

DENTAL EDUCATION

STUDENTS AND RECENT GRADUATES PERSPECTIVE OF DENTAL CURRICULUM AT KING SAUD UNIVERSITY, RIYADH - SAUDI ARABIA

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ABSTRACT

The aim of this study was to evaluate the undergraduate dental curriculum taught at King Saud University from students and recent graduates perspective. A questionnaire was developed in english and distributed to males and females of the 5th year students, interns and recent graduates of the college during the last five years. Two hundred fifty one questionnaires were answered giving a response rate of (66.05%). About (66.77%) of the participants described the perceived theoretical knowledge to be a sufficient base for general practice, whereas more clinical practice was needed in implantology (77.3%), endodontics (74.1%), oral surgery (64%) and fixed prosthodontics (61%). The most frequently encountered problems were student-instructor relationship (43.08%) and finding and / or communicating with patients (30.08%). In conclusion, the opinion of student in the evaluation process is important being the primary beneficiary of the curriculum therefore, our recommendation is that the curriculum evaluation committee of the dental college should consider taking the student's point of view when updating the curriculum and should execute more frequent curriculum evaluation at least every five years.

Key words: Dental Curriculum, Evaluation, Students, Saudi Arabia, Questionnaire

INTRODUCTION

The Kingdom of Saudi Arabia is a developing country with a population of 24,293,844¹. The demands of the Saudi population for dental care are increasing due to increase in incidence of dental diseases in addition to improved awareness of oral health². This increase in demands as well as the plan to provide continuity of treatment, which is important for the prevention of dental disease, had led to the establishment of the College of Dentistry at King Saud University (KSU) in Riyadh 1975. The College of Dentistry is the first dental school in Saudi Arabia as well as in the gulf area². The first group of students consisted of seven males who graduated in 1982. In year 2005 the

total number of graduates both males and females was 97³.

At the commencement of the College, the curricula development was done by the College Council which was composed of the Dean, Vice Dean, Department Chairpersons and Clinical Directors. However, it was based on external expertise from United States of America, United Kingdom, Germany and France. Therefore, the curriculum taught at KSU is comparable to its counterparts in some foreign countries².

The first curriculum was based on credit hours system, with 199 points or credit hours being the prerequisite to graduate as dental bachelor degree holder. Out of these 199 hours; 18 hours were devoted to

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dental electives in addition to 10 hours for free electives⁴". In 1993, the College implemented the contact hours system or yearly system with 194 compulsory hours that is equal to six years in addition to the internship year, no electives counted³.

As curricula are formulated based on the society characteristics which they serve such as; infrastructure, financial resources, workforce issues, political and legal consideration, cultural diversity and demography, no two curricula can be the same. However, any dental curriculum should bear the core values, which is applicable anywhere, such as continuous learning, patient-centred education, preventive approach to disease and evidence based decisions and therapy¹.

Curricula should not be static. The changes in disease spectrum, patient expectations, rapid developments in dental technology and improved understanding of biological mechanisms of diseases necessitate curriculum remodelling that will accommodate such changes accordingly¹. Furthermore, the successful outcome of an updated curriculum is a graduate who is competent to provide quality dental care to public members in general practice settings¹. Consequently, curricular modifications are frequently required in dental schools through reviewing and evaluation¹.

The composition of committees responsible for reviewing and evaluating vary from university to university according to its evaluating systems. In Finland, Helsinki University, the committee consisted of senior lecturers from all dental disciplines in addition to students' representatives to ensure competency⁹, whereas, in the Groningen Dental School, Netherlands, the students start the evaluation process by providing their recommendations, which then is discussed and approved by the faculty council. In this type of evaluation program the students perform internal continuous evaluation every trimester, in addition to the external evaluation every five years⁸. In some universities such as Iceland Dental School, the evaluation of the curriculum depends on students. The students' curriculum committee is formulated to provide information and recommendations to the Deans.

The students evaluation of their education is a significant factor towards the success of their training program. It has many implications for the accomplishment of new teaching methods, staff development,

study load, acceptability, quality of examinations and eventually for the future of dental schools¹⁰

To the best of our knowledge, students and recent graduates evaluation of the curriculum has not been undertaken at the College of Dentistry, King Saud University. Therefore, the objective of this paper was to evaluate the undergraduate curriculum from students and recent graduates perspective as they are the primary beneficiary of the curriculum.

