PERCEPTIONS OF THE FIRST DENTAL GRADUATES FROM USIM ON THEIR COMPETENCE

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ABSTRACT

The Bachelor of Dental Surgery (BDS) program has run for over 40 years and the approaches to learning and teaching vary. However, recently it was decided that all BDS programs in Malaysia had to fulfil a set of minimum competency requirements based on three main domains; knowledge, skills and attitudes. The Faculty of Dentistry, USIM has taken an innovative approach to evaluate the perception of its new dental graduates on all of these domains. This study was conducted on the first cohort of graduating students from USIM. The objectives of this study were to evaluate self-rated competencies upon graduation and to determine the baseline competencies of these graduates. It is self-rated and based on the 8 domains listed by the Ministry of Higher Education. The objectives relating to the minimum competencies were sent to all 29 graduates before they had commenced to work in the field. Twenty five out of 29 responded to the questionnaire. The survey used a Likert scale (1=very poor, 2=poor, 3=average, 4=good, 5=very good and 9=cannot judge). It was found that the percentage of rankings for good to very good categories combined in each domain were; D1-96%, D2-79%, D3-76%, D4-82%, D5-85%, D6-50%, D7-68% and D8-32%. In conclusion, the domains of knowledge (D1), values, ethics, morality and professionalism (D4) and communication skills and interpersonal relationship (D5) showed higher percentages compared with the other domains. In contrast, the D8 domain which focuses on managerial and entrepreneurial skills showed the lowest percentage. This reflects the reduced emphasis on this

domain in the USIM program. The findings provide valuable insights for reviewing and further improvement of the existing curriculum.

1. INTRODUCTION

The Faculty of Dentistry, USIM is the 6th Government Higher Institute and the 8th dental faculty in Malaysia. Like many other dental faculties, it has a 5-year degree course leading to a Bachelor Dental Surgery (BDS) degree. In 2007, it took its first intake of dental students. There were 29 students who graduated at the end of 2012. The system of education in Faculty of Dentistry, USIM is based on a hybrid curriculum. It adopts outcome based education in most of the subjects.

For the Malaysian dental schools, there is a list of minimum competencies for dental students. Every dental school has to fulfil all of these criteria before they can obtain accreditation. These minimum competencies are used to develop and monitor dental curricula in Malaysia. Furthermore, this is to ensure that new dental graduates are competent enough to deliver services. This is important because they play major roles in contributing to the general health of Malaysian communities, especially their oral health. These documents on competencies are derived from the 3 main domains of knowledge, skills and attitudes. Under each of the domains there are further descriptions of specific competencies. Overall, the competencies cover the whole range expected of new dental graduates.

These minimum competencies cover 8 domains listed by the Ministry of Higher Education and the Malaysia Qualification Agency, ie. domain 1 knowledge; domain 2 practical and clinical skills; domain 3 social skills, teamwork and responsibility; domain 4 values, ethics, moral and professionalism; domain 5 communication skills and interpersonal relationships; domain 6 critical thinking and scientific skills; domain 7 continuing professional development and lifelong learning; domain 8 managerial and entrepreneurial skills. Under each of the 8 domains, there are further descriptions of specific competencies. These competencies help to determine the strengths and weaknesses of existing dental programs. We are using the information to help to further improve our curriculum, thus ensuring that USIM is preparing high quality, versatile and well-prepared dentists.

Competencies are important because they ensure the completeness of the dental graduate (ADEA, 2012). They should be competent enough and be able to work independently. The Faculty of Dentistry, USIM has taken the opportunity to implement an innovative approach to evaluate its BDS curriculum by surveying its first cohort of dental graduates based on these minimum competencies. The advantage of this study is that it will be based on the national standard competencies data. Many previous studies have evaluated courses or subjects based on perceptions that have related to poorly defined or limited criteria.

This study will help to determine the areas of weakness in learning and teaching relating to specified competencies and to indicate where the BDS curriculum at USIM should be revised. In

addition, it will also act as a baseline for future enhancement of the curriculum. This will also assist in ensuring the quality of USIM graduates (Greenwood *et al.*, 1998).

2. METHODOLOGY

This study was based on self-rated assessment, ie. the new graduates' confidence levels relating to the required competencies upon graduation were explored. A questionnaire was formed from the list of objectives under each domain that was formulated by the Ministry of Health 2012. The survey consisted of all the 8 domains with 60 objectives. A set of documents was sent to 29 dental students all around Malaysia. The set contained a covering letter, information sheet and questionnaire. A stamped envelope addressed to the Faculty was also included in the set to assist participants in returning the questionnaire.

