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ORIGINAL RESEARCH

# Self-Perceived Preparedness of KFU Dental Graduates to Practice Dentistry: A Cross-Sectional Study

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**Introduction:** Assessing graduates' performance is essential to identify the strengths and weaknesses in dental education. This study examined the self-perceived preparedness of dental graduates at King Faisal University (KFU), Saudi Arabia, using the Dental Undergraduates Preparedness Assessment Scale (DU-PAS).

**Materials and Methods:** Using a cross-sectional design, this study assesses dental graduates' preparedness. This assessment measures various skills and attributes expected of dental graduates based on the DU-PAS. From January to April 2021, an electronic form was distributed to 102 eligible dental graduates of KFU. The response rate was 92.15%. The total preparedness score ranged from 0 to 100. The questionnaire consisted of two parts, the first investigating preparedness in clinical procedures (24 items) and the second investigating preparedness regarding cognition, communication, and professionalism skills (26 items). Data are analyzed using SPSS Descriptive analysis using frequencies and percentages.

**Results:** The study included 94 participants, all of them male, with a response rate of 92.4%, who graduated from the College of Dentistry KFU in Saudi Arabia. The participants' median age was 25. The mean DU-PAS score for the participants was 79.08 (SD ±12.15; range, 47.84–100). The mean score for Part A of the scale, which comprises the clinical skills, was 84.55 (SD ±13.56; range, 43.75–100). It revealed that participants felt they had no experience with the four procedures. The mean score for Part B of the scale comprising cognitive and behavioural attributes was 73.60 (SD ±16.29; range, 36.54–100). More than one-third of the participants reported limited experience in attributes related to items B30 (suspected oral cancer, 36.2%), and B33 (evaluating new dental materials, 22.3%).

**Conclusion:** In this study, dental graduates of KFU reported a high level of self-perceived confidence in their skills. Consequently, they will be able to integrate seamlessly into general dental practice. However, the participants' feedback reflects certain deficiencies in practising specific clinical procedures.

**Keywords:** DU-PASS, preparedness, dental graduates, Saudi Arabia, self-perceived, assessment

## Introduction

Worldwide, there is enormous interest in health professionals' preparedness for practice, which involves predicting the extent to which they will be able to perform their duties effectively in the future.[1,2]

To meet the modern health-care system's needs and transformation, dental students must receive proper education to provide predictable and effective health-care services and training, including education over a lifelong career.[3]

The goal of undergraduate dental education is to prepare students for a career in dental practice. Various factors can influence undergraduate students' readiness, including curriculum design, teaching methods, educational atmosphere, clinical training model, and evaluation methods.[1]

Dental graduates' preparedness reflects the knowledge, skills, and attitudes required to practice dentistry safely, efficiently, and professionally.[4] As such, the concept of being prepared for practice includes not only competence but also feeling and being ready to function independently in a variety of work settings.

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Assessing graduates' performance is essential to identify the strengths and weaknesses in dental education. In addition, their performance in practice provides an early indicator of the quality of the undergraduate curriculum and education process.[5]

Self-assessment of students is a predictable tool to provide feedback and incorporating it into academic programs is an integral part of monitoring academic quality and help health professionals improve and adapt to advances in their profession.[6–8]

The Dental Undergraduates Preparedness Assessment Scale (DU-PAS), a valid and reliable tool for assessing a wide variety of abilities and qualities of anticipated dental students at graduation, has been used worldwide to ensure that graduates are adequately prepared to provide safe clinical care.[4]

In Saudi Arabia and most other countries, dentists are required to possess the knowledge, skills, and attributes to practice safely without supervision at graduation. In addition, they must comply with the vision and mission of the Saudi Commission for Health Specialties.[9]

Dental schools and training providers are responsible for ensuring that their graduates have the necessary skills and knowledge to work safely in the profession upon graduating. Furthermore, this information is essential to guide the advancement of educational programs for dental practitioners and to support the ongoing professional development of newly qualified dental practitioners.[10]

In 2016, KFU launched its dental program. Since then, nine batches have enrolled in the program and three cohort of graduates over three years.