MATERIALS AND METHODS

A questionnaire written in english was developed and distributed to the male and female 5th year students, interns and general practitioners working at KSU in addition to other general practitioners graduated from KSU during the past five years. These general practitioners were working at the Ministry of Health, National Guard, in Military, Security Forces, in Al-Yammama, King Faisal hospitals and at Riyadh complex centre.

The questionnaire was designed to assess the perceived theoretical and clinical knowledge in each of the main topics taught over the academic years. In addition, a notation of the participants perception to the total gain in each subject was evaluated. The idea of the presence of dental elective subjects was also introduced. The questionnaire was based on the curriculum evaluation used by French dental schools¹. Three hundred and eighty questionnaires were distributed.

Both open-ended and structured questions were used. The questionnaire contained 19 questions, where the first part consisted of the demographic data including information about gender and current professional/ educational status. The second part covered subjects of dental curriculum given at KSU and consisted of 10 multiple-choice questions. The non-curricular aspects of dental education process were covered by another six multiple-choice questions.

The questionnaire presented some other aspects aside from the curriculum that would influence the students clinical performance such as laboratory work and period for written examinations. A semantic differential continuous scale was used permitting value judgment on a continuous scale between two poles, the score ranged from 1 (lowest level of knowledge) to 10

(highest level)⁵. The collected data was entered and analysed using statistical package for social science (SPSS 10.0) using descriptive statistics.

RESULTS

Two hundred and fifty one questionnaires were answered with a response rate of (66.05%). Ninety four (43.7%) respondents were male and 121 (56.3%) were female. Fifth year student constituted the majority of the participant 118 (47.4%), the rest were distributed almost equally between different other participants.

Most of the participants (85.4%) completed their undergraduate dental education in the allocated six years period. Other participants who did not finish their dental education in the allocated time attributed that to personal reasons (56.4%), difficulties in clinical part (25.6%) or difficulties in theoretical part (17.9%).

Eighty three percent of the participants stated that their dental education was different from what they had expected, (44.6%) found it slightly more difficult than what they had expected. Thirty four percent of the students considered their undergraduate education to be very difficult and only (4%) found it less difficult than what was expected.

Fifty one percent of the participants have faced clinical problems that they felt unable to deal with; these problems comprised difficulties in finding and/or communicating with patients (30.08%),

Difficulties in clinical surgical procedures (12.2%) and difficulties in endodontic clinical procedures (14.6%). Forty three percent of participants reported that the most frequently encountered problem was student-teacher communication. (Table 1)

TABLE 1: PROBLEMS ENCOUNTERED BY PARTICIPANTS DURING THEIR COURSE OF DENTAL STUDY AND THEY WERE INCOMPETENT TO DEAL WITH.

Problem	Percentage
Student-instructor relationship	43.08%
Finding and/or communicating with patients	30.08%
Clinical Endodontics	14.60%
Clinical Oral Surgery	12.20%

TABLE 2: PARTICIPANTS OPINION ABOUT THE SUFFICIENCY OF PRECLINICAL TRAINING FOR SELECTED SUBJECTS

Subject	Insufficient Base	Sufficient Base
Orthodontics	49.40%	50.60%
Endodontics Fixed	65.50%	43.50%
Prosthodontics Removable	59.80%	40.20%
Prosthodontics	74.70%	25.30%
Pedodontics	86.20%	13.80%
Operative Dentistry	88.50%	11.50%

Sixty five percent of the participants considered their preclinical training to be a sufficient base to start clinical practice. Dental subjects that have preclinical courses and participants still feel they are inadequately prepared for clinical practice were orthodontics (50.6%), endodontics (43.5%), and fixed prosthodontics (40.20%). (Table 2)

Forty five percent of the participants felt that general surgery courses from medical school had no benefit in their clinical practice while (43%) felt it was slightly beneficial. For the E.N.T course 46.60% of participant felt it has slight benefit to their dental courses However, the Pharmacology subject was believed to be significantly beneficial in their clinical practice by only (29.6%) of the participants while 52.2% felt it has slight benefit. (Table 3)

