

Qualitative study regarding changes required in the contemporary undergraduate dental curriculum in Pakistan

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Abstract

Purpose: To explore the necessary changes which are required in the undergraduate dental curriculum in Pakistan.

Methods: The Qualitative interpretive interviews based study was done at ten teaching institutes across the four provinces of Pakistan, from February 2019 to July 2019. The study included faculty members who are at an executive position and can influence the policies at national level. The interviews were audio-taped, and a thematic analysis of transcript was done manually. The credibility was established through triangulation, and member checking of the interviews.

Results: Thirteen dental faculty members with background of Medical Education were interviewed. A total of 40 open codes were developed in the first cycle of the coding that was later merged under 13 codes in the second cycle. The second cycle codes were arranged under eight subthemes that were finally assembled under three themes. The three themes were changes in curriculum content, changes in learning and teaching strategies and formulation of curriculum. Changes in curriculum content included three subthemes namely; changes which were relevant to subjects, time and responsibility towards community. Changes in the teaching and learning strategies included two subthemes: improvement in teaching methodology and improvement in the assessment methodologies. The formulation of curriculum included three subthemes: curriculum as formal document, curricular designs and the informal curriculum.

Conclusion: A number of changes need to be incorporated in the present undergraduate dental curriculum in Pakistan. The dental curriculum in Pakistan needs changes in curriculum content, changes in teaching and learning strategy and the changes in the formulation of the curriculum. Different changes required in the undergraduate dental curriculum are the changes relevant to subjects, time allocation, teaching methodology, assessment methodology and it should cater to the local needs of the community. The formulation of curriculum requires it to be a formal document with portion of informal document and curricular designs. The curriculum amended according to the latest recommendations can be implemented appropriately with support from the regulatory bodies.

Keywords: Changes, Contemporary, Curriculum, Dental, Undergraduate.

Introduction

Curriculum, always serve as the foundation stone of any program and is infact an assortment of course content, the educational strategies, learning outcomes, educational environment, assessment, educational experiences and the individual students' learning style. In 21st century, "Integrated Curriculum" has gained to a large extent popularity in dental education and labors are through to design, put into practice and evaluate it [1]. However it is a great deal easier to move a cemetery than to alter the curriculum, taking all the stakeholders on board. Change has its expenses and implications, but it must nevertheless be undertaken. Integration of core curriculum is meant to make the instruction and learning behavior more meaningful; however, the construal of 'integration' varies in different institutions and among the individuals [2]. The need for re-evaluation of set of courses is to make students capable enough to collaborate and commune with other medical professionals on condition of an effective patient care. This is also a sour fact that practicing dental professionals experience moderately little awareness regarding different innovation in their field as revealed by recurrent studies, which demand effective instructive interventions to formulate a consensus urbanized curriculum. However the curriculum in any part of the globe is often contested and challenging and curricular change is lot more than the mere amalgamation of curriculum. Contemporary Dental Education believe that curriculum should accomplish a "symbiosis" with the health services and community in which the students will ultimately serve [3].

The slender approach towards the Dental Education has dirtied the Oral Health Care System. Call for fundamental reforms in dental education were ended twice in the last century as well by the American Dental Education Association's Commission on vary and Innovation in Dental Education which emphasized on the need for revised curriculum in accordance with the international standards of World Federation for Medical Education (WFME) and Liaison Committee on Medical Education (LCME) [4]. The unevenness between skills and competencies is everywhere in the dental profession, whereas in true spirit, the curriculum of dentistry needs to deal with the local needs. There are different model and conceptual frameworks which are developed by health professional educationists, based upon their personal likeness coupled with learning and teaching theory which establish a relationship of factors that must be addressed for perfection of the curriculum. The various studies conducted in diverse parts of the globe have highlighted the important reason for reforms in the local curriculum [5]. AMEE Guide 21 explains that the key to a successful curriculum is that teachers exchange in sequence regarding what is being taught and to organize this so as to reflect the overall goals of the institution. In the recent time with all the technological advancements in health professions education, medical and dental care professionals have raised apprehension that the curriculum need to be trimmed to the

