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Self-Perceived Competence in Clinical Skills Among Fresh Graduates of Karachi Pakistan - A Comparative Study

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ABSTRACT

Students' development as effective dental practitioners are based on their happiness and self-awareness with their ability to conduct various dental operations. This study evaluated the self-perceived competence level among fresh dental graduates who are currently completing their house jobs in different dental institutes in Karachi, Pakistan. This was a descriptive, cross-sectional study, conducted in January and February 2022. Data was collected from a total of 330 fresh graduates working as house officers in six different dental colleges in Karachi. The participants were asked to fill out the questionnaire, after acquiring informed consent. The mean overall score was 75.75/100 + 11.60. Most of the participants had a firm grip on 18 out of 24 clinical procedures while bitewing radiographs and production of mechanically sound cast partial denture (CPD) were two items that most of the participants lacked. The cognitive skills in part B were absent in most of the participants. House officers were able to perform clinical duties confidently during their house job while there was a lack of interest shown in performing cognitive responsibilities which showed that there is room for improvement. The findings of this study could be applied to dental schools in Pakistan in uplifting their clinical and cognitive skills to make them better clinicians, as multiple dental schools participated in this survey. The effects should be assessed carefully as the reported competence is self-perceived, not clinically proven.

INTRODUCTION

'Dental education' is meant to train students in developing clinical skills to perform basic dental procedures, and to have an understanding of the general dental concepts with emphasis on the inclusion of certain attributes and behaviors needed in becoming a competent clinician who can function as part of a dental team (PMC, 2021). Students' satisfaction and self-awareness regarding their skill and competence in performing different dental procedures form the basis of their growth as successful clinicians in the field of dentistry. An understanding of how well they can manage dental patients during the basic level of their house job period determines how much the dental education of their undergraduate years at the institute has prepared them for a successful dental career. Fresh graduates should have the basic knowledge, conduct, and skills that could facilitate their house job to equip them with the training necessary for independent dental practice down the road (Qazi *et al.*, 2021).

Normally, dental colleges of Pakistan follow a PMC-approved BDS curriculum and house job structure that is determined by the National Medical and Dental Academic Board (PMC, 2021). Apart from the theoretical assessments, this BDS curriculum also requires students to be skilled in certain dental procedures by performing a specific number of procedures as per the quota of the individual university (Majeed & Tirmizi, 2019). During the past few years, some changes have been observed in the medical education system. The replacement of the Pakistan Medical & Dental Council (PM&DC) by the Pakistan

Medical Commission (PMC) is one such change that has exerted a huge impact on the dental curriculum. Also, the change in affiliation of private dental institutes from Karachi University to Jinnah Sindh Medical University has reshaped the pattern of examinations (Majeed *et al.*, 2020; Naqvi, 2021; Wikipedia, 2021). Furthermore, the world fighting the COVID-19 pandemic in the last few years has caused many difficulties for the dental institutes of Pakistan in clinical teaching of students. The implementation of online learning, modifications of the infection control practices, and closure of dental OPDs resulted in great deficiencies in the clinical skills teaching of third and final-year students (Ali *et al.*, 2017; Mat Yudin *et al.*, 2020). Considering the aforementioned changes in the dental education methodology and curriculum, there is a need to evaluate their effects on the competence and learning of fresh graduates of Pakistan to identify the areas for modification in the teaching strategies. There are few studies (Ali *et al.*, 2017; Mat Yudin *et al.*, 2020; Qazi *et al.*, 2021) that have been published regarding the self-perceived preparedness of the fresh graduates. These have used a previously validated dental undergraduates' preparedness assessment scale (DU-PAS) to evaluate the BDS graduates. This scale has been used internationally as a tool for the aforementioned evaluation (Ali *et al.*, 2017; Qazi *et al.*, 2021). The present study has used the same validated DU-PAS scale to evaluate the self-perceived competence level among house officers of different dental institutes in Karachi. To the best of our knowledge, only one such study has been done previously

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in Pakistan in 2018 regarding the same but it was done before the COVID-19 pandemic so the present study will also compare the results with that study to evaluate the effects of the changes in the dental education over the last few years on the self-perceived competence levels of the fresh graduates (Qazi *et al.*, 2021).