The questionnaire also included gender, age and other demographic data. To prevent bias and leaking of information, each graduate was asked to create their own code based on their mother's birthday and two extra alphabetical characters. This was also for future reference. The students were required to self-assess each competency on a five-point Likert scale (1=very poor, 2=poor, 3=average, 4=good, 5=very good and 9=cannot judge). A few responders were followed up by telephone and some questionnaires had to be resent because some of them did not reach the participants and some also forgot to reply. The quantitative data took the form of ratings for 60 minimum competencies on a five-point Likert scale.

3. RESULTS

There were 29 new dental graduates from USIM in year 2012. Only 25 responded to the questionnaire. A summary of the responders is presented in Table I.

Table-1. Gender of responders

	Female	**Male**
Respondent	17	8
Non-respondent	3	1

For the first domain (D1) on knowledge objectives, 96% of the respondents scored average to very good and only 4% scored poor or unable to judge. The majority (72.6%) felt that they had good or very good knowledge. Only 23% felt that they have average competencies with regard to knowledge objectives. Among the objectives that were scored as being good to very good (90% and above) were the ability to: objective 6 - apply the principles of oral health promotion and disease prevention, 92%(n-23); objectives 7 - explain radiographic techniques and radiation safety in the practice of dentistry, 96%(n=24); objective 8 - select relevant investigative procedures to aid the diagnosis and management of common oral diseases,92%(n=23); objective 11 - select local anesthetic procedures in the management of pain during dental treatment, 92%(n-23); objective 15 - differentiate the principles of restoration and replacement of primary and permanent dentition, 96%(n=24); and objective 17 - apply principles and methods of sterilization, disinfection and antisepsis to prevent cross-infection in clinical practice,92%(n=23). In contrast, the objectives for

which 60% or fewer respondents scored good or very good were: objective 3 - relate basic structure and functions of the human body at organ, tissue, cellular and molecular levels to the practice of dentistry, 56%(n=14); objective 4 - explain the etiology and pathogenesis of systemic conditions and disease processes such as inflammation, infection, disorders of the immune system, degeneration, neoplasia, metabolic disturbances and genetic disorders affecting the human body including orofacial region, 44%(n=11); objective 9 - explain the pharmacotherapeutics of drugs commonly used in dentistry, 44%(n=11); explain sedation and general anesthetic procedures in the control of pain related dentistry, 44%(n=11); and objective 13 - explain cranio-facial form and relationships, including evidence of deviation from the norm, 48%(n=12).
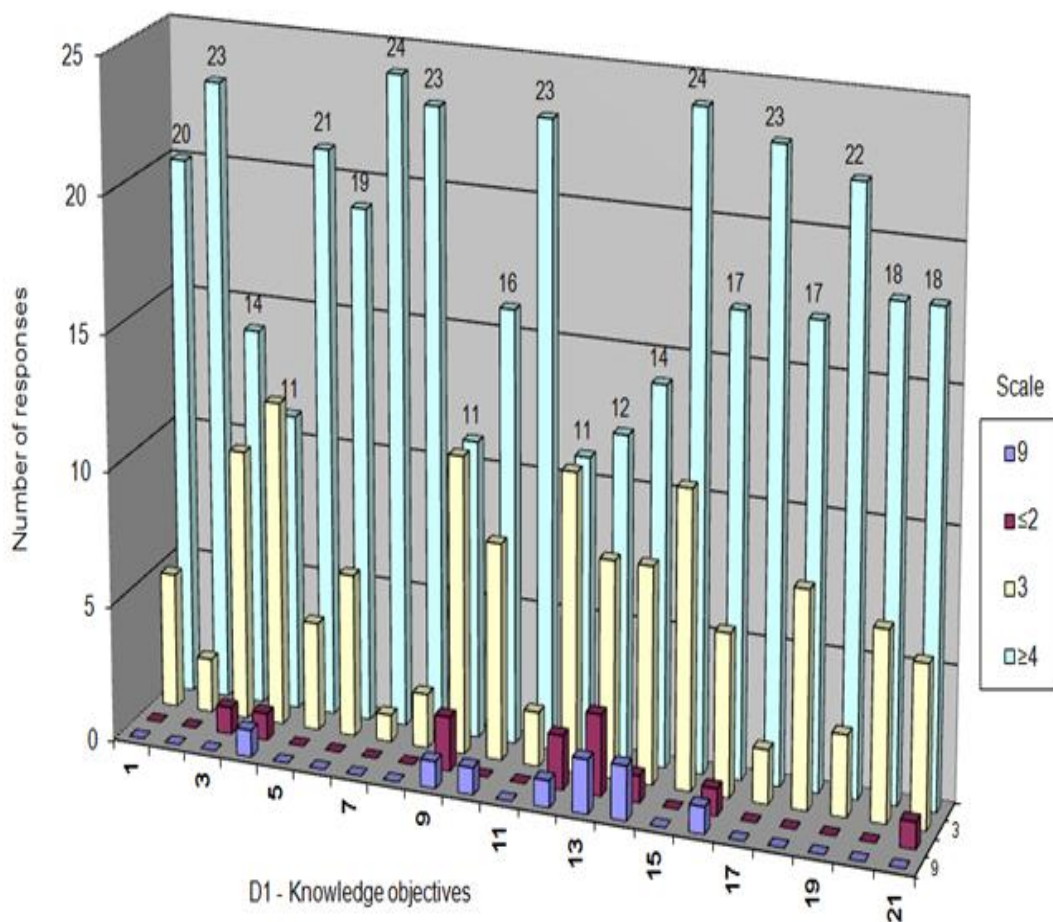