local socio cultural framework and aligned with the International Standards. Being alien with the new literature and resistant to change, policy makers have barely recognized the need to fit in changes into existing dental curriculum [6]. In Pakistan, dental curricular reforms are still in the age of infancy and the last revised undergraduate dental curriculum of 2003 is still being followed, which had negligible depiction from qualified medical educationists. Therefore we planned a study to include members of dental faculty who are on an executive position to sway the policy at national level with background of medical/dental education from across all the four provinces of our country Pakistan for their valuable contribution.

Methods

A qualitative semi structured interview based study was done at different institutes of Pakistan from February 2019- July 2019. It was described based on the reporting guideline of qualitative study, COREQ 32-item checklist [7].

Research team and reflexivity

All interviews were conducted by the corresponding author, GM (BDS, MPH, MHPE). GM is titled with MHPE in health profession education, MPH in community dentistry, and BDS in dentistry. UM is titled with Doctor of health professions education, MPH in community medicine, and MBBS in medicine and surgery. RY is titled with Masters in Health Professions Education and is Pursuing Doctorate in Health Professions Education. RAK is titled with the Master's Degree in the field of Medical Education from the University of Glasgow and is also currently pursuing Doctorate Degree in Health Professions Education in Maastricht University. Three authors were male whereas one female. GM is Assistant Professor concurrent with Assistant Director, UM is Associate Professor, whereas RY and RAK are Professors. All four were trained for health professions education. The credibility was ensured by spending maximum time at the inquiry site, and first author provided time to the participants to identify salient features of context, problem and explained the purpose of interviews. A meeting was conducted prior to interview participants and time was booked for interview. Participants were given the details of the authors and reasons for selecting the participants to determine their perceptions for the recommendations in the curriculum. A detail of the research project that was conducted for partial fulfillment of training was also provided to them.

Study Design

Semi-Structured Interviews and grounded theory analysis under interpretative assumptions were combined to construct a compatible research methodology[8]. Interview questions were developed followed by ensuring credibility (validity). A total of thirteen participants were included in the study, one each from KMU, Riphah International, Fauji Foundation,

IMDC, UOL, DUHS, BUMHS and two each from KCD, IIDC and AFID, thereby representation of one participant each from Balochistan and Sindh, three each from KPK and Federal Capital while five from the province of Punjab. Information rich cases through purposeful sampling were selected for a thick description from a wide variety of sources. Study setting was the workplace where the participants were working and interview time was scheduled accordingly at their feasibility. An introduction to the study along with the questionnaire was sent via email to all participants explaining the purpose of the research project that was conducted for partial fulfillment of training and for the need analysis of revision of the curriculum. The first author booked time for face-to-face interviews and telephonic interviews. Thirteen senior faculty members from basic and clinical dentistry, with background in health professional education were selected. These participants were working as professors, associate professors or assistant professors in their respective departments (Table 1). All participants approached co-operated for interviews and there were no drop outs. Interviews were arranged in the offices of participants as a single session. Theoretical sampling was based on analyses of collected data from previous interviews that guided the authors for future data collection and sample size was not fixed. The process of data collection was stopped when theoretical saturation was achieved [9]. All raw data, audiotaped interviews and interview transcriptions were sent to the participants for the members checking, confirmation of accuracy and credibility.

The Pakistan Medical Commission (PMC) curriculum for BDS currently followed in dental institutes was discussed for the betterment purpose. Questions for interview were based on literature review and were sent to three experts in dental education with experience of more than 05 years of teaching in undergraduate level. A pilot interview was done with a faculty member at university of the first author and finally six open-ended questions were selected. Interviews were completed in a single session and were not repeated. Two sources were used to audiotape the interviews, and measures including keeping the mobile phones turned off and putting of signboard mentioning Interview in progress, kindly ensure pin drop silence were taken to avoid background sounds and interruptions. Field notes were taken during the session. The time estimated for interview was around half an hour.