The aim of conducting this study was to evaluate the self-perceived competence level in performing clinical skills, appropriate conduct, and certain cognitive attributes among the fresh dental graduates who are currently doing their house jobs in different dental institutes in Karachi, Pakistan.

MATERIALS AND METHODS

It was a descriptive, cross-sectional study conducted in January and February 2022. The sample was comprised of house officers from six different dental colleges in Karachi including Dow International Dental College (DIDC), Dow Dental College (DDC), Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences (DIKIOHS), Karachi Medical & Dental College (KM&DC), Altamash Institute of Dentistry & Medicine (AIDM) and Jinnah Postgraduate Medical Centre (JPMC). Data collection started on the 18th of January 2022 and ended on the 10th of February 2022, lasting 24 days. House officers who gave their written informed consent with ages ranging between 20 to 30 years were included in the study and are working in one of the aforementioned institutes of Karachi. House officers who hadn't completed their dental education (BDS) from Pakistan, graduates below 20 or above 30 years of age, and not working in the mentioned institutes of Karachi were excluded. The study consisted of 330 participants in total (38 study participants from DIDC, 102 from KMDC, 39 from AIDM, 37 from JPMC, 48 from DUHS, and 69 from DIKIOHS). The institutional review board approved the study (AIDM/RDRC/12/2021/03). The convenience sampling technique was used with sample size calculation done by using the Cochran formula in which the known population size was taken as 3557 as a rough estimate (Commission, 2021a, 2021b; GD, 1992).

The permission of the author of the DU-PAS scale to use the said scale was obtained via email. Tangible questionnaires were distributed among the house officers of the aforementioned dental colleges. The questionnaire consisted of three sections: an informed consent section, a supplemental participant information section, and the validated preparedness assessment scale section. The Scale was originally prepared in the United Kingdom via specific studies and methods and was reviewed for its lexical and grammatical appropriateness by a team of ten dental scholars in Pakistan (Ali *et al.*, 2017; Mat Yudin *et al.*, 2020; Qazi *et al.*, 2021). This scale is used for the assessment of the clinical skills, appropriate professional conduct, and the attributes that are required or expected from a fresh dental graduate. It consists of 50 questions that are split into two parts- A and B. Part A evaluates self-

perception regarding clinical competence and consists of 24 questions and part B assesses professionalism, communication skills, and cognitive skills that are required for success in dentistry (Ali *et al.*, 2017) and it contains 26 questions (Pakistan, 2021). The responses from parts A and B were graded as follows: 0 for 'no experience', 1 for 'with help', and 2 for 'on my own for part A and 0 for 'no experience', 1 for 'Mostly', 2 for 'Always' for part B (Qazi *et al.*, 2021).

After all the questionnaires were filled and submitted, all the data was entered into the Statistical Package of Social Sciences (SPSS) software for statistical analysis. Descriptive statistics in addition to the overall DU-PAS scores and their mean and standard deviation were also calculated for comparative purposes. The p-value was kept at 0.05 at a confidence level of 95%.

RESULTS AND DISCUSSION

Results

A total of 330 house officers aged ranging from 22 to 28 years were approached to fill out the questionnaire. 51 (15.54%) participants were male and 279(84.54%) were female (Table 1). The mean of the overall scores was 75.75 + 11.60. The highest score was 100 and the lowest was 16. Most of the participants were of 24 years of age followed by 23 years (Table 1). The majority of the house officers were from KMDC and DIKIOHS (52.73 %). The participants from government dental colleges of Karachi were 206 (62.43 %) and 124 (37.58 %) from private medical colleges (Table 2).

Table 3 shows part A of the preparedness assessment scale that evaluates clinical skills which signifies that more than half of the participants felt they could perform about 18 of the 24 clinical procedures on their own. The procedures that most participants (more than or equal to 90 %) felt confident in doing on their own were obtaining a complete medical history from their patients (item A1), obtaining valid consent from their patients before starting treatment (item A11), and removing dental caries effectively (item A16). Conversely, the only two procedures that were significantly (more than 35 %) regarded by the participants as having no experience with were taking bitewing radiographs (item A5) and providing mechanically sound cast partial dentures (item A22).

