



## IDENTIFYING AND ASSESSING COMPETENCIES FOR AN ENTRY LEVEL GRADUATE IN THE FACULTY OF DENTISTRY, DAMASCUS UNIVERSITY: APPROACHES, LESSONS LEARNED AND EVIDENCE PROVIDED

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### ABSTRACT

The curriculum in the Faculty of Dentistry, Damascus University is traditional. It does not develop intellectual, transferable and general skills such as critical thinking, problem solving and communication. Concern has been recently raised about competency of students in the faculty. It is important to define the new dental curriculum in terms of competences required at an entry level graduate. Several approaches and studies were undertaken to identify essential needed competencies in the areas of dentistry before graduation. All information and data collected were organized to form a list of 37 competencies which represents the essential knowledge, skills and attitudes needed in ethical and behavioral, personal, professional and clinical domains. It was utilized to assess the attitudes of graduates towards current curriculum delivered. A questionnaire was developed to assess the attitude of graduates towards current curriculum delivered. Findings indicated lack of some essential skills which were not well considered in the current curriculum. There is a need to reform the curriculum in order to produce a competent, socially sensitive practitioner who adheres to the highest standards of professionalism and can effectively improve oral health care in society.

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### INTRODUCTION

The curriculum in the Faculty of Dentistry, Damascus University is traditional, hospital-based and disease-oriented. It provides students with all related theoretical knowledge and clinical skills. However, it does not develop other important intellectual, transferable and general skills such as critical thinking, problem solving and communication. Previous research on dental caries did not indicate a decrease in the prevalence of the disease, despite an enormous increase in the number of dentists distributed in Syria (1). Recent study investigating Syrian children attending nursery schools, has found that 61% of children examined had dental caries, 15% had restorations and 6% had missing teeth (2). The varying health needs in Syria, necessitate the development of new curriculum in which community health needs, socio-cultural aspects of health and disease can be emphasised.

Concern has recently been raised about competency of students in the faculty. Our academic members aim to reform the curriculum in order to produce graduates who are committed to personal development and are able to practice evidence-based dentistry in the community. They recently addressed the need to focus on learning outcomes that student should achieve at the end of the course. Therefore, it is important to define the new dental curriculum in terms of

competences required at an entry level graduate (3) from Damascus University in terms of knowledge, attitudes and skills.

#### Global Trend

To identify a preliminary list of essential competencies in the areas of dentistry, dental textbooks, journals and databases in the last ten years, were searched. This was so helpful to be familiar with new trends in dentistry and to identify changes in the concept and techniques being taught to students (4). Considerable changes were noticed in restorative dentistry in terms of esthetic dentistry (such as veneers and teeth whitening), evidence-based dentistry and minimal invasive dentistry.

Major and supporting competencies of European dentists identified by International Association of Dental Education IADT were also studied (5). This was so helpful to identify the profile of Syrian dentist with reference to that of European graduates.

#### Stakeholder Meeting

A stakeholders' meeting including students, graduates, faculty members, employers and participants representing professional organizations and associations, was organized to identify areas requiring special attention in early years of practice and

discuss the process of educational reform in the Faculty of Dentistry.

students and graduates; and the ever-changing expectations of society for oral healthcare.