When the participants were asked about their perceived knowledge for the theoretical and clinical aspects over the course of their dental study on a scale from 1 to 10, the lowest scores were for orthodontics in both theoretical and clinical (5.24 and 3.38) respectively. The highest scores were for operative dentistry both theoretically and clinically (8.28 and 8.64) respectively. Clinical pedodontics scored 8.18 out of 10. (Fig. 1)

Most of the participants considered the theoretical knowledge given to be a sufficient base for general dental practice. However, participants indicated that some subjects needed more clinical practice to provide them with better ability to work as independent general practitioners. These included endodontics (74.1%), orthodontics (67.7%), oral surgery (64.5%) and fixed prosthodontics (61%). In addition, the majority of par-

TABLE 3: PARTICIPANTS' OPINION ON THE BENEFIT OF MEDICAL COURSES TO THE CLINICAL DENTAL PRACTICE

Opinion	General surgery	E.N.T	Pharmacology	General Pathology	Internal medicine
NO benefit	45.80%	45.70%	18.20%	35.10%	41.60%
Slight benefit	43.00%	46.60%	52.20%	48.60%	45.70%
Significant benefit	11.20%	7.70%	29.60%	16.30%	12.70%

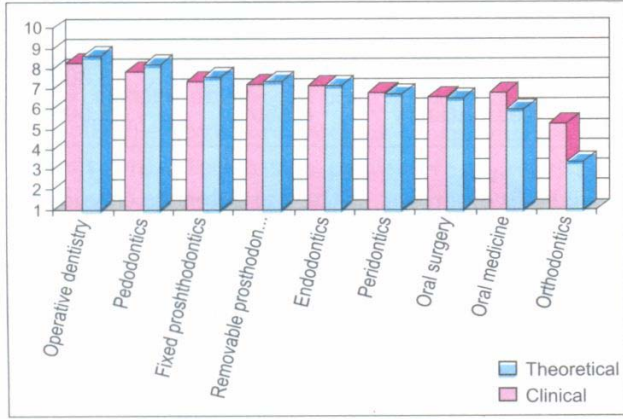


Fig 1. Mean of perceived theoretical and clinical knowledge in selected subjects rated from 1 to 10.

Participants reported that implantology subjects should be given more importance in theoretical (64.9%) and clinical practice (77.3%). (Fig 2)

Subjects that the participants considered should be as independent subjects instead of having these as part of other subjects included: implants (81.3%), esthetic dentistry (68.5%), geriatric dentistry (17.1%) and nutrition (10%). (Table 4)

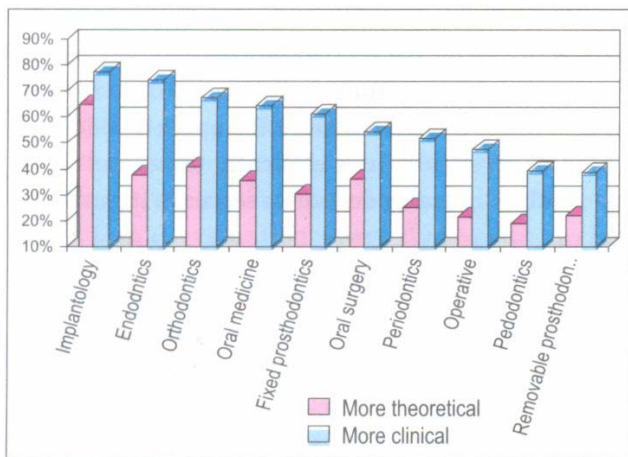


Fig 2. Subjects reported by participants that they need more theoretical or clinical knowledge.

TABLE 4: DENTAL SUBJECTS THAT SHOULD BE TAKEN AS SEPARATE COURSES AS ANTICIPATED BY PARTICIPANTS

Subject	Percentage
Implantology	81.30%
Esthetic dentistry	68.50%
Research methodology	42.60%
Sedation and pain management	42.20%
Communication skills	31.50%
Psychology	30.70%
Plastic maxillofacial surgery	30.30%
Ethics and dental laws	25.10%
Geriatric dentistry	17.10%
Nutrition	10%

The ideas proposed of implementing elective courses were highly recommended by the participants (84.9%). The Board preparation (i.e., learning about future options for student carrier) (49.4%) and more clinical practice in a chosen discipline (73.3%) were the most preferred electives.