The aim of the study is to describe the self-perceived preparedness of dental graduates at KFU, which is one of the emerging universities in Saudi Arabia, using a previously validated scale, the DU-PAS.

The current findings will serve as a basis for future reviews and the improvement of accreditation standards, policies, and the professional skills of newly licensed dental professionals at KFU.

## Materials and Methods

This is a cross-sectional study of dental graduates of the College of Dentistry. The all-male dental school was established in 2011 and three cohorts have graduated since its establishment.

From January to April 2021, an electronic form distributed to 102 eligible dental graduates of KFU. The inclusion criteria was Dental graduates in active internship training. Exclusion criteria consisted of dental students and graduates who had completed their internship. The response rate was 92.15%.

The DU-PAS tool which is a valid and reliable tool to measure a broad range of skills and attributes expected of dental students at the time of graduation.[4] The questionnaire consists of two parts, the first investigating preparedness in clinical procedures (24 items) and the second investigating preparedness regarding cognition, communication, and professionalism skills (26 items).

The participants received an information sheet summarizing the study's purpose and an invitation letter. Participation was voluntary, anonymous, and completely confidential. Their consent was obtained before collecting their responses. The data were analyzed using SPSS Descriptive analysis using frequencies and percentages. The total preparedness score ranged from 0 to 100. Part A of the scale focuses on clinical skills and is scored on a 3-point scale: 0, no experience; 1, with verbal and/or practical input from a colleague; and 2, on my own, independently. Part B consists of 26 items related to cognitive and behavioral attributes scored on a 3-point scale: 0, no experience; 1, most; and 2, always.

Ethical approval obtained was to conduct the study from the Research Ethics Committee at King Faisal University (KFU-REC-2021- NOV-EA000229).

## Results

The study included 94 participants, all of them male. The response rate was 92.4%, graduated students in the College of Dentistry, KFU, in Saudi Arabia. The participants' median age was 25 years (range, 22–27 years).

In this study, the participants' mean DU-PAS score was 79.08 (SD ±12.15; range, 47.84–100). The mean score for Part A of the scale, which comprises the clinical skills the respondents learned during their undergraduate dental education program, was 84.55 (SD ±13.56; range, 43.75–100), Figure 1.