**Table 1** Findings of graduate attitudes towards current curriculum delivered.

Domain	Competency	Very good	Good	Fair	Poor	No response
		N(%)	N(%)	N(%)	N(%)	N(%)
Ethical/ personal	1. Ethical behavior.	78(40)	76 (39)	20(11)	11(6)	8(4)
	2.Caring attitude to patients.	75(40)	98(53)	11(6)	2(1)	0(0)
	3.Adherence to health and safety procedures	79(41)	87(45)	19(9)	3(2)	5(3)
	4.Adherence to infection control procedures	80(42)	77(39)	26(13)	5(3)	5(3)
	5.Communication with staff and patients	38(20)	101(52)	41(21)	8(4)	5(3)
	6.Working independently.	41(21)	87(45)	53(28)	6(3)	6(3)
	7. Time management	20(10)	81(42)	73(38)	14(7)	5(3)
Professional	8.Informatics (word documents, databases, internet).	65(34)	55(29)	35(18)	14(7)	24(12)
	9.Research methods	22(12)	52(26)	69(36)	26(14)	24(12)
	10.Competence in a foreign language	53(28)	77(40)	50(25)	10(5)	3(2)
	11. competence in English in Dentistry	44(23)	70(36)	59(30)	15(8)	5(3)
	12.Ability to take appropriate medical/dental and social history.	47(24)	108(56)	32(16)	1(1)	5(3)
	13. knowledge and understanding of the relevance of systemic diseases to the practice of dentistry.	24(13)	103(54)	46(23)	16(8)	4(2)
	14. 14.Competence in emergency procedures in dental practice.	10(5)	55(29)	94(48)	30(16)	4(2)
	15.Ability to carry out appropriate examination	29(15)	123(64)	35(18)	2(1)	4(2)
	16.Ability to diagnose and provide with differential diagnosis	15(8)	95(49)	68(35)	10(5)	5(3)
	17.Ability to refer patients and seek advice	33(17)	103(53)	44(23)	8(4)	5(3)
	18.Ability to require supplementary investigations(aware of indications and limitations).	17(9)	66(34)	89(46)	17(9)	4(2)
	19.Take and interpret –Dental X-ray	66(34)	90(47)	30(15)	3(2)	4(2)
	20.Ability to discuss options for and plan treatment.	44(23)	114(59)	27(14)	4(2)	4(2)
Clinical	21.Manage dental caries	128(66)	59(30)	3(2)	0(0)	3(2)
	22.Perform endodontic treatment	44(23)	107(55)	30(15)	9(5)	3(2)
	23.Perform periodontic treatment	45(23)	94(49)	42(21)	7(4)	5(3)
	24.Treat oral infection	18(9)	75(39)	82(43)	14(7)	4(2)
	25.Behavior management	28(15)	100(52)	54(28)	7(3)	4(2)
	26.Design and fabricate complete denture	53(28)	83(43)	45(22)	9(5)	3(2)
	27.Design and fabricate partial denture	51(26)	94(49)	40(20)	5(3)	3(2)
	28.Design and apply space maintainer	39(20)	79(40)	57(30)	13(7)	5(3)
	29.Ability to recognize malocclusion	30(16)	70(36)	68(35)	22(11)	3(2)
	30.Perform simple orthodontic treatment	25(13)	68(35)	58(30)	38(20)	4(2)
	31.Prepare tooth and apply crown	86(45)	86(46)	12(6)	6(3)	3(2)
	32. Extract a tooth	100(52)	73(37)	14(7)	3(2)	3(2)
	33.Perform simple surgical operation	36(19)	45(23)	59(30)	50(26)	3(2)
	34.Ability to prescribe.	45(23)	77(40)	56(29)	11(6)	4(2)
	35. up to date with new dental techniques, materials and equipments	10(5)	62(33)	74(38)	23(12)	24(12)
	36.Handling information (classification, record keeping, evaluation	21(11)	86(45)	43(22)	19(10)	24(12)

Employers addressed the gap between curriculum delivered and the demands from society, business and industry. Lack of confidence among new graduates, in using new dental materials and equipments, was reported by employers. Graduates reported that emergency topics were not adequately covered in the curriculum. They reported lack of confidence in providing emergency care in dental setting, lack of sufficient knowledge in systemic diseases, and laboratories investigations.

In addition, 15 star performer students were also invited for in depth discussion to recount the most critical situation they had faced in their dental practice, to describe situations, reasons, people involved, and attitudes thoughts of dentists. Students were asked to define essential characteristics and attitudes they think the dentist should possess in order to be a good dentist, essential skills and competencies needed for good dentist. The same procedures were repeated with average performers. The analysis was undertaken in order to identify behaviors, skills, and characteristics that can distinguish the good from the average students. Excellent students reported difficulties in solving problems and working in a team. They also reported lack of confidence in communication, writing and reading in English. Generally, stakeholders stressed the need to undertake the necessary measures by the faculty to improve the delivered programme in response to continued changes in dental knowledge; materials and equipments; methods of delivering oral health care; demands of dental

Moreover, the stakeholders' message informed staff in the Faculty of Dentistry about the need to address the issue of continuous professional development, and improving teaching and learning methods in order to create a new dental curriculum which emphasizes evidence-based dentistry(6).

**Research undertaken**

Stakeholders also addressed the need to investigate academic barriers that could currently limit pursuing internationally recognized standards (competencies) in dental education. One of the key barriers, which have received much attention, is the language barrier. Syrian education leaders believe that educational programs should be delivered in Arabic and adopting Arabic in educational system would be fundamental to the society cohesion and identity. Therefore, it is important to identify whether the current English delivered would assist the faculty in meeting the international standards, and to detect English learning needs in dentistry in order to guide the curriculum development. Attitudes of dental students towards teaching 'English in Dentistry, was investigated. The participation included 107 undergraduate dental students. It is interesting to see the positive attitudes towards learning 'English in Dentistry' and that students would like the faculty to improve their professional English. The majority (88%) answered that they need it to travel abroad to obtain higher education. About 103(97%) of students reported that they need it to improve their scientific standards, 101(96%) thought that this would be necessary to read scientific articles, 97(90%) of

students thought that this would be desirable to attend and understand English-speaking visitors. About 93(88%) of students wanted the topic to study abroad and set international exams, and 70% to present lectures in international dental meetings. Interestingly, 43(40%) of students wanted to learn 'English in dentistry' to be able to write and publish in international journals and 37(35%) wanted it to be able to critically appraise scientific articles. It is necessary to ascertain students' needs, consider new materials and methods for teaching and learning 'English in Dentistry', allocate sufficient time for teaching and learning (7).