Eighty-five percent of participants reported that written examinations given before or after clinical sessions do affect their performance in either the clinic or the examination itself. (Fig 3) When participants were asked how strongly it affects their performance in

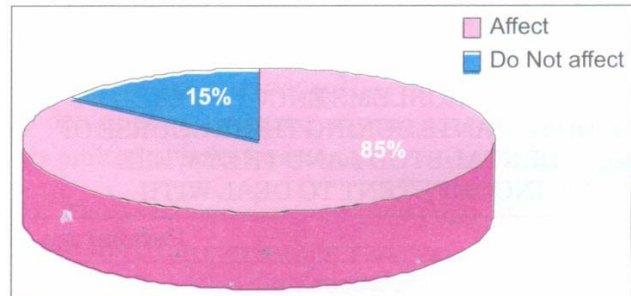


Fig 3. The effect of written examination given with clinical sessions on participant performance in examination and/or clinic.

TABLE 5: PARTICIPANTS PROPOSED SOLUTIONS FOR DIFFERENT DENTAL PROSTHODONTICS LABORATORY PROBLEMS

Solution proposed	Percentage
Leasing space to private laboratory	58.80%
Repeat laboratory work	27.90%
Participants suggestions	25.20%

either in clinical or examination itself, 56.6% indicated that it strongly affects their clinical performance.

The suggestion of a period of successive examinations without clinical obligation was preferred by (59.8%) of participants, where (57.6%) suggested two weeks period for examinations rather than one week only (42.4%).

Concerning the Dental College Prosthodontics Laboratory; the time frame and/or quality of work were found to negatively affect the vast majority of participants (91.1%). One of the solutions proposed in our questionnaire was how to improve the quality of lab work and 58.8% of the participants supported the leasing of lab space to a private lab, hiring more qualified lab personals and/or giving freedom to the participants to deal with private labs was suggested

Extracurricular activities were believed by (53.4%) of participants to lighten the academic atmosphere considerably, while (36.8%) believed that they have a slight effect. Only (38.6%) of participants interacted with the questionnaire, giving or discussing comments and suggestions which they think might be valuable in improving dental education process. Majority of comments were suggested by 5th year students (54.6%), followed by interns (33%). (Table 6) Finally (60.5% study 11

TABLE 6: PARTICIPANT INTERACTION WITH QUESTIONNAIRE SORTED BY GENDER

Gender/Status	Percentage
Female	52.3%
Male	47.7%
5th year student	54.6%
Intern	33%
General practitioner	12.4%

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participants reported that they would still choose dentistry as a career if they were given the choice to start over again.

DISCUSSION

The main objectives of any undergraduate curriculum are to provide the students with basic knowledge and training skills necessary for practicing general dentistry and to lay the groundwork for the development in advanced clinical training and postgraduate study¹¹.

Curriculum changes in dental education have been the subject of many investigations. Evaluation of dental students attitude towards many aspects of college courses is important. The students perception can be investigated with regard to students knowledge⁶, students satisfaction⁵, performance⁸ and students acquisition skills⁷. Students opinions on their education have been evaluated in Northern Europe¹¹. Other retrospective studies of dental curriculum in general practice have been conducted to evaluate the opinion of the general dental practitioners on their undergraduate education^{11,12}.

The response rate obtained in this study was (66.05%), which is comparable to that obtained in studies using questionnaire to investigate changes in undergraduate education^{5,11,12}. Lower response rates, with figures as low as 33%, have also been considered sufficient'. The sample size of our study is large compared to the Northern Europe and the French school studies and this is because we included the 5th year students (118), dental interns (68) and a group of general practitioners (63), while those in other studies were either students or general practitioners.

Although dentistry as a learning process was stated by the participants to be more difficult than what they have expected, slightly more difficult by 44.6% and strongly more difficult by 34.5%, eighty-five percent of the participants completed their dental study in the allocated six years period. This could be attributed to the fact that students get used to the dental college after they have gone through a very meticulous university entrance examination. Moreover, they had to pass the high school examination with a minimum graduation percentage of 95%. consequently only elite students are admitted in the dental college.