Table 4, on the other hand, represents part B of the preparedness assessment scale which shows that more than half of the participants reported feeling always or mostly confident in almost all of the mentioned skills. However, the items that were significantly reported (more than or equal to 20%) to having no experience with were: evaluating new dental materials and products using an evidence-based approach (item B33), referring patients suspected of having oral cancer (item B30), and interpreting research results that could affect their dental practice (item B34) and using an evidence-informed approach in their clinical practice (item B35).

Table 1: Demographic values of the population

Variable	Frequency	Percentage
Age Group		
22	15	4.54 %
23	110	33.33 %
24	129	39.09 %
25	62	18.78 %
26	12	3.63 %
27	1	0.30 %
28	1	0.30 %
Gender		
Male	51	15.54%
Female	279	84.54%

Table 2: Participants from Government and Private dental colleges

Variable	Dental College	Frequency	Percentage
Private Sector	AIDM	39	11.82 %
	DDC	45	13.64 %
	DIDC	40	12.12 %
Total		124	37.58 %
Government Sector	JPMC	32	9.70 %
	KMDC	105	31.82 %
	DIKIOHS	69	20.91 %
Total		206	62.43 %

Table 3: Part A of the DU-PAS

Item	Question	No experience (%)	With help (%)	On my own (%)
A5	I am able to undertake bitewing radiographs	44.5	42.4	13
A21	I am able to provide crowns using principles of tooth preservation	23.6	38.8	37.6
A22	I am able to provide mechanically sound cast partial dentures	36.1	40.3	23.6
A4	I am able to undertake periapical radiographs	17	27	56.1
A20	I am able to perform endodontic treatment on mutli rooted teeth appropriately	19.1	38.8	42.1
A7	I am able to assess the treatment needs of patients requiring orthodontics	18.8	51.8	29.4
A23	I am able to provide a mechanically sound full denture	13	37.6	49.4
A8	I am able to formulate a comprehensive treatment plan which addresses all treatment needs of my patients	3	40.3	56.7
A11	I am able to obtain a valid consent from my patients prior to undertaking any treatment	0.6	8.5	90.9
A12	I am able to carry out patients' treatment sessions in an appropriate order	2.7	23	74.2
A15	I am able to perform non-surgical periodontal treatment using appropriate methods	4.5	18.2	77.3
A9	I am able to provide a range of treatment options to my patients based on their individual circumstances	1.5	26.4	72.1
A3	I am able to prescribe appropriate dental radiographs	2.7	15.8	81.5
A14	I am able to administer inferior dental nerve blocks effectively	1.2	9.4	89.4
A10	I am able to explain the merits and demerits of various treatment options to my patients	0.9	11.8	87.3

Item	Question	No experience (%)	With help (%)	On my own (%)
A13	I am able to prescribe drugs to my patients appropriately	1.5	23.3	75.2
A18	I am able to restore teeth with amalgam fillings appropriately	7.9	13.6	78.5
A24	I am able to undertake non-surgical tooth extractions appropriately	1.2	11.5	87.3
A2	I am able to undertake a comprehensive, clinical oral examination	0.9	10.6	88.5
A6	I am able to interpret common findings on dental radiographs	1.2	15.5	83.3
A16	I am able to remove dental caries effectively	0.6	8.8	90.6
A17	I am able to restore teeth with tooth colored fillings appropriately	2.4	10.6	87
A19	I am able to perform endodontic treatment on single rooted teeth appropriately	9.4	19.7	70.9
A1	I am able to obtain complete medical history from my patients	0.6	5.8	93.6
A5	I am able to undertake bitewing radiographs	44.5	42.4	13
A21	I am able to provide crowns using principles of tooth preservation	23.6	38.8	37.6
A22	I am able to provide mechanically sound cast partial dentures	36.1	40.3	23.6
A4	I am able to undertake periapical radiographs	17	27	56.1
A20	I am able to perform endodontic treatment on mutli rooted teeth appropriately	19.1	38.8	42.1
A7	I am able to assess the treatment needs of patients requiring orthodontics	18.8	51.8	29.4
A23	I am able to provide a mechanically sound full denture	13	37.6	49.4
A8	I am able to formulate a comprehensive treatment plan which addresses all treatment needs of my patients	3	40.3	56.7
A11	I am able to obtain a valid consent from my patients prior to undertaking any treatment	0.6	8.5	90.9
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A14	I am able to administer inferior dental nerve blocks effectively	1.2	9.4	89.4
A10	I am able to explain the merits and demerits of various treatment options to my patients	0.9	11.8	87.3
A13	I am able to prescribe drugs to my patients appropriately	1.5	23.3	75.2
A18	I am able to restore teeth with amalgam fillings appropriately	7.9	13.6	78.5
A24	I am able to undertake non-surgical tooth extractions appropriately	1.2	11.5	87.3
A2	I am able to undertake a comprehensive, clinical oral examination	0.9	10.6	88.5
A6	I am able to interpret common findings on dental radiographs	1.2	15.5	83.3
A16	I am able to remove dental caries effectively	0.6	8.8	90.6
A17	I am able to restore teeth with tooth colored fillings appropriately	2.4	10.6	87
A19	I am able to perform endodontic treatment on single rooted teeth appropriately	9.4	19.7	70.9
A1	I am able to obtain complete medical history from my patients	0.6	5.8	93.6
A5	I am able to undertake bitewing radiographs	44.5	42.4	13
A21	I am able to provide crowns using principles of tooth preservation	23.6	38.8	37.6
A22	I am able to provide mechanically sound cast partial dentures	36.1	40.3	23.6
A4	I am able to undertake periapical radiographs	17	27	56.1
A20	I am able to perform endodontic treatment on mutli rooted teeth appropriately	19.1	38.8	42.1