Fig-1. Number of graduates responses on D1 with scales; $\leq$ 2(poor),3(average), $\geq$ 4(good) and 9 cannot judge.

The D2 domain on practical and clinical skills objectives showed that 55 % of the respondents considered their skills to be good, 24 % very good, 15 % as average and only 5 % to be below average. Overall, 95% considered their clinical skills belong to average, good and very good categories and, among this group, 79 % belonged to the good and very good categories. All the respondents scored good or very good with regard to performing appropriate methods of infection control in clinical practice. Among the very good, good and average categories, the clinical skills that were ranked lower than the other clinical skills were: objective 9 - perform complex restorative

procedures in primary and permanent dentitions, including onlays, single crowns, short span bridges and root canal therapy of uncomplicated multirooted teeth, 88%(n=22); objective 12 - perform Basic Life Support in the management of medical emergencies in dental practice, 84%(n=21), and manipulate commonly used dental materials in dental practice, 64%(n-16).
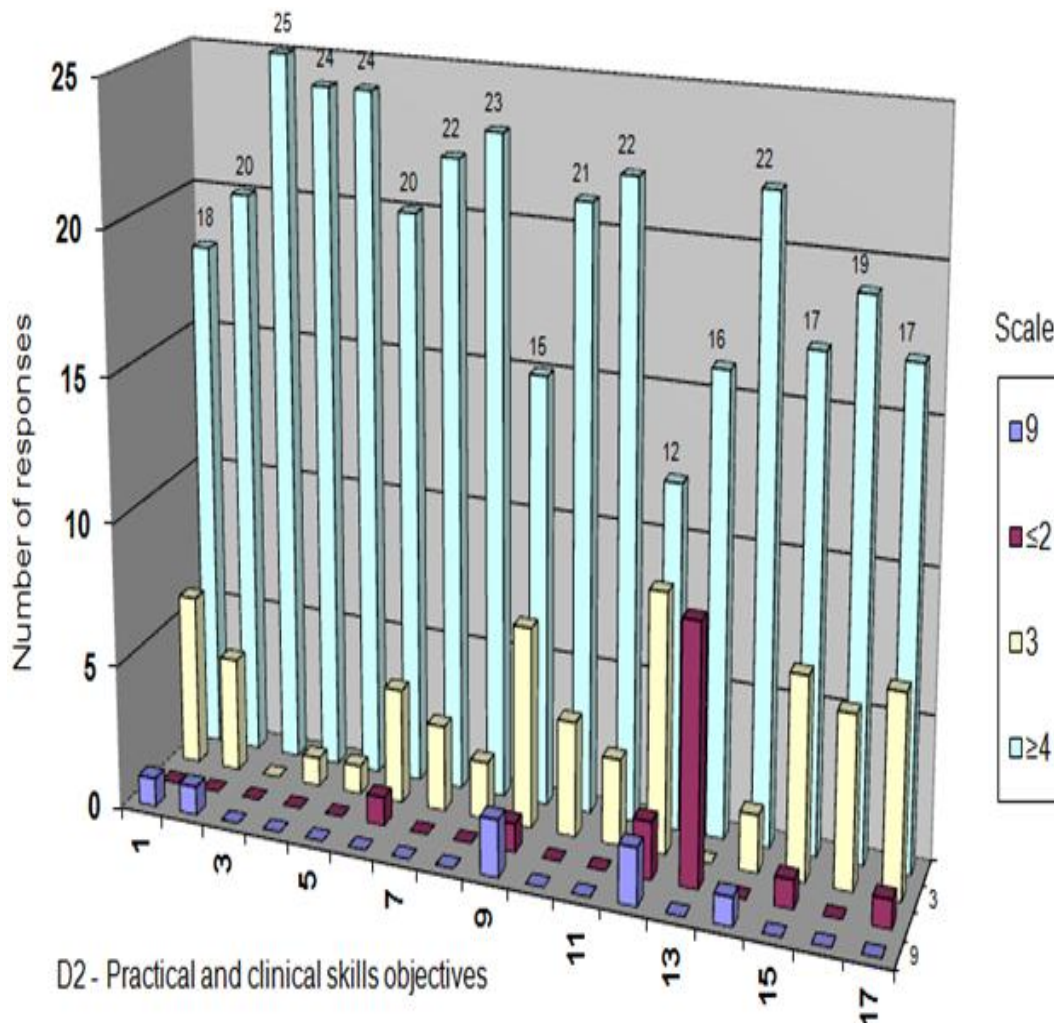