Fifty one percent of participants encountered problems, which they were not able to deal with. These problems included difficulties in communication with patients as well as finding and keeping suitable patients for clinical courses with a percentage of (30.05%). The most frequently encountered problem was student-instructor interaction (43.08%). These results reflect the status of teaching in our college where no undergraduate courses are given to educate or improve the students communication skills, in view of the fact that besides technical expertise, the success of dental care depends on the behavioural patterns of the student, the patient and the way they interact with each other. Since communication is involved in the process of care, in many ways it is a key concept of this interaction.

As patient satisfaction and quality care are closely related with the students positive attitudes and communicative skills, students need to focus on patients as individuals and have real communication with them by this way they may be able to solve the difficulties of keeping patients. Failure of dental patients to complete their treatment challenges the efficient use of human and clinic resources, expectations of improved patient's health, and the dentist's effective management of his patients. Accordingly, efforts should be made to refine present methods of patient screening and patient management as practiced by dental students and their preceptors. Communications skill courses and behaviour management courses should be carefully planned when updating the current curriculum.

Concerning courses that have preclinical laboratory training; sixty five percent of participants felt that preclinical training was a sufficient base to start clinical practice. However, some subjects were observed to be in need of more preclinical practice; such as endodontics (34.5%) and fixed prosthodontics (40.2%). As for endodontics courses, the possible explanation is that it is given as only one preclinical course and one clinical course before they start their final year. However, for fixed prosthodontics, students actually take two courses before they start their final year but it could be due to the high incidence of mishaps or possibility of complications with this specialty.

Perceived knowledge, as assessed by personal evaluation scale; ranged from 5.24 for theoretical orthodon-

tics to 8.28 for theoretical operative dentistry. Perceived clinical knowledge ranged from 3.38 for clinical orthodontics to 8.64 for clinical operative dentistry. These results are comparable to the French study⁵, where 3.6 were given for clinical orthodontics and 7.42 were given to clinical operative dentistry. Clinical pedodontics scored 6.22 in the French study, whereas it scored as high as 8.18 in the present study. The high scores for operative dentistry could be explained by the fact that it is a subject that has two years laboratory training and two more years as separate clinical training courses, so it is not unexpected that operative dentistry has the highest scores both in theoretical and clinical knowledge. Orthodontics on the other hand is given as one and half year with laboratory training only and no actual clinical exposure. For clinical pedodontics, the high score in our study could be due to the fact that pedodontics is given in a two and half years, two of them are purely focused on clinical practice.

Medical courses were perceived to have no benefit (35.1%-45.8%) to slight benefit (43%-48.6%) in the general dental practice. This could be due to the disorganization of these courses either in the contents being not focused on the dental aspects or faculty absence. Only the Pharmacology was seen to be significantly beneficial to the general dental practitioner by 30% of the participants. The reason might be due to the greater exposure of the dentist to drug prescription and/or drug interaction.

The ideas of dental electives were highly acknowledged by (84.9%) of the participants, because it gives the student the choice over his/her course of study. The proposed electives in the questionnaire were purely dental electives, the most approved elective was more dental practice in any chosen field preferred by the student (73.3%).

Written examinations that are scheduled before or after a clinical session were found to negatively affect the clinical performance or the written examination by (85.3%) of the participants. Fifty six percent of the participant stated that it strongly affects their clinical performance. As examinations present a stressful event for students, clinical duties should be kept minimum because it would affect the quality of dental care delivered for the patients, thus a suggestion was proposed to dedicate a period of time strictly for successive

written exams, freeing the students from any clinical obligation, the suggestion was approved by (59.8%) of participants. These results are in agreement with Al-Sudani¹³ study where it was reported that written examination has an adverse effect on student clinical performance in both quantity and quality of their work.

Operating a Contact hours (yearly) system in our school originates this problem only during midterm examination period where they still have lectures and clinical session running. Consequently they have to perform their mid term examination before or after the clinical sessions which result in complete exhaustion and inability to work in the clinic. Nevertheless, they do not encounter this problem during their end of year examination because they have two weeks allocated for examination without clinical session. This problem should be taken into consideration when developing the mid term examination schedule by both the course directors and administration.