Item	Question	No experience (%)	With help (%)	On my own (%)
A7	I am able to assess the treatment needs of patients requiring orthodontics	18.8	51.8	29.4
A23	I am able to provide a mechanically sound full denture	13	37.6	49.4
A8	I am able to formulate a comprehensive treatment plan which addresses all treatment needs of my patients	3	40.3	56.7
A11	I am able to obtain a valid consent from my patients prior to undertaking any treatment	0.6	8.5	90.9
A12	I am able to carry out patients' treatment sessions in an appropriate order	2.7	23	74.2
A15	I am able to perform non-surgical periodontal treatment using appropriate methods	4.5	18.2	77.3
A9	I am able to provide a range of treatment options to my patients based on their individual circumstances	1.5	26.4	72.1
A3	I am able to prescribe appropriate dental radiographs	2.7	15.8	81.5
A14	I am able to administer inferior dental nerve blocks effectively	1.2	9.4	89.4
A10	I am able to explain the merits and demerits of various treatment options to my patients	0.9	11.8	87.3
A13	I am able to prescribe drugs to my patients appropriately	1.5	23.3	75.2
A18	I am able to restore teeth with amalgam fillings appropriately	7.9	13.6	78.5
A24	I am able to undertake non-surgical tooth extractions appropriately	1.2	11.5	87.3
A2	I am able to undertake a comprehensive, clinical oral examination	0.9	10.6	88.5
A6	I am able to interpret common findings on dental radiographs	1.2	15.5	83.3
A16	I am able to remove dental caries effectively	0.6	8.8	90.6
A17	I am able to restore teeth with tooth colored fillings appropriately	2.4	10.6	87
A19	I am able to perform endodontic treatment on single rooted teeth appropriately	9.4	19.7	70.9
A1	I am able to obtain complete medical history from my patients	0.6	5.8	93.6

Table 4: Part B containing questions regarding cognitive and communication skills

Item	Question	No experience (%)	Mostly (%)	Always (%)
B33	I am confident to evaluate new dental materials and products using an evidence-based approach	30	57	13
B30	I feel confident referring patients suspected with oral cancer	23.6	53.6	22.7
B34	I am confident to interpret the results of research which may influence my practice	35.5	50.3	14.2
B35	I use an evidence-informed approach in my clinical practice	25.2	53.3	21.5
B44	I maintain accurate records of my clinical notes	10.3	59.1	30.6
B42	I am able to manage the behavior of children to enable appropriate dental treatment	9.1	68.8	22.1
B49	I feel able to raise concerns about inappropriate behavior of my colleagues	14.8	55.5	29.7
B41	I feel confident managing anxious patients with appropriate behavioral techniques	6.7	64.8	28.5
B38	I feel confident to address barriers to effective communication with patients appropriately	7.3	59.4	33.3
B32	I have sufficient knowledge of scientific principles which underpin my dental practice	11.2	67.9	20.9
B29	I am able to refer patients with complex treatment needs appropriately	9.1	59.1	31.8