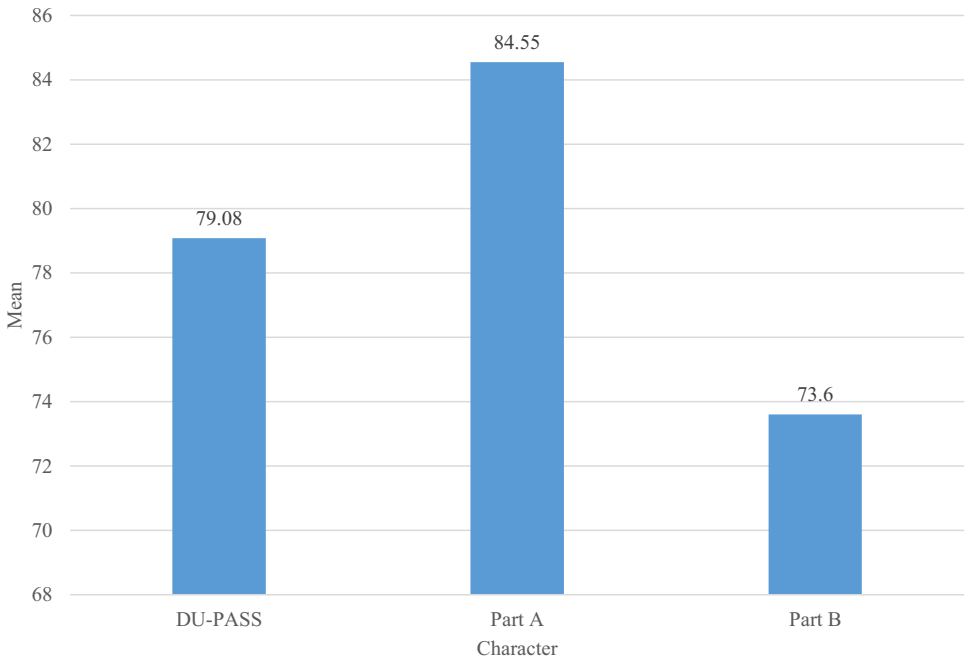



**Figure 1** Total mean scores of DU-PASS, PART A and B among KFU dental graduates.

Across the 24 questions relating to clinical procedures, participants felt they had no experience for four of the procedures namely; A7 (assessing the need for orthodontic treatment) 11.7%; A18 (restore teeth with amalgam fillings) 18.1%; A22 and A23 (provide full and partial dentures) 41.5%.

Among the clinical procedures, thirteen of them scored more than 80%, which includes oral examination, restore tooth with colored fillings, non-surgical extraction and perform endodontics appropriately. Two clinical procedures scored more than 90%, which includes administration of local anesthesia and removing dental caries effectively, Figure 2.

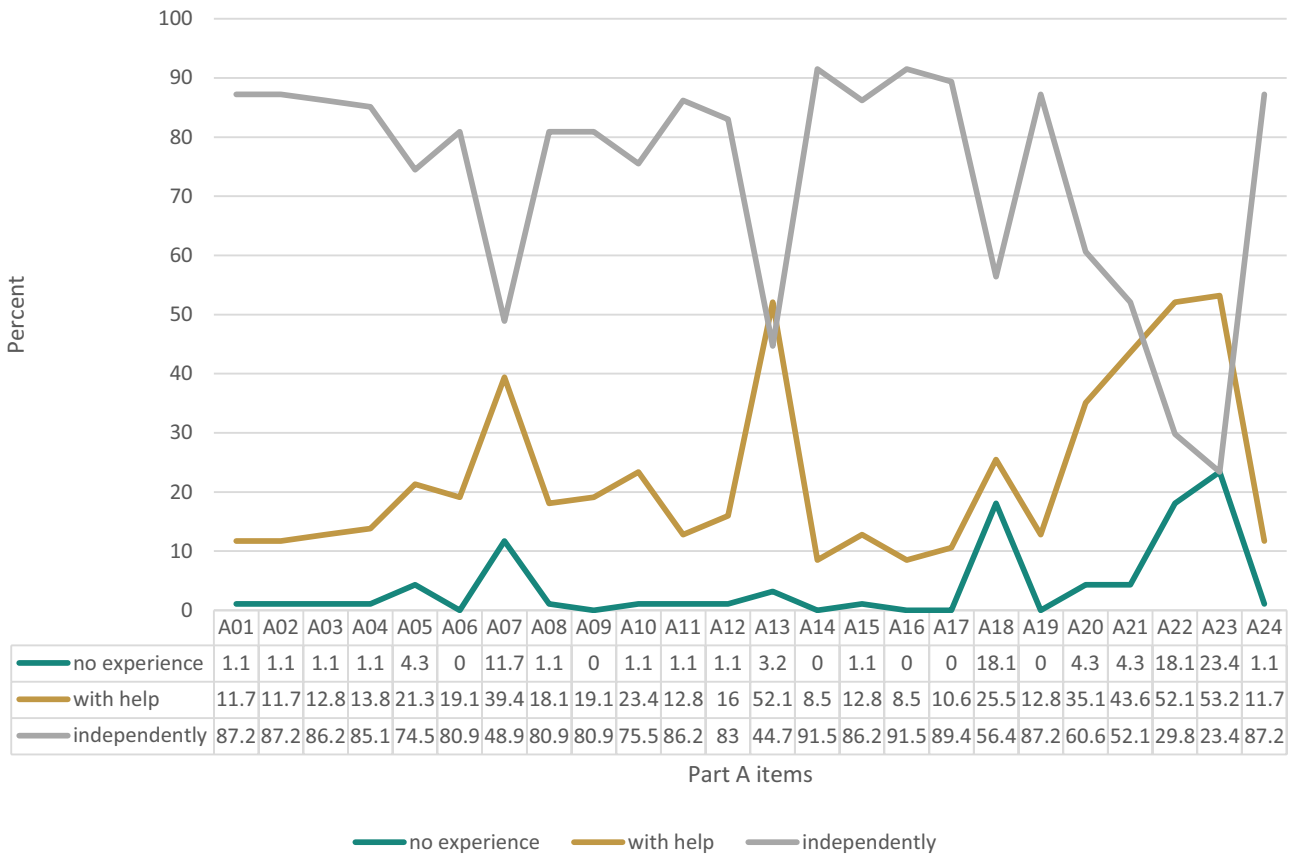
The mean score for Part B of the scale, which comprises cognitive and behavioral attributes, was 73.60 (SD ±16.29; range, 36.54–100), Figure 3.