Fig-2. Number of graduates responses on D2 with scales; ≤ 2(poor),3(average), ≥ 4(good) and 9 cannot judge.

Generally for the D3 domain on social skills, teamwork and responsibility objectives,76% ranked good to very good and 2% ranked unable to judge. For D4 on values, ethics, moral and professionalism objectives, 82% of the respondents scored good or very good. The areas that may need further coverage to provide a better understanding to the students were the role and function of professional organizations and regulatory bodies. These objectives were scored lower by the respondents.
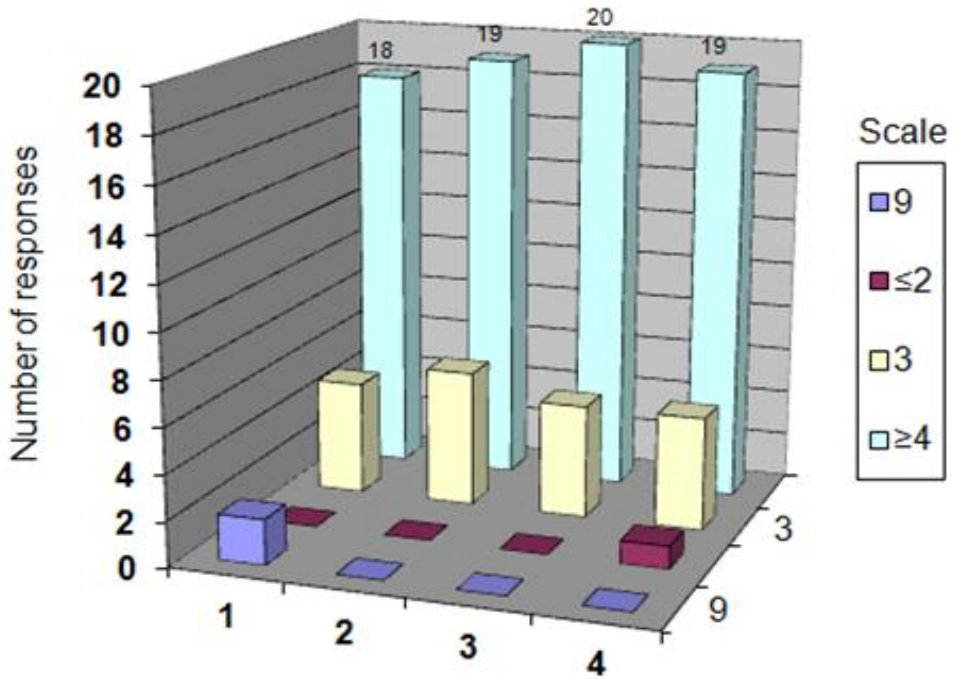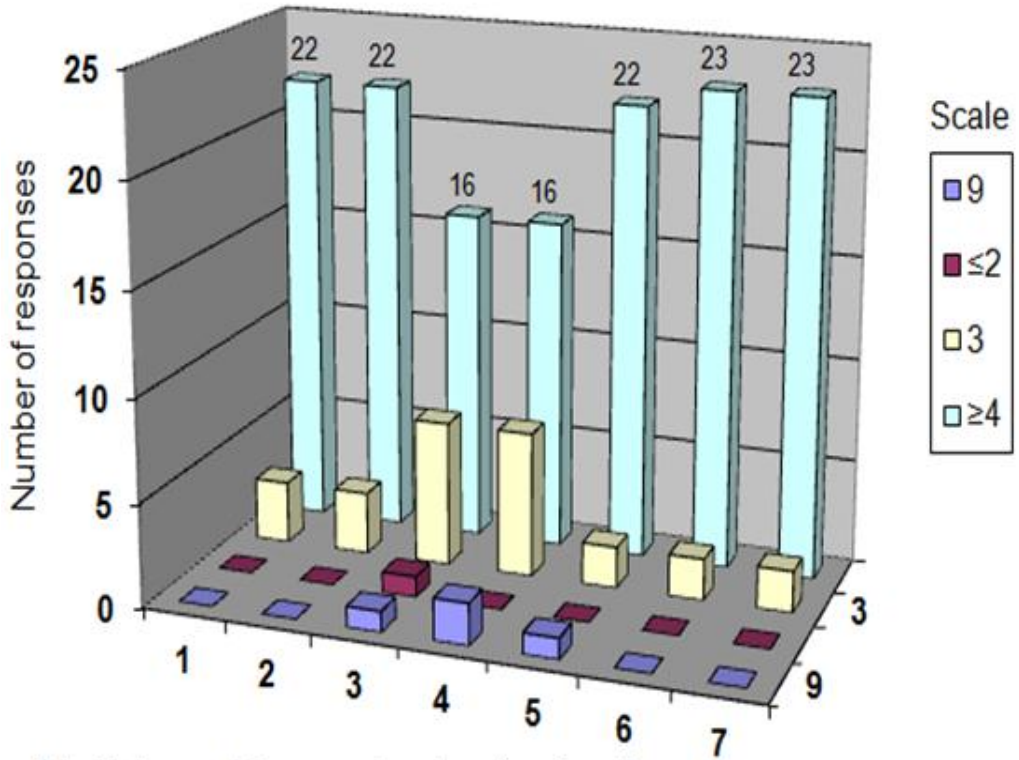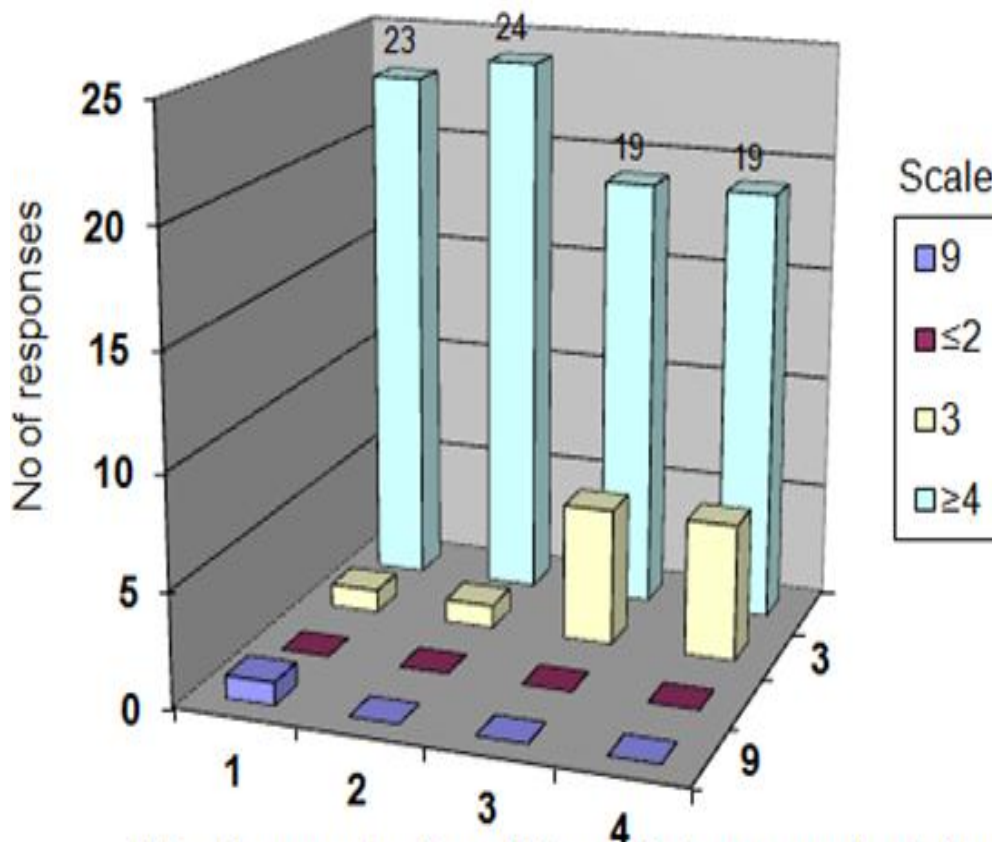
Fig-3. Number of graduates responses on D3 with scales; $\leq$ 2(poor), 3(average), $\geq$ 4(good) and 9 cannot judge.