B31	I reflect on my clinical practice in order to address my learning needs	5.5	57.9	36.7
B39	I feel confident to communicate potential risks of operative procedures to patients	5.8	57.3	37
B45	I am able to work within the constraints of clinical appointment schedules	3.6	63.3	33
B27	I recognize my personal limitations in clinical practice	6.4	44.8	48.8
B37	I provide opportunities for my patients to express their expectation from dental treatment	3.6	44.8	51.5
B47	I am aware of my legal responsibilities as a dental professional	2.1	35.8	62.1
B50	I take appropriate measures to protect patient confidentiality	3	29.1	67.9
B25	I feel I can manage people's expectations of their treatment	2.4	57.6	40
B26	I feel able to motivate my patients to encourage self-care for their dental needs	2.1	42.4	55.5
B28	I feel comfortable asking for help from supervisor or colleague if needed	2.7	35.5	61.8
B36	I feel I can manage to communicate effectively with my patients	1.8	37.9	60.3
B40	I feel confident to communicate appropriately with my colleagues	1.2	34.5	64.2
B43	I am able to fulfill my responsibilities as an effective member of the dental team	2.7	36.1	61.2
B46	I take responsibility for my continuing professional development	1.5	32.1	66.4
B48	I restrict my relations with my patients to a professional level	2.7	27.3	70

Discussion

The results discussed in the aforementioned section reveal the current state of the confidence level of the house officers with regards to the skills they are expected to have as a dental graduate in order to lead a more successful career in dentistry (Qazi *et al.*, 2021). These results indicate adequate experience with more than half of the clinical skills listed in table A. The procedure which most of the participants felt that they had no experience in was bitewing radiography (A5), which could be due to the fact that performing radiography isn't normally taught in dental school (Qazi *et al.*, 2021). As for how competent the participants felt regarding the cognitive skills- the most reported procedures (more than or equal to 25 %) in part B of the questionnaire for 'no experience' were all cognitive skills. This reflects weaknesses in the dental education system especially with regards to the significance of research in dental practice. Despite these inadequacies, most of the skills in which more than half of the participants reported feeling completely confident with were affective and communicative in nature. This could indicate the potential for good teamwork and how the current model of the education system might have contributed to its development. It also possibly indicates the existence of a more patient-centric system that can communicate and fulfill the patients' needs effectively. However, to create a more productive structure, more focus should be given to research and its inclusion in dental practice.

A similar study in Malaysia included its public universities and had an overall mean score of 79.56 and a standard deviation of 13.495 (Mat Yudin *et al.*, 2020). Another similar study that was conducted in Pakistan in 2018 that had utilized the dental graduates- preparedness assessment scale had compared its own results with the

results of the study that was done in the UK (Ali *et al.*, 2017). It had a mean overall score of 70/100 with a standard deviation of 11.7 (our study's mean, in contrast, was 75.75 and standard deviation was 11.60) (Qazi *et al.*, 2021). Compared to the results of this previous study, improvement and decline can be noticed in several areas in the results of our study. For part A, there were about seven items that had indicated significant (more than 20%) improvements via the percentages of the scores in the 'no experience' or in 'on my own' columns: ability to formulate a treatment plan that addresses all patient needs (item A8), providing a range of treatment options based on the individual patient's circumstances (item A9), being able to explain the merits and demerits of various treatment options to patients (item A10), being able to prescribe drugs appropriately to patients (item A13), being able to undertake a comprehensive oral examination (item A2), obtaining a complete medical history from patients (item A1) and being able to undertake bitewing radiographs (item A5). All other items of part A indicated moderate improvement (less than or equal to 20%) in the aforementioned columns except for five items that had indicated an overall decline (percentage changes in 'no experience' compared with the changes in percentages in 'on my own') in clinical output: being able to provide sound cast partial dentures (item A22), being able to provide mechanically sound full dentures (item A23), being able to restore teeth with amalgam fillings appropriately (item A18), being able to restore teeth with tooth colored fillings (item A17) and being able to perform endodontic treatments on single rooted teeth appropriately (item A19). Decrease in confidence in these procedures could be due to the impact of the COVID-19 pandemic on the dental education system that, as mentioned previously, had resulted in online learning and clinical limitations

of students in the essential clinical years (third and final years) of their dental education (BDS) due to the closure of colleges (Ali *et al.*, 2017; Mat Yudin *et al.*, 2020).