More than one-third of the participants reported limited experience in attributes related to items B30 (suspected oral cancer, 36.2%), B33 (evaluating new dental materials, 22.3%), B34 (interpreting research results, 17%), and B35 (using an evidence-informed approach, 12.8%). More than two-thirds of the participants scored higher than 60% on of the preparedness in communication skills with patients (B36, B40) and colleagues as well as most of the professionalisms aspects (B46-B48).

## Discussion

The study measured the dental graduates' self-perceived preparedness in technical skills and cognitive and behavioral attributes that can influence clinical proficiency. Self-assessment is a recommended procedure that has been shown to promote professional growth and enhance competent performance at the workplace, however on other contrary results should be augmented by other methods.[8]

The results show the dental graduates of KFU are well prepared compared to those from developed countries. The mean total score of 79.08 (SD ±12.15) is similar to that from a study conducted in Malaysia and better than those of undergraduates from Pakistan and the United Kingdom, who scored 65.60 and 74, respectively.[11,12] This study also highlights that participants had self-awareness of their strengths and deficiencies in particular areas of knowledge and skills.




| | A01 | A02 | A03 | A04 | A05 | A06 | A07 | A08 | A09 | A10 | A11 | A12 | A13 | A14 | A15 | A16 | A17 | A18 | A19 | A20 | A21 | A22 | A23 | A24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| no experience | 1.1 | 1.1 | 1.1 | 1.1 | 4.3 | 0 | 11.7 | 1.1 | 0 | 1.1 | 1.1 | 1.1 | 3.2 | 0 | 1.1 | 0 | 0 | 18.1 | 0 | 4.3 | 4.3 | 18.1 | 23.4 | 1.1 |
| with help | 11.7 | 11.7 | 12.8 | 13.8 | 21.3 | 19.1 | 39.4 | 18.1 | 19.1 | 23.4 | 12.8 | 16 | 52.1 | 8.5 | 12.8 | 8.5 | 10.6 | 25.5 | 12.8 | 35.1 | 43.6 | 52.1 | 53.2 | 11.7 |
| independently | 87.2 | 87.2 | 86.2 | 85.1 | 74.5 | 80.9 | 48.9 | 80.9 | 80.9 | 75.5 | 86.2 | 83 | 44.7 | 91.5 | 86.2 | 91.5 | 89.4 | 56.4 | 87.2 | 60.6 | 52.1 | 29.8 | 23.4 | 87.2 |