Analysis and findings

Transcriptions were checked by UM having expertise in medical education and data were coded by GM and UM who reviewed and discussed the results. A total of 40 codes were developed in the first cycle of coding. As a key process of grounded theory analysis, coding began early after the first interview and open coding was done by categorizing data. Second cycle of coding was done to relate three categories of changes in course content, changes in teaching and learning strategies and formulation of curriculum to subcategories. A total of 13 codes emerged in the second cycle of

coding. Finally by selective coding, core category was recognized as Changes required in the contemporary dental curriculum. Individual transcripts were then read line by line; salient features related to research objectives and research questions were identified and chunks of the text were labeled by creation of codes and saved in storage area of nodes. A total of 40 codes from data were collected that were merged together to make a total of 13 codes. Categories were created by bringing several codes together. Three themes for the changes required in the contemporary dental curriculum in Pakistan were derived based on the need analysis model. Sub-themes derived from collected data were arranged under the themes (Fig. 1). Data analysis of transcribed interviews was done manually though both of the researchers were trained for relevant software use. Attribute codes were given to all the participants at first. Additional information suggested by participants after participants' checking was incorporated in the final report.

Quality Assurance: The manuscript was described based on consolidated criteria for reporting qualitative research (COREQ). Data triangulation from audio taped interviews was taken. Raw material was saved for future reference and audit trial. All participants reviewed interview transcripts and any additional information if recommended was incorporated in the final report. Participants from a variety of clinical and basic sciences departments were selected through purposive sampling to maximize the collected information, and we leave the transferability of the study findings to the reader's judgement as the context may vary [9].

Ethical approval: Issuance of ethical approval from Ethical Review Committee of University was obtained IRB: Riphah/ERC/19/0338. (Informed consent form of participants is attached as supplementary material).

Results

A total number of thirteen participants were interviewed, which took about 100 plus hours of the transcription time, thereby making the total word count up of 40,096 of all the interviews. Individual transcripts be read line by line and salient features which were related to the study objectives and research question were branded and chunk of the transcript was labeled by creation of codes and were saved in the storage area of the nodes. Quotations from the participants to illustrate the themes were identified by attribute codes (Tables 2 – 4). Collected data interpret consistency in findings and interpretations of both major and minor themes. The major theme “Changes required in Course Content” showed those attributes of the curriculum relevant to subjects and changes relevant to time (Table 2). The theme “Changes in Teaching and Learning Strategies” represented improvement in teaching methodology and improvement in assessment methods (Table 3). The third major theme “Formulation of Curriculum” stressed on the

formal documentation of the curriculum, role of informal curriculum, curricular designs and responsibility towards community (Table 4).

Changes required in curriculum content included changes relevant to subjects and changes relevant to time duration. Changes in teaching and learning strategies included teaching methodologies and methods of assessment. Formulation of Curriculum highlighted the need to draft the curriculum as formal document, the role of informal curriculum, application of various curricular designs and responsibility towards community.

Discussion

The purpose of this qualitative research was to highlight the neglected part of required reforms in the decades old dental curriculum of Pakistan. The curriculum developers have some disagreements with regulatory body Pakistan Medical Commission, the then Pakistan Medical and Dental Council, that it has not paid efforts for updating dental curriculum. In the present study we have done needs analysis to understand the insight of the dental faculty of different dental institutes of Pakistan across all the provinces for discussion at length on required curricular reforms. The current study suggested that many new subjects like Geriatric Dentistry, Forensic Dentistry, Implantology and Aesthetic Dentistry need to be incorporated as a formal curriculum that may be introduced gradually and progressively. This is mainly because the practicing dentists are aware of the emerging fields whereas the curriculum was designed decades earlier. It is also emphasized earlier that after the 2005 earthquake, Pakistan needs to give importance to Forensic Dentistry. Presently paedodontics is taught as piecemeal attached with Conservative Dentistry so the students are not fully sensitized about this specialization, which is a separate discipline. A total of nine out of thirteen participants believe that at hand is extensive overlap of the substance in different subjects. There are some subjects like the General Medicine and the General Surgery with no need to be taught to that momentous level to undergraduate students of dentistry. The same amount of course content is being taught to MBBS students who of course have to treat the whole human body. However, the finding contradict with a study from the Harvard School of Dental Medicine recommending break down of the wall between that of Medicine and the Dentistry[10].