Part B, on the other hand, revealed a greater decline compared with Part A (Qazi *et al.*, 2021). Twelve items indicated a lower self-perceived competence level (comparing changes in the 'no experience' column with the changes in 'on my own' column) than the previous study: confidence in interpreting research results that could influence their dental practice (item B34), feeling able to raise concerns about the inappropriate behavior of their colleagues (item B49), having sufficient knowledge of scientific principles that underpin clinical practice (item B32), reflecting on clinical practice in order to address their learning needs (item B31), feeling confident in addressing the barriers to effective communication with patients appropriately (item B38), being able to refer patients with complex treatment needs appropriately (item B29), feeling confident in communicating the potential risks of operative procedures to patients (item B39), recognizing personal limitations in clinical practice (item B27), feeling comfortable in asking for help from a supervisor or colleague if needed (item B28), feeling that they can manage to communicate effectively with patients (item B36), feeling confident in communicating appropriately with colleagues (item B40) and restricting relations with patients to a professional level (item B48). These areas of decline indicate a lack of proper guidance and clinical experience and a poorer role of research in the clinical practice of dental students. However, all other items indicate an improvement and the most significant (more than 20%) improvement was in feeling able to fulfill responsibilities as part of the dental team (item B43) (Qazi *et al.*, 2021).

The aforementioned study of 2018 was the first study, to our knowledge, to have used the international DU-PAS in Pakistan. It was conducted over several months and had a larger sample size that was meant to represent all the house officers of Pakistan (Qazi *et al.*, 2021). Even though, one of its weaknesses was that the sample was not large or diverse enough to be representative of Pakistan, by using the DU-PAS scale, it had done what numerous studies were unable to do, to our knowledge, which is to give a slight representation of where Pakistan lies in comparison to other countries in terms of the proper standards of dental education by using an internationally validated scale (Ali *et al.*, 2017). For our study, its significance stems mainly from the fact that it had used this scale on a sizeable portion of the population in the pre-COVID era in the time PMDC determined the dental education system instead of PMC.

Our study, in comparison to the aforementioned study, is stronger in terms of the sample size (which consisted of 330 participants compared with 128 in the previous study) and variability as it includes six dental colleges instead of just three (Qazi *et al.*, 2021). However, since our sample was meant to represent all the house officers of Pakistan, it lacked diversity as it only included house

officers from the dental colleges located in Sindh. Also, as mentioned in the previous study as well, the relationship between self-perceived preparedness and competence is not always so direct (Qazi *et al.*, 2021). Some studies (Barnsley *et al.*, 2004; Colthart *et al.*, 2008; Lai & Teng, 2011) have been conducted to investigate the connection between these two and have discredited the association between them or have advised more studies to be done in order to be able to provide more clarity on the subject. Also, other types of information bias may have played a role in the data that was collected especially due to the questionnaire's length.

Despite these limitations, this was a much-needed study in the COVID-19 era; in which students have been unable to acquire the experience they need and when even a less diverse study such as this one can prove to be valuable (Ali, *et al.*, 2017; Mat Yudin *et al.*, 2020). In addition, it can also be used for comparative purposes with future studies done on the same topic. This could then illuminate the areas in the education system that need to be modified and help lead to a future that's better prepared to deal with the pandemic.

CONCLUSION

Results of the study indicated that most house officers had some confidence in performing clinical and affective skills. However, the skills mostly reported in part B as having 'no experience' were mainly cognitive skills. While improvements were noticed in comparing these results with a similar study conducted in 2018 in Pakistan, several areas of decline in self-perceived competence levels were also revealed in terms of certain clinical, cognitive, and affective skills. These declines could be due to recent changes, including the COVID-19 pandemic.

