



ORIGINAL ARTICLE

## Reforms in current dental curriculum, through perceptions of medical educationists in Pakistan: A Qualitative Analysis.

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**Article Citation:** Sheikh GM, Mehboob U, Naveed A, Khalid S, Haque A, Farid H. Reforms in current dental curriculum, through perceptions of medical educationists in Pakistan: A Qualitative Analysis. *Professional Med J* 2022; 29(10):1582-1589.  
<https://doi.org/10.29309/TPMJ/2022.29.09.6858>

**ABSTRACT ... Objective:** To explore the perceptions of the dental faculty regarding the changes required with regards to subjects, the teaching methodology, assessment and innovative recommendations in Pakistan. **Study Design:** Qualitative Research Project. **Setting:** Riphah International University, Rawalpindi. **Period:** February 2019 till July 2019. **Material & Methods:** In which 13 dental faculty members with post graduate degrees in Medical/Dental Education in addition to the Dental Specialties were selected via a purposive sampling technique for semi-structured one to one interview. Data was collected from 8 various institutes. The protocol for thematic data analysis was utilized. Explanatory, exploratory and interpretative approaches of content analysis were employed to screen out prominent and relevant concepts and emergent themes. **Results:** Participants reported that many new subjects need to be incorporated. A uniform curriculum all over the country is required. The content of subjects needs to be aligned to the needs of the community. Need analysis is to be carried out at regulatory body level for what sort of General Dentists are to be produced in the country who can later work in other parts of the world, if they desire. **Conclusion:** Course content needs to be aligned with rest of the world and community. Teaching and Learning Strategies should be reevaluated with the present day needs of the curriculum. Curriculum must be patient centered and inculcate the local needs of the community.

**Key words:** Curricular Reforms, Dental Curriculum, Education, Local Needs, Medical/Dental, Undergraduate.

### INTRODUCTION

The dental students are still being taught via conventional teaching methods including traditional lab techniques in addition to tooth preparation exercises on the phantom head.<sup>1</sup> Curriculum is defined as the result of Human Agency by the guide “ABC of Learning and Teaching in Medicine”.<sup>2</sup> The experts consider curriculum as an attempt to achieve desired outcomes. Multiple factors need to be considered during curriculum development.<sup>3</sup> It provides the framework which sets expectations for students’ achievement and learning.<sup>4</sup> Over the last decade, “Integrated Curriculum” has gained much popularity and efforts are being made to plan, execute and assess the dynamic.<sup>5</sup> However, due to limited resources and the shackle of traditional and cultural beliefs among faculty members and

administrators, progress has been drastically delayed. The Oral Health Care System has literally been spoiled due to very little approach to Dental Education.<sup>6</sup> The imbalance between skills and competencies is universal in the dental profession, whereas our dental curriculum should address the local needs.<sup>7</sup> The curriculum must offer necessary opportunities and encourage students to engage in structured learning experiences that combine community service with preparation and reflection of the aim which is to realize students’ professional responsibility to address the needs of the community.<sup>8</sup> This will be a good initiative to improve the standards of dental education across the country.<sup>9</sup> It is to ensure that students receive integrated, lucid learning experiences that contribute to their professional learning and development.<sup>10</sup> Curriculum forms

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**Article received on:** 23/02/2022  
**Accepted for publication:** 23/06/2022

an integral part of the end product of a dental institution in the form of a dentist.<sup>11</sup> Due to the current digitalization, curricular standards have declined, as students prefer gadgets over typical textbooks.<sup>12</sup> Over the years, it has been stressed to incorporate Simulation and Professionalism in the Undergraduate Dental Curriculum in Pakistan. Every dental school, in different provinces, is following merely a table of contents, not a definite curriculum.<sup>13</sup> Dental curricular reforms are still in their beginning stage. For an evocative change, faculty has to go through a process of new skills development that will prepare them to teach and assess students differently.<sup>14</sup>

The purpose of this study is to explore the perceptions of the dental faculty regarding the need for a concrete curriculum with regard to subjects, the teaching methodology, assessment and innovative recommendations.

## MATERIAL & METHODS

This was a qualitative study where a semi-structured, in-depth one-to-one open-ended interview was used as an instrument to collect data. Expert validation was acquired by sending the interview guide to the present study supervisor and was pilot tested on two of my colleagues in the RARE department of Riphah International University. Only 6 questions were included in the study.

This study was conducted at Riphah International University and data was collected from the following teaching institutes:

- Khyber Medical University,
- Dow University of Health Sciences,
- Riphah International University, Islamic International Dental College,
- Islamabad medical and Dental College,
- Fauji Foundation Dental College,
- Armed Forces Institute of Dentistry and
- Khyber College of Dentistry.