The study finished with changeable opinion of faculty members of dentistry with regards to the time duration of the entire course that is many advocated that the curriculum need to be designed for a period of five years although a little proportion(n=4) was also contended with the present four years duration. The different studies recommended it as a guideline that can be used according to national healthcare facilities and ground culture. What is needed is that,

successful implementation of curriculum demands faculty's familiarity with the content, acceptability and readiness to adopt the changing needs of the present day students. Our findings are in consistent with the literature that the curriculum needs to be flexible enough to incorporate the ever changing dynamics of the community[11]. This however requires the input of community practitioner in designing of the curriculum.

Teaching the course content in modular fashion was considered more applicable for implementation because integration of whole curriculum at once may result in several problems and resource constraints on an institution, specially an institute in the rural areas with dearth of faculty and technological advancements. Participants agreed effective implementation of the curriculum in first year as a pilot project that can be adopted in another succeeding year after considering the results and requirements. It suggests the need that the curriculum be tailored off according to the socio cultural needs of the institution coupled with the use of a wide array of teaching methods to educate dentistry from format of whole group lectures to that of small group discussions, role plays and simulations[12]. The limited knowledge about different curricular designs and representation of students in curriculum committees was revealed, however evaluation studies exposed a positive attitude of faculty with the curriculum and reported increase in knowledge after teaching sessions[13].

Most of the errors in present curriculum cannot be attributed to institutional negligence. Current study revealed administrative issues at many levels of academia. Miscommunication between the faculty and institution and widening gap of the institution with the regulatory body is reason for delay in curricular reforms. Appealing environment for students also produce appealing environment for patients and their attendants. The participants of the study submitted that current culture of imposing the curriculum is quite odd because everyone is not used to it, so once new reforms are introduced, the better will be the output (future dentists) of the institution [14]. Documentation of formal curriculum with a significant portion of informal curriculum is very vital for all professionals to excel in their career [15].

Some of the interpretations of the study were limited by time constraints. Transferability is our main limitation. As PMC is considered the main governing body for choice about curriculum in the dental education and key representatives from it were also not approached thereby further research for execution of the curriculum in this milieu may help finishing the picture. The participants in this study considered need for new curriculum being the dire need of time so as to introduce new postgraduate specialties in the future. Once true intentions of implementing reforms are known, resistance from the senior faculty with traditional methods of teaching will also go down as the technology is an opportunity to boost quality dental care. The necessary changes in curriculum need to be made according to local culture

and literacy level. The contemporary curriculum can be implemented if the regulatory body and dental institutions and hospitals join hands and adopt the required changes in undergraduate curriculum.

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Author Contributions

Conceptualization: GS, UM, RY, RAK

Data curation: GS.

Formal analysis: GS, UM.

Methodology: GS, UM,RY

Project administration: GS, UM.

Visualization: GS, UM.

Writing – original draft: GS, UM.

Writing – review & editing: GS, UM,RY,RAK.

Conflict of interest

No conflict of interest in any form relevant to the current article was ever reported.

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Ethics Review Committee
ISLAMIC INTERNATIONAL MEDICAL COLLEGE
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Appl. # Riphah/ERC/19/0338
February, 11 2019

Dr. Gul Muhammad Shaikh
Department of Medical Education (RARE)
Islamic International Medical College

Subject: Approval for research proposal entitled "Change required for the contemporary dental curriculum." "Ref # Riphah/ IIMC/ERC/19/0316"

Dear Dr

On behalf of Ethics Review Committee (ERC) this is my privilege to inform you that ERC has reviewed your research proposal entitled "**CHANGE REQUIRED FOR THE CONTEMPORARY DENTAL CURRICULUM.**" "Committee recommends that the proposal may be commenced with immediate effect as proposed.