REFERENCES

- Ali, K., Slade, A., Kay, E., Zahra, D., Chatterjee, A., & Tredwin, C. (2017). Application of Rasch analysis in the development and psychometric evaluation of dental undergraduates preparedness assessment scale. *European Journal of Dental Education*, 21(4), 135-141. <https://doi.org/10.1111/eje.12236>
- Ali, K., Slade, A., Kay, E., Zahra, D., & Tredwin, C. (2017). Preparedness of undergraduate dental students in the United Kingdom: a national study. *British Dental Journal*, 222(6), 472-477. <https://doi.org/10.1038/sj.bdj.2017.272>
- Barnsley, L., Lyon, P. M., Ralston, S. J., Hibbert, E. J., Cunningham, I., Gordon, F. C., & Field, M. J. (2004). Clinical skills in junior medical officers: a comparison of self-reported confidence and observed competence. *Medical education*, 38(4), 358-367. <https://doi.org/10.1046/j.1365-2923.2004.01773.x>
- Colthart, I., Bagnall, G., Evans, A., Allbutt, H., Haig, A., Illing, J., & McKinstry, B. (2008). The effectiveness of self-assessment on the identification of learner needs, learner activity, and impact on clinical practice: BEME Guide no. 10. *Medical teacher*, 30(2), 124-145.

- <https://doi.org/10.1080/01421590701881699>
- Israel, G. D. (1992). *Determining sample size*. Gainesville: University of Florida. Report No.: Fact Sheet PEOD-6. <https://www.psychosphere.com/Determining%20sample%20size%20by%20Glen%20Israel.pdf>
- Pakistan Medical Commission. (2021a). *Pakistan undergraduate colleges—Private dental colleges*. <https://www.pmc.gov.pk/Colleges/PrivateDentalColleges>
- Pakistan Medical Commission. (2021b). *Pakistan undergraduate colleges—Public dental colleges*. <https://www.pmc.gov.pk/Colleges/PublicDentalColleges>
- Lai, N. M., & Teng, C. L. (2011). Self-perceived competence correlates poorly with objectively measured competence in evidence based medicine among medical students. *BMC medical education*, 11(1), 1-8. <https://doi.org/10.1186/1472-6920-11-25>
- Majeed, H. A., & Tirmizi, S. M. (2019). Assessment of confidence level amongst undergraduate dental students in performing various restorative procedures. *Pakistan Oral & Dental Journal*, 39(3), 293-297.
- Majeed, M. M., Durrani, M. S., Bashir, M. B., & Ahmed, M. (2020). COVID-19 and dental education in Pakistan. *Journal of the College of Physicians and Surgeons Pakistan*, 30(10), 115-117. <https://doi.org/10.29271/jcpsp.2020.supp2.115>
- Mat Yudin, Z., Ali, K., Wan Ahmad, W. M. A., Ahmad, A., Khamis, M. F., Brian Graville Monteiro, N. A., Che Ab. Aziz, Z. A., Saub, R., Rosli, T. I., & Alias, A. (2020). Self-perceived preparedness of undergraduate dental students in dental public universities in Malaysia: A national study. *European Journal of Dental Education*, 24(1), 163-168. <https://doi.org/10.1111/eje.12480>
- Medical News Pakistan. (2021). JSMU announces BDS 1st Prof result. *Medical News Pakistan*. Retrieved October 21, 2021, from <https://www.medicalnewspk.com/16-Jan-2016/jsmu-announces-bds-1st-prof-result>
- Naqvi, A. (2021). Nine private colleges affiliated to JSMU. *Dental News Pakistan*. Retrieved October 21, 2021, from <https://www.dentalnewspk.com/24-Mar-2015/nine-private-colleges-affiliated-to-jsmu>
- Pakistan Medical Commission. (2021). *PMC medical and dental undergraduate education (Admissions, curriculum and conduct) regulations 2021*. [https://pmc.gov.pk/Documents/Others/PMC%20Medical%20&%20Dental%20Undergraduate%20Education%20\(Admissions%20Curriculum%20&%20Conduct\)%20Regulations%202021%20--%20Amended.pdf](https://pmc.gov.pk/Documents/Others/PMC%20Medical%20&%20Dental%20Undergraduate%20Education%20(Admissions%20Curriculum%20&%20Conduct)%20Regulations%202021%20--%20Amended.pdf)
- Qazi, H., Urzinger, S., Cockerill, J., & Zahra, D. (2021). Self-perceived competence of new dental graduates in Pakistan—A multi-institution study: Competence of new dental graduates. *Pakistan Armed Forces Medical Journal*, 71(3), 739-43. <https://doi.org/10.51253/pafmj.v71i3.5012>
- Wikipedia. (2021). *Pakistan Medical Commission*. Retrieved from https://en.wikipedia.org/wiki/Pakistan_Medical_Commission