INTRODUCTION

The crux of academia lies in effectively transferring skills, from what is perceived as an expert source, to a novice. In general, the goal of dental education is to guide student’s development through different stages from a novice to an expert learner. The novice-expert concept places competence in the middle of the growth ladder.

The early learners that are in the 1st years of study are considered as “novice.” They move on to become “beginners” from the middle of the program. By the time of graduation, they are termed “competent.” Competence is the exhibition of acquired skills, independently in any given environment. This is the stage where a learner is considered more organized and on a platform where self-evaluation and critical analysis is normal to the skills repertoire. A “competent” graduate is an active life-long learner having skills that are not immune to embracing scientific and technological advancements.

Commission on Dental Accreditation of United States Department of Education describes competencies as written statements describing the levels of knowledge, skills, and values expected of graduates.

Objectives: A questionnaire survey of Interns was conducted to obtain their feedback regarding newly introduced Clinical Competencies (CC) in King Khalid University College of Dentistry (KKUCOD), Saudi Arabia.

Materials and Methods: A self-administered questionnaire was employed with questions focusing on the effectiveness of didactic and clinical training, fairness, importance and confidence instilled by the CC. Dichotomous data was recorded and analyzed for distribution of frequency.

Results: Majority (85.9% to 92.7%) of the surveyed interns ‘agree’ that all KKUCOD CC are important for general dental practice. 62.3 to 83.4 % interns ‘agree’ their classroom and clinical training was ‘satisfactory’ to ‘excellent’ for CC related to patient assessment and diagnosis, periodontal therapy, restoration of teeth and endodontics, replacing missing teeth, dental emergencies and radiographic interpretation and surgical management. These CC received ‘excellent’ rating for their fairness in KKUCOD evaluation and assessment system (percentage range of ‘agree’ between 70.2% and 75%).

On the other hand, CC related to management of orofacial pain, oral mucosal disorders and treating malocclusions ‘need attention’ (percentage range of ‘agree’ between 38.5% and 56.5%) for their classroom and clinical training. However, the interns (percentage range of ‘disagree’ 13.4 between 47.6%) perceive lack of confidence for unsupervised clinical work for all KKUCOD CC except the one related to restoration and Endodontics.

Conclusion: The Interns consider Clinical Competency system to be fair and important; however, measures should be taken so that they feel confident during unsupervised clinical work.

Key words: Clinical education, competency, curriculum, dental, dental students, education, graduate

ABSTRACT

Original Article

Access this article online
Website: www.saudijhealthsci.org
DOI: 10.4103/sjhs.sjhs_63_16

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How to cite this article: Alshahrani A, Togoo RA, Master L, Mohammad SH, Addas MK, Syed S. Dental interns’ feedback to introduction of clinical competencies in King Khalid University, Bachelor of Dental Surgery Program. Saudi J Health Sci 2017;6:8-13.
education focuses primarily on how a student exhibits the knowledge and skills in a specific environment. In contrast to this, discipline-based education lays more stress on established subject matter domain and an unfathomable assumption that this naturally seasons into a competent product.

At the outset, the dental curriculum at King Khalid University, College of Dentistry (KKUCOD) revolved around the “discipline-based education” model. With time, components of “SPICES” were introduced in specifically selected course. Small group problem-solving sessions in “Advanced Surgical Management” course received mixed response at its inception. KKUCOD students with abstruseness received the radical swing from teacher centered didactic teaching to student-centered problem-solving. Subsequent evaluation through questionnaire survey proved its complete acceptance. Another milestone at KKUCOD was introducing E-learning system through BlackBoard, which is mainly used as a repository for online resources and assignments. By and large, this system was assimilated by the students instantly.

KKUCOD envisions to produce highly competent graduates and achieve accreditation by Commission on Dental Accreditation (internationally) and National Commission for Academic Accreditation and Assessment (locally) for their undergraduate program. Many reasons prompted the introduction of clinical competencies (CC) in KKUCOD. Feedback obtained from stakeholders including employers and patients were carefully considered before deciding to include CC. This upgrade to the KKUCOD evaluation and assessment system initiated in the year 2012–2013 is a small addition to the comprehensive 5-year strategic plan. A formal partnership was made with University of Nevada Las Vegas School of Dentistry to initiate the upgrade process. Furthermore, KKUCOD Accreditation Committee was constituted to develop the competency evaluation plan. The competency statements were framed using the 2002 Institute of Medicine core set competencies including the six domains laid down by the American Dental Education Association House of Delegates. These were approved by the teaching departments, College Board and finally by the Deanship of Quality and Accreditation of the University. The concerned teaching faculty were informed and trained through workshops and presentations before the approved CC were included. This introduction has amalgamated into a hybrid model which retains the conventional evaluation mechanisms (clinical exams) along with competency assessment.