The study was completed after synopsis approval in six months i.e., February 2019 to July 2019. A purposive sampling technique was employed. Thirteen dental faculty members were selected for semi-structured interviews; both telephonic

and face to face fulfilling the inclusion criteria.

## Inclusion Criteria

Dental Faculty members having Ph.D, MHPE/MME, MCPS (HPE) or a Certificate in Medical Education in addition to their primary specialization, involved in the teaching and assessment of undergraduate dental students were involved in the study.

## Exclusion Criteria

Faculty members have the required dual qualifications, but not involved in teaching the undergraduate dental students, working below Assistant Professor level or having only the administrative roles.

The protocol for thematic data analysis was utilized. Explanatory, exploratory and interpretative approaches to content analysis were employed to screen out prominent and relevant concepts and emergent themes. The interviews were transcribed verbatim on word files. A consolidated micro soft excel file was then prepared where the respondent answers to each question were categorized and catalogued together, thus generating a consolidated list of questions with the answers from all 13 respondents. Initially, open coding was instigated for a raw identification of themes. The themes that emerged from the data were coded utilizing tree nodes. Open coding was succeeded by axial coding and selective coding. Coding comparison queries and project map generation was then carried out, in order to generate the interlinked themes. Comparisons were made across the empirical data in order to reach abstract conceptualization. Constant comparison of similar and contrasting themes led to the final results.

The ethical considerations were ensured by executing the following measures.

1. Research proposal was approved by ERC, Riphah International University.
2. All respondents contributed to the research voluntarily after being informed about the aims and objectives of the current study. Their consent was also obtained. Confidentiality of the participant details was ensured to promote

trust.

## RESULTS

A total of 13 participants were selected after applying the inclusion criteria on an initial list of 18 candidates. Data collection and data analysis both were initiated simultaneously. Interviews

were recorded, transcribed verbatim, analyzed manually, copied on Microsoft excel files. Manual Coding was done in rounds. Themes were generated from them and analyzed. The representative number of codes generated and the subthemes from each respondent interview are given in the following Table-I.

Themes and Representative Quotes from the Data regarding the changes required for Contemporary Dental Curriculum.					
S. No	Code	F	Category	Theme	Quote
1	Maxillofacial Oncology	7	Changes relevant to subjects	Changes in Curriculum Content	<p>“In a country facing Terrorism, we must emphasize the need for Forensic Dentistry as Separate Subject!” (M,R# 13)</p> <p>Karachities are habitual of paan and betelnut. They are prone to develop oral malignancies that justifies the introduction of oral oncology as a subject. (M, R# 1)</p> <p>Dentists don't treat burns but 1/4<sup>th</sup> of general surgery implies to varying degrees burn wounds. (F,R#8)</p> <p>“First we should do Need Analysis and implement Project Management at the level of Final Year....this will generate research on the appropriate time to be allocated for the procedure and accordingly we will design Credit Hours” (M, R#4)</p> <p>“Research and Mentorship be given due share in Curriculum as these BDS students will be dental teachers tomorrow”. (F, R#8)</p>
	Implantology	10			
	Family Dentistry	10			
	Aesthetic Dentistry	5			
	Forensic Odontology	9			
	Paedodontics	7			
	Geriodonotology	5			
	Crown And Bridge	9			
	Dental Radiology	12			
	Dental Education and Research	5			
	Project Management and Entrepreneurship	4			
2	Trimming of content of general medicine and general surgery	9			
3	Content of physiology must be revisited	2			
4	Overlapping of content in Oral pathology and oral medicine	10			
5	Sequencing of subjects to be reconsidered	8			
6	Repetition in various subjects must be avoided	12			
7	Clinical content should be introduced earlier	12			
8	Reduce theoretical content	6			
9	Omit Embryology	3			
10	Address community oriented problems especially nutrition related.	3			