Ninety one percent of participants concluded that the time frame and quality of laboratory work negatively affect their clinical performance. Time frame for the laboratory ranges from one week to ten days for some cases of removable and/or fixed prosthodontics. The great work load on laboratory technicians lead to poorer quality of the finished work that might necessitate repeating some of both clinical and laboratory steps wasting yet more time for the patient and student. Many solutions were proposed to help solve this problem. Fifty eight percent of the participant recommended renting the laboratory space in the college to a private laboratory that is known to be more efficient in time frame and quality of work. Other solutions included hiring more qualified laboratory technicians and giving freedom to students in dealing with private laboratory. About (90.2%) of participants indicated that extracurricular activities do lighten the academic atmosphere, and this should be taken into consideration in arranging more of these events.

Majority of interaction with the questionnaire came from 5th year students (54.6%) followed by (33%) from the interns who spent more time with the questionnaire, commented, discussed and suggested ideas that could positively reinforce the dental education. This is because they are freshly exposed to the curricu-

lum and still passing through the system and facing some difficulties, therefore, this emphasizes the fact that frequent curriculum evaluation from student's perspective should be conducted regularly.

Despite all the reported problems and difficulties faced during the dental education about (60%) of participants would still choose dentistry as a career if they were given the chance to start over again. This could be justified by the fact that most of the high school graduate would like to be enrolled in the medical field as either medical doctor or dentist. Even though the medical field with its long years of study in addition to the nature of work, students decide to embark on a dental career with the aim of acquiring professional skills in the medical field but with an acceptable compromise of time.

Students' and fresh graduates' feedback is of utmost value because they experience the curriculum first hand. Their comments could provide baseline data about the need to modify current curriculum. Curriculum evaluation and modification is a very important exercise that should be executed on regular intervals to accompany changes in society.

CONCLUSIONS

Current curriculum was perceived by students to have certain limited deficiencies in quantity and quality in some components as well as the conditions affecting the learning process. The students had demonstrated good ability to pinpoint their problems as well their solutions.

REFERENCES

- 1 Statistics book. World Fact book and the library of Congress Country studies. The U.S. government's complete geographical hand book 2005: Photius Coutsoukis
- 2 Seraj A., Ghanem H., Ford M., Jamjoom G. *The development of dental education in the kingdom of Saudi Arabia*. Br dent J. 1983; 23;155 (2): 65-66.
- 3 King Saud University, College of Dentistry, College statistics, Kingdom of Saudi Arabia. 2005.
- 4 King Saud University, College of Dentistry, Kingdom of Saudi Arabia, Dental curriculum 1977.
- 5 Farge P., Virieux J., Doury J., Student satisfaction with curriculum modifications in a French dental school. Eur J Dent Edu 2000. 4: 3: 112-117.
- 6 Boyd M. Curriculum focus: traditional dental education confronts the new biology an social responsibility. J Dent Edu 1993; 57:340-342.

- 7 Reed M., Claffey N., Allen B., Beeley J., Beemsterboer P., Carrassi A., Filippi E., Licari F., Munck C., Nagy G., Abou Rass M., Sanz M., Sekiguchi E., Townsend G. Towards global convergence of education, training, quality, outcome and assessment. *J Dent Educ* 2002; 6: 3: 78-83
- 8 Rohlin M. , Rob M. Schaub, Holbrook P. , Leibur E. , Levy G., Roubalikova L., Nilner M., Roger-Leroi R., Danner G., Iseri H., Feldman C. Continuous quality improvement. *Eur J Dent Educ* 2002; 6: 3: 67-77
- 9 Kerosuo E. , Ruotoistenmaki J., Murtomaa H. , Report on the development of a new dental curriculum at Helsinki. *Dent Educ* 2001; 5:1: 23-29
- 10 Green J. Science and the shifting paradigm in dental education. *J Dent Educ* 1997;61:407-411
- 11 Widstrom E., Hindbeck H., Haugejorden O., Martinsson T., Nilsson B. A retrospective study on the relevance of the dental curriculum in general practice. *Swed Dent J* 1989; 11(3):127133
- 12 Meadows H., Ireland R., Bligh J. A survey examining the attitudes of general dental practitioners toward changes in undergraduate dental education. *British Dent J* 1998; 184: 401-404
- 13 Al-Sudani D. The evaluation of students clinical/laboratory performance during the examination weeks. *Personal Communication*. 2006.