D4 - Values, ethics, moral and professionalism

Fig-4. Number of graduates responses on D4 with scales; $\leq$ 2(poor), 3(average), $\geq$ 4(good) and 9 cannot judge.

The D5 domain objectives were on communication skills and interpersonal relationships. 85% of the respondents ranked these skills to be good or very good. When comparing the four objectives listed, the highest score was for objective 2, that is, the ability to identify patients' expectations, demands, needs and attitudes with regards to oral health care. In contrast, the lowest score was for objective 3, that is, the ability to display effective communication with the dental team, patients, and other health care personnel to facilitate the delivery of oral health care.
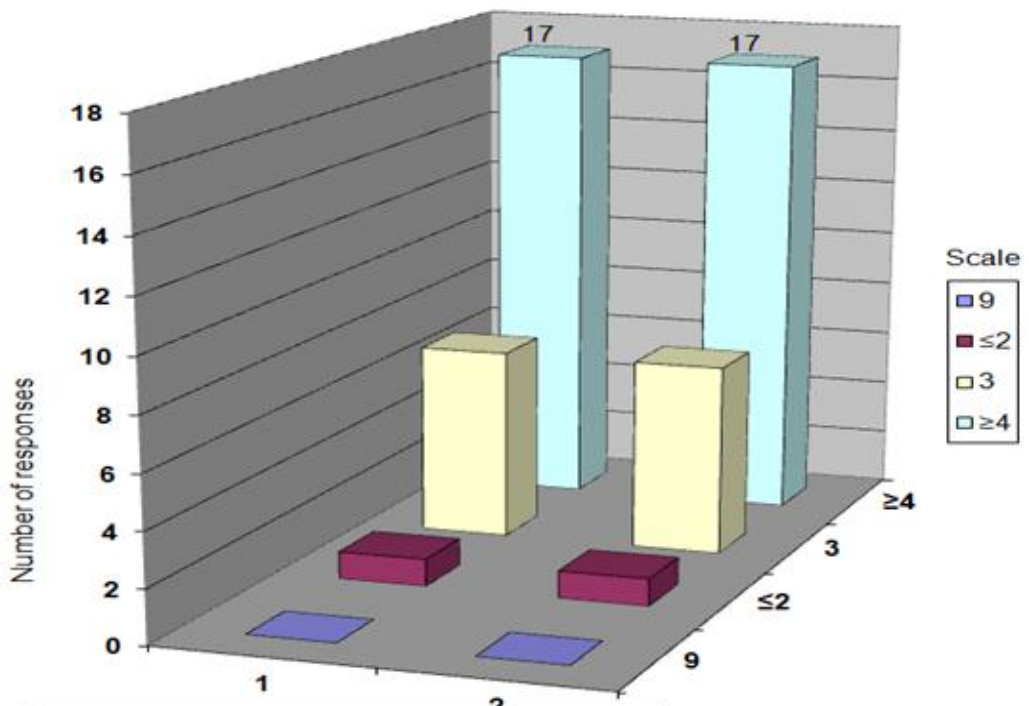

Fig-5. Number of graduates responses on D5 with scales; ≤ 2(poor), 3(average), ≥ 4(good) and 9 cannot judge.