11	Increase duration of complete program up to 5 years	8	Changes relevant to time		There is a big requirement of looking in to credit hours and their distribution..... (M ,R#12)
12	Clinical subjects timing should be increased	7			
13	Time for dental subjects should be increased	6			
14	Awareness on Water fluoridation, rampant caries in children, lead workers gum problems	1	Responsibility towards community		Curriculum must be flexible enough to incorporate the sudden outbreaks in the community (M ,R#11)
15	Use of community based clinics at student training sites	5			
16	Input of community practitioner should be considered	2			
17	Update curriculum with changes in community	4			
18	Introduction of CBLs, PBLs, SGDs etc	6	Improvements in teaching methodology	Changes in Learning and Teaching Strategies	Our senior faculty is very much reluctant to adopt modern day changes (M ,R#10) They are shy to learn from young medical educationists, who are actually well trained with new requirements of the modern day student. (M ,R#5) Modern Teaching Methodologies like AV aids, Portfolios are dire need of the present medical education. (F ,R#8) "BDS Curriculum is all around 100 themes...make curriculum and divide into four or five years, whichever suits you" (F ,R#8)
19	Patient focused teaching	4			
20	Introduction of digitalization	4			
21	Learning objectives must be clearly defined	3			
22	Constant feedback must be there.	3			
23	Adequate faculty members should be hired and should be trained accordingly	9			
24	Sufficient Resources should be provided	9			
25	Student teacher ratio should be 4:1	3			
26	Can be taught on 100 themes instead of subjects	2			
27	TOS should be made and followed and should be available to students.	8			
28	Study guide should be available to all	7			
29	MIT as a guideline be taught.	1			
30	Training on Phantom head is easier.	4			
31	Assessment should be aligned with the content taught.	8			
32	Aptitude should be assessed.	2			
33	Decision skills should be evaluated	2			
34	Patient focused assessment be carried out.	4			
35	360 degree evaluation and portfolios should be done	3			

36	Technological Advancements should be there.		7	Curriculum as a formal document	<b>FORMULATION OF CURRICULUM</b>	“First lay down the Oral Health Policy of the country, take all stakeholders on board and then talk about the new Curriculum” (M ,R#5) “Young Dentist...Listen Carefully! Medical Educationists are only on papers to fulfill PM&DC criteria...hahaha.... who will propose the changes in new curriculum” (M ,R#3)
37	It should be open to Review		8			
38	Lack of consensus should not be there.		7			
39	Integrated Curriculum		10			
40	Proper documentation of curriculum		8			
41	Focus on	Professionalism	11	Informal curriculum		Dental Graduates will ultimately run the organizations tomorrow so they need to focus those attributes today (M ,R#3)  Students must learn work place based ethics...they will run their own set ups tomorrow. (F ,R#7)
		Leadership	10			
		Ethics	11			
		Interpersonal skills	7			
		Robotics	2			
		Communication skills	13			
42	Theme based Curriculum		2	Curricular designs	Imagine, we are still debating on Integration and Modular System....What a pity?” (F ,R#8)  “First we should do Need Analysis for the curriculum and implement Project Management at the level of Final Year.... this will generate research on the appropriate time to be allocated for the procedure and accordingly we will design Credit Hours” (M ,R#7)	
43	Outcome based curriculum		3			
44	Competency based curriculum		1			
45	Team based curriculum		1			

**Table-I. Table showing codes and their frequencies, categories**

Forty-five open codes were generated represented by the research questions which were further conformed into 3 themes, which led to the development of 8 categories. Substantive coding led to the emergence of three major themes. These are presented in Table-II.

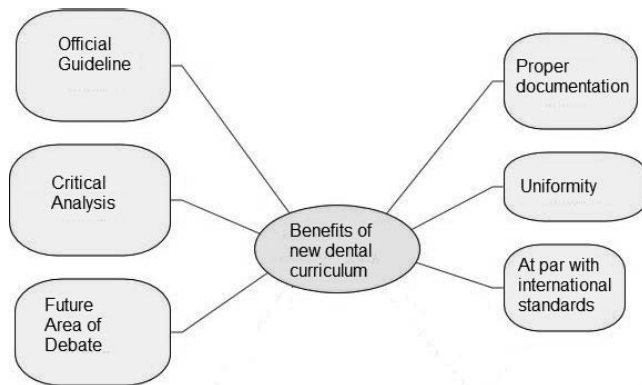
**Faculty perceptions regarding new dental curriculum**

During data analysis the perceptions of the dental faculty regarding new curriculum emerged. In order to have a holistic view of the perception regarding new undergraduate curriculum, the faculty observations and insights about the phenomenon needs careful scrutiny. The relevant themes emerged from the data analysis being

presented here.