Please note that this approval is for a period of one year only from the date of issuance of this letter and will require fresh approval if the study needs to be extended or its commencement is delayed beyond the stipulated period.

In case of a query regarding the observations made by ERC, kindly feel free to contact the undersigned at shabana.ali@riphah.edu.pk

With kind regards

Sincerely

ERC
IIMC
Dr. Shabana Ali Mohammad
Secretary, ERC
Islamic International Medical College

Cc: Prof. Dr. Muhammad Ayaz Bhatti, Chairman, ERC

Questionnaire for interview

I am Dr. Gul Muhammad, student of MHPE program at Riphah International University. I am working on my research project "Changes required in the Contemporary Dental Curriculum" in undergraduate dental education in Pakistan. This interview questionnaire is a part of my research for the MHPE Program. I will collect data by recording interviews and analysis after wards. I assure that your personal information will remain confidential and will be used only for educational purposes. Your cooperation in this regard will be highly appreciable.

Research Question

What are changes required in contemporary dental curriculum at the undergraduate level in Pakistan?

Interview Questions

1. Which reforms do you think are required for the upcoming dental curriculum? Probe: <ul style="list-style-type: none">• Are you aware that PMDC/PMC is planning to draft new dental curriculum?
2. What are the resources required for its implementation? Probe: <ul style="list-style-type: none">• Do you look after Inspection Committee's visits at your institute?• Are you in process of addressing faculty dearth and other infrastructure needs at your place?
3. What are the obstacles in drafting down and implementing this curriculum? Probe: <ul style="list-style-type: none">• What challenges do you expect in regard of teachers' training?• To what extent do you think will faculty cooperate?
4. How can you ensure timely implication of the proposed changes? Probe: <ul style="list-style-type: none">• As new curriculum will incorporate different new teaching and learning strategies, do you think introducing the new curriculum from the new batch being inducted 1st year will be a good idea?
5. Do you consider that there is need to increase/decrease the number of subjects or the content? Probe: <ul style="list-style-type: none">• What would be the response of our students and administrative staff when these changes will take place?
6. What are your views about the duration and nomenclature of the curriculum? Probe: <ul style="list-style-type: none">• Is our socio cultural environment designed to recognize 5 years DDS program at par with the western countries?

Principal Investigator's Details

Sr. No	Category	Description
1.	Name of interviewer	Gul Muhammad
2.	Gender	Male
3.	Credentials	BDS, MPH, MHPE
4.	Occupation at the time of study	Faculty Health Professions Education and Quality Enhancement Cell, CMH Lahore Medical College.
5.	Experience of the researcher	Researcher had experience of Masters in Public Health and Masters in Health Professional Education. Researcher also got training of qualitative study and NVivo software workshop for the research project.

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Table # 1. Demographics of the Respondents

Respondents	Age	Gender	Teaching experience	Credentials	Institute
01	33 yrs	Male	04 yrs	BDS, Ph.D (Medical Education)	Khyber Medical University
02	51 yrs	Male	16 yrs	BDS, FCPS, CHPE	Khyber College of Dentistry
03	54 yrs	Male	18 yrs	BDS, FCPS, MHPE (Thesis Submitted)	Khyber College of Dentistry
04	56 yrs	Male	23 yrs	BDS, FCPS, CHPE	Armed Forces Institute of Dentistry
05	54 yrs	Male	20 yrs	BDS, FCPS, MCPS (HPE)	Armed Forces Institute of Dentistry
06	56 yrs	Female	23 yrs	BDS, MHPE, Ph.D Scholar (Medical Education)	Riphah International University
07	56 yrs	Female	17 yrs	BDS, FCPS, MHPE Student	Islamic International Dental College
08	40 yrs	Female	09 yrs	BDS, M.Sc, MHPE Student	Fauji Foundation
09	55 yrs	Male	18 yrs	BDS, FCPS, MHPE	Islamic International Dental College
10	49 yrs	Male	18 yrs	BDS, FCPS, MHPE	Islamabad Medical and Dental College
11	57 yrs	Male	23 yrs	BDS, FDS, CHPE, MME Student	University of Lahore
12	55 yrs	Male	19 yrs	BDS, MCPS, FCPS, CHPE	Dow University of Health Sciences
13	40 yrs	Male	08 yrs	BDS, MPH, MHPE	Bolan University of Medical and Health Sciences