For D6 domain on critical thinking and scientific skills, all of the respondents felt that their critical thinking and scientific skills were average, good or very good. 50% ranked these skills as good. The D7 domain objectives covered continuing professional development and lifelong learning. It was found that 68 % of the respondents scored their skills in this domain as good or very good, with 40 % categorized as good. The last domain D8 is on the managerial and entrepreneurial skills. The percentage of the respondents who ranked their abilities in this domain as average to very good was 55%, with 32% scoring good to very good.
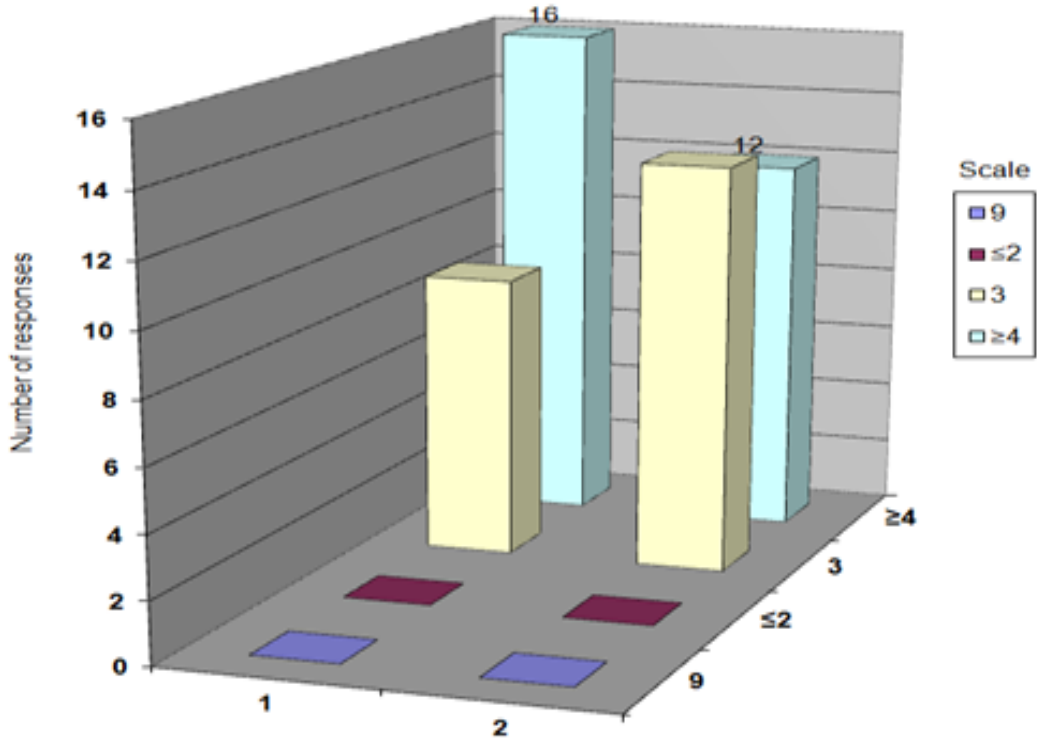
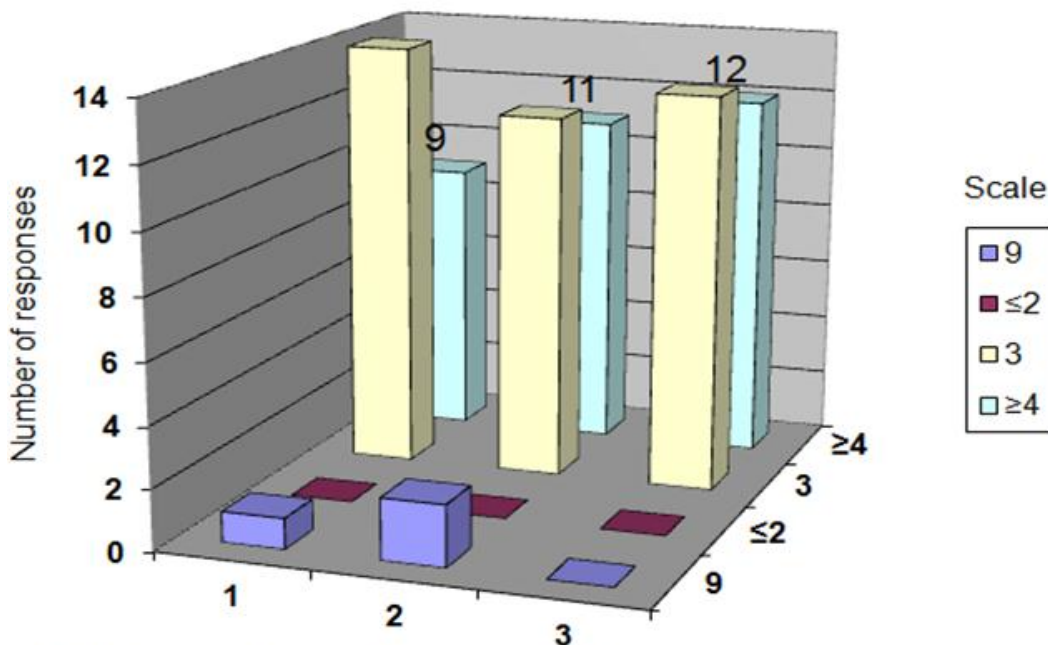**Fig-6.** Number of graduates responses on D6 with scales; ≤ 2(poor), 3(average), ≥ 4(good) and 9 cannot judge.