**Figure 2** Percentage scores for DU-PASS Part A among the participants.

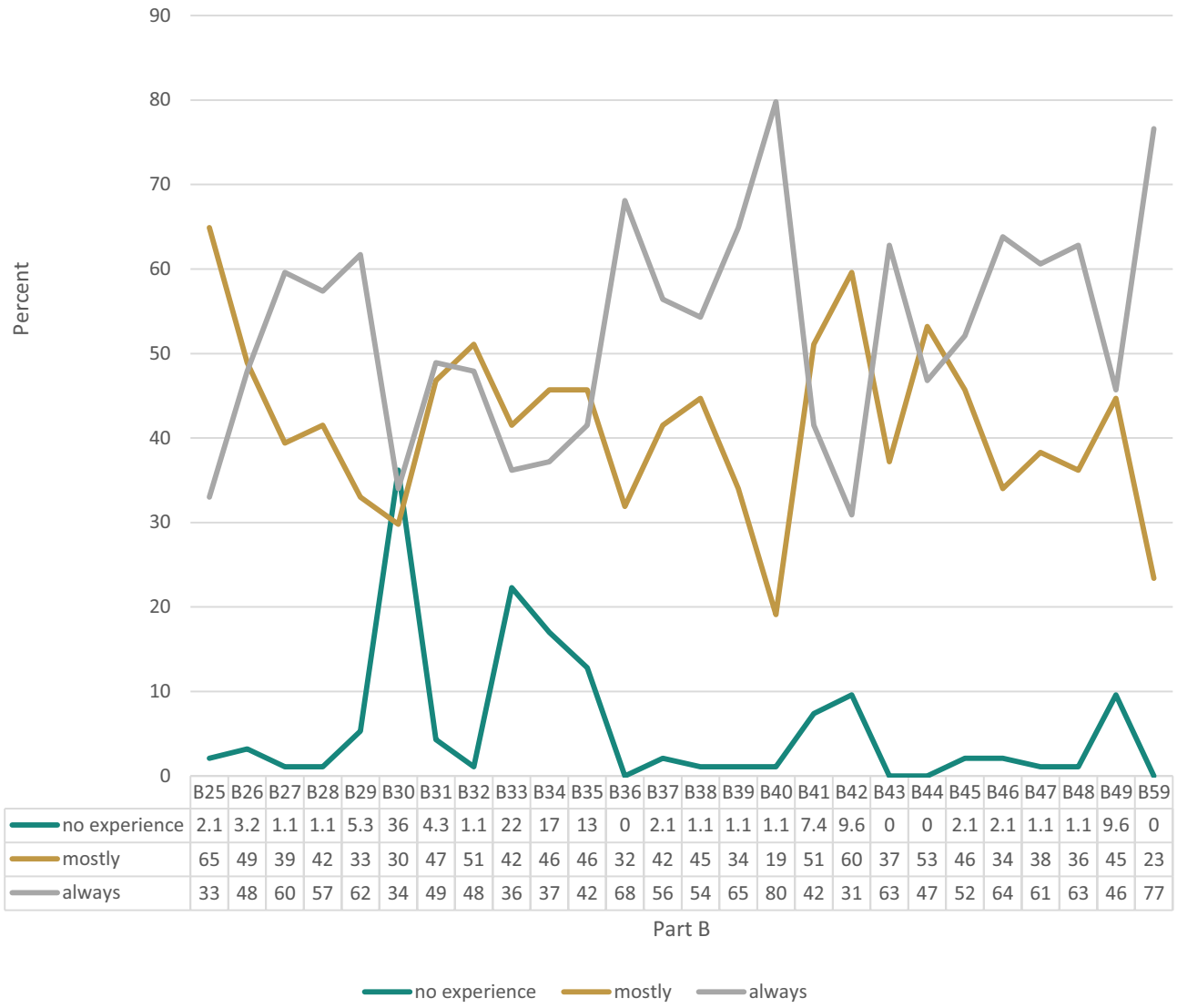
The result highlight areas of weaknesses that require further education and training, especially in orthodontics. This issue can be explained by the fact orthodontics in undergraduate curriculums was covered with less emphasis on clinical training than on other subjects because orthodontics practice usually occurs in postgraduate training.[13]

On preparedness for prosthodontics clinical procedures (A21-A23), the participants scored the lowest. This result is consistent with other studies and is attributable to the fact that prosthodontic procedures are associated with a high risk of failure; furthermore, the short preclinical training and the need for one-to-one supervision requires more faculty, especially in preparation of a patient with fixed prosthodontics.[13–17] Rayyan et al[18] provided another reason for the low score in preparedness for prosthodontics when they reported high self-perceived stress among Saudi dental students regarding prosthodontics who perceived they did not have adequate preclinical training and fear of errors and lack of facilities.