It is known that competencies are understood and employed in different ways in different educational environments. It can be perilous to embrace any curriculum change without understanding its context. It is a common practice to obtain feedback from graduates with the aim of improving dental curriculum. The American Dental Education Association annually surveys graduating dentists about curricular content and communicates the findings to dental schools. Hence, at the inception of the competency system, it was planned to evaluate its importance and worth at regular intervals. Questionnaire survey was one such tool chosen for this purpose to obtain feedback from all stakeholders including, students, interns, and faculty. To kick start the evaluation process, interns were chosen first for their feedback. Therefore, the aim of this study was to obtain feedback regarding the introduction of KKUCOD CCs. The specific objective was to evaluate the interns’ perception regarding all the KKUCOD CC related to their “learning experiences” and the “value” of the new competency system.

**MATERIALS AND METHODS**

The research protocol for this retrospective study utilized a cross-sectional design and a convenient sampling strategy. The study proposal was approved by the Ethics Division of Scientific Research Committee of KKUCOD.

**The questionnaire**

Department of Dental Education KKUCOD prepared a questionnaire keeping in mind the objective of the study. The questionnaire was distributed to 92 male interns of KKUCOD towards the end of their internship year 2014–2015. All the interns participated in the study voluntarily and signed an informed consent before responding to the questionnaire.

The questions of the questionnaire were as follows:

1. Your classroom training was effective in preparing you for KKUCOD CC?
2. Your clinical training was effective in preparing you for KKUCOD CC?
3. KKUCOD CC system instilled confidence for unsupervised clinical work?
4. Is the KKUCOD CC system fair in assessing students’ clinical performance?
5. KKUCOD CC are important for Student assessment and evaluation system?

**King Khalid University, College of Dentistry clinical competencies**

The respondents had to answer the above questions relating to all the nine KKUCOD CC. KKUCOD CC [Table 1] are related

<table>
<thead>
<tr>
<th>CC number</th>
<th>KKUCOD clinical competency</th>
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</thead>
<tbody>
<tr>
<td>CC 1</td>
<td>Patient assessment and diagnosis</td>
</tr>
<tr>
<td>CC 2</td>
<td>Management of orofacial pain and anxiety</td>
</tr>
<tr>
<td>CC 3</td>
<td>Periodontal therapy</td>
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<tr>
<td>CC 4</td>
<td>Restoration of teeth and endodontics</td>
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<tr>
<td>CC 5</td>
<td>Oral mucosal disorders</td>
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<td>CC 6</td>
<td>Replacing missing teeth</td>
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<td>CC 7</td>
<td>Dental emergencies</td>
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<tr>
<td>CC 8</td>
<td>Malocclusions</td>
</tr>
<tr>
<td>CC 9</td>
<td>Radiographic interpretations and surgical management</td>
</tr>
</tbody>
</table>

CC: Clinical competencies, KKUCOD: King Khalid University, College of Dentistry
to patient assessment and diagnosis (CC1), management of orofacial pain and anxiety (CC2), periodontal therapy (CC3), restoration of teeth and endodontics (CC4), oral mucosal disorders (CC5), replacing missing teeth (CC6), dental emergencies (CC7), malocclusions (CC8), and radiographic interpretation and surgical management (CC9).

Data analysis
The responses to the questionnaire were collected as dichotomous data in the form of “agree,” “disagree,” and “undecided” and the frequency in percentages for each of the items were calculated using Microsoft Excel 2013 (Microsoft Inc., USA). The data were further categorized as “needs attention” if the response percentage for agree was <60%, “satisfactory” if the response percentage for agree was between 61% and 69% and “excellent” if the response percentage was above 70%. [18]

RESULTS
A high response rate was received for the survey, 85 out of 92 (92%) interns returned completed survey forms in the stipulated time. The remaining seven interns did not give a reason for their nonparticipation in the survey study. Only male interns were included in the study as no female intern had graduated at the time of the study. Table 2 presents an overview of responses to all the survey questions about KKUCOD CC. The percentage of interns agreeing for questions regarding classroom/clinical experience and fairness [Figures 1-3 respectively] of all KKUCOD CC [Table 1] ranged between 38.5% and 83.4%, that is, between “excellent” and “needs attention” [Table 3]. The interns felt their classroom experience (question 1) was “satisfactory” to “excellent” for CC1, CC3, CC9 and CC4, CC6, CC7, respectively [Table 3]. A similar response was observed for their clinical experience (question 2) where CC2, CC5, and CC8 “need attention” [Table 3].

All questions received responses except for question 3 for which many of the respondents (between 20.2% for CC4 and 47.3% for CC3) had chosen “undecided” [Figure 4]. The percentage of interns disagreeing for question 3 (regarding confidence while working unsupervised) ranged between 13.4% and 47.6% [Figure 4]. According to them, eight out of nine CC “needs attention” in building confidence for unsupervised clinical work [Table 3]. Only CC4 (restorations and endodontics related competency) received “satisfactory” response (60.7%) in this regard.