Table 2: Different Themes as well as Sub-themes identified for changes which are required in the Curriculum of Dentistry

S. NO	THEMES	SUBTHEMES
1	CHANGE IN THE CURRICULUM CONTENT	<ul style="list-style-type: none"> • Changes which are relevant to subjects • Changes which are relevant to time
2	CHANGE IN THE LEARNING AND TEACHING STRATEGIES	<ul style="list-style-type: none"> • Improvement in the teaching methodology • Improvement in the assessment methodology
3	FORMULATION OF THE CURRICULUM	<ul style="list-style-type: none"> • Curriculum as the formal document • Informal curriculum • Various Curricular designs • Responsibilities towards the community

Table 3. Summary of major theme changes required in the curricular content and subthemes that emerged from analysis of faculty interviews along with representative quotations from interview transcripts				
Sub-Themes	Description	Frequency	References	Representative Quotes
Changes relevant to subjects	Some subjects need to be added while other trimmed to the appropriate weight age.	9	31	<i>M,R#3: "I think it is the right time now, if we want our graduates to come at par with the developed world".</i>
Changes relevant to time	Time required for learning different competencies varies from student to student and every subject cannot be allocated equal number of credit hours.	10	26	<i>M,R#12: "There is a big requirement of looking into the credit hours and their distribution".</i>

Table 4. Summary of major theme changes required in teaching and learning strategies and sub-themes that emerged from analysis of faculty interviews along with representative quotations from interview transcripts					
Sub-Themes	Description	Frequency	References	Representative Quotes	
Improvement in teaching methodology	A lot of faculty development activities required to upgrade faculty	10	42	<p><i>M,R#5: "Weaknesses It feels shy to learn from young medical educationists, who are actually well trained with new requirements of the modern day student.</i></p> <p><i>are the training of the trainers first; we must have the trained person who will train the trainers".</i></p>	
Improvement Assessment Methodology	Marks and Grades are not the ultimate output of the future dentists.	9	27	<p><i>F,R#8: " Multi Source Assessment is the emerging need of time for future generation."</i></p>	

Table 5. Summary of major theme Formulation of Curriculum and subthemes that emerged from analysis of faculty interviews along with representative quotations from interview transcripts

Sub-Themes	Description	Frequency	References	Representative Quotes
Curriculum as a formal document	Until curriculum is conducted in a structured way and implemented officially, it cannot be effective.	9	29	M,R#5: <i>“First lay down the Oral Health Policy of the country, take all stakeholders on board and then talk about the new Curriculum.”</i>
Informal curriculum	Topic not taught as an explicit component of the curriculum	10	27	F,R#7: <i>“In informal way they are trained work place based ethics as for example how to behave with patients and their attendants, and how to lead the group activity.”</i>
Curricular Designs	There is dire need to debate different models and introduce a uniform consensus built curriculum.	10	19	F,R#8 <i>“Imagine, we are still debating on integration and modular system...what a pity! Need analysis need to be carried out and initiative needs to be taken at the level of our national regulatory authority and every university needs to tailor it according to their needs, their facilities, and whatever is happening over there. One curriculum does not fit all set ups.”</i>
Responsibility towards Community	Faculty and authorities need to know its applicability to local socio cultural context.	8	18	M,R#11: <i>“Yes, Curriculum must be flexible enough to incorporate the sudden outbreaks in the community because this is the justification for which they have come.”</i>