More participants felt unprepared with some items (eg, regarding the use of an evidence-based approach in evaluating new dental materials as well as their clinical practices [B33, B35] and interpreting the results of the research [B34]). Previous studies have shown that undergraduate dental students lacked confidence in their knowledge and skills in evidence-based dentistry.[19–21] Therefore, it is advisable that dental students receive adequate training to evaluate published research critically in the age of rapid technological advancement.

Our findings highlight the dental graduates' high level of preparedness regarding their cognitive, communication, and professionalism skills. Many students found that it was easy to communicate appropriately with their patients and colleagues, fulfill their responsibilities as part of a team, restrict their providing opportunities for patients to express their expectations of the dental treatment, and recognize their own personal limitations in clinical practice.

Furthermore, the study showed that many participants always seek help from their supervisors or colleagues, which is similar to results from Malaysia and the United Kingdom.[21] This in turn increased students' confidence and made them




| | B25 | B26 | B27 | B28 | B29 | B30 | B31 | B32 | B33 | B34 | B35 | B36 | B37 | B38 | B39 | B40 | B41 | B42 | B43 | B44 | B45 | B46 | B47 | B48 | B49 | B59 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| no experience | 2.1 | 3.2 | 1.1 | 1.1 | 5.3 | 36 | 4.3 | 1.1 | 22 | 17 | 13 | 0 | 2.1 | 1.1 | 1.1 | 1.1 | 7.4 | 9.6 | 0 | 0 | 2.1 | 2.1 | 1.1 | 1.1 | 9.6 | 0 |
| mostly | 65 | 49 | 39 | 42 | 33 | 30 | 47 | 51 | 42 | 46 | 46 | 32 | 42 | 45 | 34 | 19 | 51 | 60 | 37 | 53 | 46 | 34 | 38 | 36 | 45 | 23 |
| always | 33 | 48 | 60 | 57 | 62 | 34 | 49 | 48 | 36 | 37 | 42 | 68 | 56 | 54 | 65 | 80 | 42 | 31 | 63 | 47 | 52 | 64 | 61 | 63 | 46 | 77 |

**Figure 3** Percentage scores for DU-PASS Part B among the participants.

feel safer in providing treatment although a previous study showed that some students tend to rely on their supervisors and became anxious whenever they are working independently on some occasions.[22]

## Conclusions

According to this study, dental graduates of the College of Dentistry felt confident about their skills across most areas of dentistry, although there were some areas where they felt less confident. Consequently, they will be able to integrate seamlessly into the general dental practice. However, the participants' feedback reflects certain deficiencies regarding specific clinical procedures.

## Recommendations

Periodic curriculum revision that incorporates the students' feedback with increased experiential training in a wider range of clinical procedures will enhance their preparedness to practice.

## Limitation of the Study

This study has limitations related to self-reported information biases, which is different from actual clinical competence based on the trainees' examination, but mainly addressed the appropriateness of dental curriculum and the students' opinions because as stakeholders, they play an important role. However, our findings will help assess the appropriateness of dental curricula from the students' perspective and identify the gaps that need to be addressed in the design of future undergraduate (BDS) dental curricula.

## Abbreviations

DU-PAS, Dental Undergraduates Preparedness Assessment Scale; KFU, King Faisal University; BDS, Bachelor of Dental surgery.

## Data Sharing Statement

The data that support the findings of this study are available from the corresponding author with permission from the Research Ethics Committee at King Faisal University.

## Ethics Approval and Consent to Participate

Ethical approval to conduct the study was obtained from the Research Ethics Committee at King Faisal University (KFU-REC-2021- NOV-EA000229).

## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no competing interests.

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