85.9%–92.7% of the interns identify all CC as important (question 5) for clinical and evaluation system [Figure 5]. In addition, CC2, CC4, CC9 “needs attention” for their objectiveness in the KKUCOD competency system.

Figure 1: Survey response to question 1 - Your class room training was effective in preparing you for King Khalid University, College of Dentistry clinical competencies?

Figure 2: Survey response to question 2 - Your clinical training was effective in preparing you for King Khalid University, College of Dentistry clinical competencies?

Figure 3: Survey response to question 4 - Is the King Khalid University, College of Dentistry clinical competency system fair in assessing students’ clinical competencies?

Figure 4: Survey response to question 3 - King Khalid University, College of Dentistry clinical competencies system instilled confidence for unsupervised clinical work?
DISCUSSION

The consistent thing about dental curriculum is that it is not exempted from vicissitude. The foregone and prevalent education systems have been effective in adapting to the needs of the time. A good example is the introduction of a subtle shift of focus from the subject matter being taught to the subjects responsible for receiving the matter. For long, this was a stagnant component of curricula widely practiced. A dental curriculum can be as much ideal as the situation within which it is deployed. This is because academic situations are dictated by volatile factors from scientific and nonscientific forces. Ideally, a dental curriculum should be visited and re-visited with an aim to produce pupil with knowledge and set of clinical skills that can be put to use in any given challenging milieu. Most important discerning factors for bringing about change in curriculum should be the judicious inclusion of innovations and the continuous evaluation of its worth. Hence, this study was conducted to assess interns’ perception regarding KKUCOD CC.

The interns surveyed in this study showed willingness to participate in the curricular evaluation process initiated by the Department of Dental of Education of KKUCOD. They were informed about the objective of the survey and the importance of knowing their opinion regarding CC before distributing the questionnaire. They were cognizant of the fact that the growth of a dental learner is far from over with graduation. The next level in novice-expert continuum is to embark on an independent journey leading to proficiency and expertise. The interns seemed to be nervy embarking on this journey. The majority of them alleged lack of confidence doing unsupervised clinical work (CCs) in the Intern’s clinics. This is being considered the biggest outcome of this survey. There can be many whys and wherefores for their lack of confidence. The surveyed batch was pioneers in taking up the newly introduced competency evaluation having no experience passed on from any of their seniors. This can be a consideration of a less exposed mind to clinical situations rather than an under prepared one. The cognitive development from a competent to an expert learner requires exposure and
forward reasoning. The difference in cognitive development between a beginner, competent, and an expert learner was demonstrated by a diagnostic model concept studied by Crespo et al.\textsuperscript{19} In our opinion, confidence during competent stage of cognition is a trail of the proficient and expert stage, which boosts with more and more exposure to clinical situations. With time, guidance from senior professionals and experiences from real time situations also adds to self-reliance in clinical domain. However, further assessment of intern's perception about their confidence shall provide insight into this problem and an appropriate solution for it.

Demonstration of forward reasoning with in-depth knowledge of the discipline in relation to clinical situations is the hallmark of expert dentists.\textsuperscript{19} They possess, what has been described as an "illness script,"\textsuperscript{20} in mind while dealing with patients thereby converting skills into subconscious habits. Although the surveyed interns are far from being considered "experts," they have raised concerns regarding their "in-depth knowledge" in handling clinical situations for the management of orofacial pain (CC2), oral mucosal disorders (CC5), and malocclusions (CC8). This is also an important outcome of the survey and strategies will be planned to address this area of weakness. However, other competencies received good ratings, and similar results from similar studies were reported regarding patient assessment and diagnosis from students of Canada,\textsuperscript{21} Australia,\textsuperscript{22} Malaysia,\textsuperscript{18} and Trinidad and Tobago.\textsuperscript{23}

The overwhelming positive response to the importance of the competency evaluation highlights the general acceptance of the change introduced in the existing assessment and evaluation system. This is being seen as an example for other dental institutes in the region. The results of this study perhaps point toward the fact that changes in curriculum when introduced methodically lead to good results provided the objectives and process are made clear to all stakeholders. Careful following, monitoring of challenges, effectively employing the process is mandatory. Applying survey tools, interviews to assess the situation can make a big difference. Curricular changes are principally governed by the need to adapt to scientific developments and socioeconomic demands. Tweaks should also be considered as a result of hiatus or loopholes uncovered in the preceding system.\textsuperscript{24} Any curricular change should be considered with few cardinal principles, they are and not limited to……

1. Firm believe in making a positive change
2. Leadership with vision
3. Complete involvement of all stakeholders
4. Changes in small doses, avoiding radical shifts
5. Timely evaluation of progression.

**CONCLUSION**

The interns consider CC system to be fair and important for assessing and evaluation clinical skills, therefore, we recommend it should be included in dental curriculum of other institutes of this region. In addition, measures should be taken so that recent graduates (interns) feel confident during unsupervised clinical work.

**Acknowledgment**

We would like to thank all the interns who voluntarily participated in this study.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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