Fig-7. Number of graduates responses on D7 with scales; ≤ 2(poor), 3(average), ≥ 4(good) and 9 cannot judge

Fig-8. Number of graduates responses on D8 with scales; ≤ 2(poor), 3(average), ≥ 4(good) and 9 cannot judge

4. DISCUSSION AND CONCLUSION

This research involved self-rated answers on basic competencies in 8 domains outlined by the Ministry of Higher Education. Self-rated or self-assessment has been defined as "the involvement of students in identifying standards and/or criteria to apply to their work and making judgements about the extent to which they have met these criteria and standards" (Wetherell *et al.*, 1999). Therefore, from this study we were able to identify whether or not the desired outcomes of the Faculty and the Ministry of Education had been achieved, at least in terms of the perceptions of graduating students. This is important for future improvement, as the Faculty of Dentistry, USIM is young and there may be some unseen gaps present in the program which need to be improved and monitored. The evaluation of this perception can also help in curriculum review and as a base line to validate the outcomes of this new faculty. Furthermore, this study can ensure that these graduates are competent and comparable with graduates from other universities (Rafeek *et al.*, 2003)

The findings show that the knowledge domain (D1) represents the highest percentage of students ranked good to average. Few lower rankings were noted, ie. poor to very poor or unable to judge. The lower ranked objectives related to the basic science syllabus, ie. basic structure and function, pathogenesis and pharmacotherapeutics. The Faculty of Dentistry, USIM is still inexperienced in the use of a problem-based learning (PBL) approach. It is hoped that a PBL approach will help to enhance the integration of the basic science knowledge to the clinical skills (Hmelo, 1998).

For the practical and clinical skills objectives domain D2, it was noted that nine graduates ranked poor in relation to manipulation of commonly-used dental materials in dental practice. This

issue has to be reviewed thoroughly and the syllabus needs to place more emphasis on this topic during the preclinical sessions. Objective 1 of domain D3; display skills in implementing preventive measures for individuals and community according to the risk assessment, showed a lower ranking compared to D2 objective 1 on; demonstrate the prevention methods of common orofacial diseases and conditions based on scientific evidence This showed that the risk assessment module needs to be reviewed. It was also noted that there was one student who rated themselves as poor in objective 4 in domain D3; the ability to lead or contribute as a team member.

This study shows that the majority of the USIM graduates are confident that they are able to fulfil the objectives in domain D4 on values, ethics, moral and professionalism. It is a concern as a comprehend syllabus were prepared in the program and it was noted 1 graduate rated poor and 4 graduates rated cannot judge (Likert scale; 9). This finding would help in determining the weakness of the syllabus. It is also hoped that the elements of D4 domain can be enhanced through exposure to the real world and to life-long learning. However, it will also depend on other factors such as demographical, family influence and professional behavior (Polyzois et al., 2010).

It was noted that in D5 domain, ie. communication skills and interpersonal relationships, had a high percentage of rankings of good to very good (85%), with only 14 graduates ranked average and none ranked poor or unable to judge. This shows that this aspect of the syllabus seems to be covered well in the program.

The faculty implemented behavioral science course for students throughout the programme. In this course, students are introduce and exposed to factors that have an impact on the patient as a whole and also on the oral health care. This includes various aspects of social, interpersonal relationship, cultural and communication. Holden (2011) has stated that communication skills are very important and nowadays graduates tend to have better communication skills than in earlier days. This is due to more effort being put into the new dental curriculum on this topic.

Among the four objectives on communication and interpersonal relationships, the objective 3; display effective communication with the dental team, patients, and other health care personnel to facilitate the delivery of oral health care scored the lowest percentage (55%). This relates more to communication during clinical sessions, ie. communication with patients, colleagues, staff and patients (Holden, 2011).

D6 domain on critical thinking ranked lower compared to other domains which indicates that more monitoring is needed in this area. It is hoped that the more we use a PBL approach, the more the rankings in this area will improve (Khoo, 2003; Marshall et al., 2011). In addition, Domain D7 on continuing professional development and lifelong learning was well scored, with only 2 graduates ranking as poor. This shows that our graduates are able to appreciate the importance of professional development and lifelong learning. Therefore, it is expected that these graduates are more proactive to find educational resources for career development (Polyzois et al., 2010).

Although this study was based on self-ratings or self-assessment, it is considered that the new graduates were able to assess themselves accurately and that their answers were reliable. This is because the approach of self-assessment is implemented in the Faculty of Dentistry, USIM from the first day of their clinical sessions which starts in year 3.

This study reported that among the first graduates of the Faculty of Dentistry, USIM more than 60% percentage rated themselves as good or very good in the objectives under the following domains: knowledge, practical and clinical skills (D1), practical and clinical skills (D2), social skills, teamwork and responsibility (D3), values, ethics, moral and professionalism (D4), communication skills and interpersonal relationship (D5) and continuing professional development and lifelong learning (D7).

The domains of critical thinking and scientific skills (D6) and managerial and entrepreneurial skill (D8) were rated lower, with percentages of 50% and below. Further exploration of the lower ranked domains and specifically the objectives within these domains should help to improve and enhance the desirable competencies in new dental graduates in the future.

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