S. No	Themes	Subthemes
1	Changes in Curriculum Content	<ul style="list-style-type: none"> <li>Changes relevant to subjects</li> <li>Changes relevant to time</li> <li>Responsibility towards community</li> </ul>
2	Changes in Learning and Teaching Strategies	<ul style="list-style-type: none"> <li>Improvements in teaching methodology</li> <li>Improvements in assessment methodology</li> </ul>
3	Formulation of Curriculum	<ul style="list-style-type: none"> <li>Curriculum as a formal document</li> <li>Informal curriculum</li> <li>Curricular designs</li> </ul>

**Table-II. Substantive themes and corresponding Subthemes of the changes required for Contemporary Dental Curriculum**



**Figure-1. Benefits of new curriculum**

The steps to improve the present course content: Medical-dental divide emerged as the difference in policy making of certain subjects like General Surgery and Medicine. Inter-professional collaboration is necessary between the two extremes. New aspects, skills, and attributes are required to be taught. Patient rights, simulations, technology, and innovation coupled with academic freedom be given due share in the curriculum along with character building and reintegration into the community. The use of mobile applications should be boosted for easier learning and for the sake of future generations, the curriculum should integrate these applications into it. As it will prevent students from curricular burnout.

## DISCUSSION

The present study has concluded that there is a need to incorporate some new subjects and it is supported by a study published in Pakistan Armed Forces Medical Journal.<sup>15</sup> Forensic Odontology is not the part of BDS curriculum in Pakistan which 9 respondents out of 13 (69%) feel necessary to be incorporated as a separate subject, especially after the 2005 earthquake.<sup>16</sup> The chances of future natural calamities and terrorism require the dental profession in Pakistan to be prepared for an expanded role.<sup>17</sup> 7 out of 13 respondents (54%) suggested that Pedodontics as separate subject in undergraduate curriculum. A similar study carried out in Chile, which is one of the most rapidly ageing country demonstrated that 37% of dental schools teach Geriatric Dentistry as a separate subject.<sup>18</sup> Gerodontology

is being taught in 86.2% of schools at the undergraduate level.<sup>19</sup> The need to understand and interpret radiographs at the undergraduate level is expanding exponentially in case of oral & maxillofacial surgical procedures. Thus, it was also suggested that radiology should be incorporated as soon as possible.<sup>20</sup> About 38% of respondents had the opinion that Aesthetic Dentistry be taught as separate subject, in this era of modernization. Implantology must be taught to undergraduate students as it is the age of rehabilitation (n=10).<sup>21</sup> There is vast overlapping and repetition of course content in different subjects and subjects like General Medicine and General Surgery which should not be taught to that significant level. However, there is a contradiction with study from Harvard School of Dental Medicine which is in favor to break down the wall between Medicine and Dentistry.<sup>22</sup> This study however advocates that even Medical Graduates should be taught the basic fundamentals of Dentistry.

Many advocated that curriculum should be designed for five years whereas only a small proportion (n=4) was satisfied with present four years' duration.<sup>23</sup> Worldwide, both patterns are in practice.<sup>24</sup> Curriculum should reflect local needs of the society. Problems of Nutrition and Water fluoridation must be addressed along with any epidemic as and when required must be taught.<sup>25</sup> A study in the US strengthens this finding that Dental Curriculum should be Community Oriented and cater all segments of the community.

Dental Students along with their teachers must be equipped with modern teaching methods and institutes must ensure varying teaching methodologies. This can improved cognitive, affective, and overall learning of students over a period of time.<sup>26</sup> Constant Feedback must be there as supported by all of other studies.<sup>27</sup> Learning objectives must be defined and should be attained at the end of the course.<sup>28</sup> Assessment drives learning and Curriculum must be designed keeping different assessment methods in mind. Education, simulated patients and phantom head can be utilized for Assessment.<sup>29</sup> Evaluation through Portfolios is an applicable method of assessment. Aptitude and Decision making must

also be assessed.

## CONCLUSION

The revised dental curriculum has many deficiencies in terms of few specialties like Geriatrics Dentistry, Forensic Dentistry, Family Dentistry, Dental Radiology, Aesthetic Dentistry being totally missed and has many other issues as that of alignment, distribution of contact hours and with course contents as well. The new curriculum should reflect the technological advancements relevant to Dentistry at par with International Standards. The Curriculum must be patient centered and inculcate the local needs of the community along with options of electives.

## LIMITATIONS

The study was carried out on the senior faculty of the dental colleges of the country, the study could have been extended to those Pakistani dentists working with foreign universities and colleges for their valuable input in our curriculum design. The study did not involve community or parents'/ student's perspectives.

## Future study

A comparison of different views of teaching faculty between public sector institutes and private sector institutes can lead to the emergence of some very interesting themes and can highlight the problems of curriculum faced in different contexts. Obtaining the perceptions of the students and community about curriculum issues and recommendations can also help immensely in further elaboration of the study.






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No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Usman Mehboob	Supervisor.	
3	Ayesha Naveed	Drafting of the work and revising it critically for important intellectual content.	
4	Saria Khalid	Drafting of work.	
5	Ayesha Haque	Data collection and analysis.	
6	Huma Farid	Critical evaluation and analysis of data.	