Students discussed support from teachers, online resources like YouTube, and live lectures as beneficial aids in the integrated curriculum.

"I prefer to work under the supervision of my teachers and am confident that my studies will benefit my future patients." (Speaker 4, FGD 1)

"I use YouTube, and it helps a lot. My notes are prepared during live lectures." (Speaker 6, FGD 1)

The benefits of integration included improved clinical skills, continuous knowledge updates for faculty, and efficient marks allocation.

"The system encouraged students to study smart and teachers to teach smart. It started guiding us automatically." (Speaker 3, FGD 1)

DISCUSSION

The study identified multiple challenges students face in an integrated dental curriculum. One significant issue was extensive coursework and frequent modular exams, which, combined with the accelerated pace of the curriculum, led to frustration and fear of failure. Unlike Muller et al., who reported sequencing and scaffolding content as main challenges in an integrated curriculum, this study highlighted the pace of program as the primary concern [13]. Students also struggled with time management due to balancing social commitments with academic requirements, leaving insufficient time for revision. Similar issues were reported by Tsang et al. However, Mahsood N et al.found that students appreciated integrated system for enhancing time management and understanding, though their study focused on a single module.[14,10] First-year students transitioning from a traditional education system require additional support. This aligns with findings by Wajid et al., who emphasized the importance of facilitating this adjustment[15]. Shah T, similarly noted the difficulties of simultaneously learning multiple subjects under an integrated system, particularly for newly admitted students 1.[6] In this study, student preferences varied, with some favoring the traditional system over the integrated one. Faculty respondents identified several challenges, including insufficient infrastructure to support the integrated curriculum. They noted the lack of dedicated Problem-Based Learning (PBL) rooms and adequate space for Objective Structured Clinical Examinations (OSCEs), as highlighted in the study by Madeeha Rehan. Some faculty members perceived the integrated system as experimental, with inadequate policy frameworks.

Rehan et al. further emphasized the need for policies to streamline integration, enhance faculty development, and foster collaboration at institutional and administrative levels.[17] Faculty resistance to interdisciplinary collaboration was another significant challenge. Traditional subject specialists were hesitant to adapt to the integrated system, feeling disempowered when their contributions were undervalued. This contrasts with the welcoming attitude of senior faculty reported in Rehan's study.[17] Assessment-related issues were also highlighted, including the difficulty of designing scenario-based clinical questions, the overuse of MCQs, and the resulting decline in students' writing skills. Additionally, frequent assessments created a stressful environment. These findings are consistent with Tsang et al., who noted similar challenges in integrated assessments.[14] The study also revealed issues in curriculum alignment, with discrepancies between content and subject requirements. Students reported feeling overwhelmed by extensive syllabi and high credit hours, which led to decreased engagement and a loss of interest. A hybrid integration model was described by faculty, reflecting a transitional phase toward full integration. This finding aligns with Shah et al., who highlighted that though it was difficult for the students and faculty, but over time, the integrated approach need was realized.[16] Mehboob's study also emphasized the absence of established integration systems for dentistry, consistent with the current study.[18] The importance of timely feedback throughout the learning process was emphasized, with respondents advocating for continuous feedback rather than end-of-term evaluations. This aligns with the findings of Rehman et al. The use of remedial measures for struggling students, particularly in areas like theory and OSCEs, was also discussed.[17] Faculty proposed reforms in annual exams, recommending a balance between scenario-based MCQs and conventional question styles. Supportive measures, identified by students included teacher guidance, family support, and the use of online resources like YouTube to enhance visual memory and concept clarity. Collaborative learning through peer discussions and clinical case observation under supervision was also highlighted. These strategies are consistent with the study by Peterson et al.[19] The study also noted several benefits of integration. Students reported improved conceptual clarity and reduced redundancy, allowing more time for self-directed learning. These findings are supported by Muller and Petersen, who emphasized the role of integration in enhancing conceptual understanding and knowledge retention.[13,19] Additionally, the elimination of selective studies for exams was seen as a significant advantage, noted by Lajbar et al.[20] Faculty emphasized the importance of developing training programs tailored to departmental needs and aligned with the Department of Medical Education. This ensures faculty are well-equipped to deliver the integrated curriculum and support student learning. Rehman et al. and Shaheen et al. similarly highlighted the role of faculty training in successful integration. Case-based learning was a proposed strategy to promote problem-solving skills, clinical exposure, and interdisciplinary collaboration. These findings are consistent with McLean's study on case-based learning.[21] In conclusion, while the integrated dental curriculum offers numerous benefits, such as improved understanding and reduced redundancy, significant challenges remain. Addressing these issues through infrastructure development, policy reform, faculty training, and student support systems is crucial for the successful implementation and sustainability of the integrated curriculum. The findings from this qualitative research can be transferred or adapted in other comparable contexts or settings to enhance the application of integrated dental curricula for a more efficient and supportive academic atmosphere by comparing integrated and traditional curricula.[22]

LIMITATIONS

The study was conducted with a small, homogenous sample comprising only female students from a single institute in Khyber Pakhtunkhwa province. Gender-based perspectives can provide valuable insights. This limited scope of data collection may affect the generalizability of the findings to broader populations or diverse educational settings. Institutional variations may influence curriculum perceptions. Longitudinal studies could offer deeper insights into long-term adaptation and evolving perceptions of an integrated curriculum.

CONCLUSIONS

Several challenges were identified in the integrated dental curriculum. The students' challenges included a heavy workload, rapid pace, and limited revision time. The faculty faced challenges like resistance to change, inadequate infrastructure, and assessment validity concerns. They required comprehensive training in integrated teaching methodologies and effective assessment strategies. The findings can be transferred to similar settings to further study integrated curricula.

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