Another helpful approach, we performed in order to predict performance in dentistry, was through investigating patients' satisfaction towards dental management provided by dental graduates from the University Dental Hospital of Damascus, and also to ask patients to report dental incidents that happened to them or that observed. The participation included 131 patients from 6 departments in the faculty. It is very interesting to note that the majority of patients were satisfied with preventive and treatment procedures offered by the departments investigated. About 95% were satisfied with treatment provided. About 85% had full explanations about the treatment provided and treatment options and 76% of patients had treatment for all problems they had. The information collected and the findings helped us to identify criteria of good and bad dental practice or behavior. However, findings also helped us to notice that taking proper informed consent in terms of patient autonomy and confidentiality should be further addressed in the new curriculum. Reports of incidents helped us to set rules related to radiation protection and infection control in order to achieve good practice and will also be used as foundation stones to organize a continuous professional development program to help health practitioners to improve their professional standards (8).

### **Delphi Techniques**

All information and data collected, from the above approaches and studies, were organized into a preliminary list of competencies which represents the specific knowledge, skills and attitudes needed in ethical and behavioral, personal, professional and clinical domains.

The developed initial list assisted us in designing a questionnaire containing competencies. Delphi technique which has been described as a successful technique for identifying professional behavior or competence was selected to seek a final consensus of opinion on learning outcomes (9,10). Fifteen dental experts who demonstrate knowledge, clinical and teaching experience and who make active contribution in dental education, clinical dentistry or scientific research, were individually invited to identify competencies for safe professional practice and to fill the designed questionnaire. They were asked to classify each item into essential or not essential. Each expert was given two weeks to respond to the task and to send the response to the quality assurance coordinator. The responses were gathered. All competencies rated as essential or valuable by at least of 80 % of participants, were selected for the second round and included in the final list (11). The list was sent again to all experts to ask them to read each competency and indicate beside each one using a five point scale, how essential the competency would be, in order to produce competent dentist (not essential=1, perhaps useful=2, useful=3, important=4, essential=5). The weighted response for each competency was

calculated (9,11). The ratings were analyzed and the findings indicated that there are 37 essential competencies required before graduation in the areas of dentistry.

### **Evaluation tool**

The developed list of competencies was also tested and a questionnaire containing 37 items of competencies was utilized to investigate the attitudes of students and graduates towards current curriculum delivered. About one hundred and ninety three dental students after setting the competency final national exam were asked to identify areas in which they felt least confident. They were asked to judge themselves as very good, good, fair, or poor in personal, professional, clinical, ethical and behavioral domains. Findings are presented in Table 1. Students addressed lack of some essential skills which were not well considered in the current curriculum. Graduates were competent in tooth preparation and restoration, but they are not in providing health promotion. For instance, at ethical and behavior domains, only 41% considered themselves as very good in providing patient care, 40% can take appropriate informed consent, 41% adhere to health and safety rules, and 42% can adhere to infection control procedures at a very good level. Moreover, at personal domain: only 21 % can work independently, 10% were very good in time management. At professional level, 5% assessed themselves as very good in using new dental technology and dental materials, 11% were very good in data management and patient records, 34% as very good in computer technology and informatics, and 12% can undertake simple scientific research.

### **Lessons Learnt and Evidence Provided**

All information collected and approaches and studies undertaken have provided evidence that there is a critical need for delivering dental curriculum which can provide the dentist with essential theoretical and clinical knowledge to be able to evaluate the evidence, to communicate effectively, to practice safely, to solve clinical problems, and to use and apply all new information technologies to develop the role of a dentist within community.

Thirty seven competencies were identified in dentistry that helped to focus on ethical behavior, evidence based dentistry, oral health promotion and prevention as well as professionalism and personal development. A competency model and image of the new graduate of the University Dental Hospital of Damascus University have been now created. It does not mean to increase "musts" and "should" facing the curriculum planners. It is a framework for dental education which takes student through several learning activities in order to reach the defined competences to meet the needs of good learning for good patient care"(12). The emphasis thus, should not be only on what the dentist is able to do 'doing the right thing', nor on how the dentist approaches his/her practice 'doing the thing right', but is also on how to prepare the dentist to be a professional 'the right person doing it' (13).

This will produce a competent, socially sensitive practitioner who adheres to the highest standards of professionalism and can effectively improve oral health care in society.

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