RESEARCH ARTICLE

Evaluation of user experience and satisfaction with workplace-based assessments (WPBAs) in dental postgraduate programmes

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Abstract

Objective: To explore the experience of and satisfaction with workplace-based assessment tools among dental postgraduate trainees.

Method: The cross-sectional study was conducted from March to October 2022 at the Aga Khan University Hospital, Karachi, and comprised all Operative Dentistry, Prosthodontics and Orthodontics postgraduate trainees. A questionnaire with both open-ended and closed-ended questions was used to record the experiences and satisfaction level of the dental residents who had earlier been subjected to workplace-based assessment. Data was analysed using SPSS 20, while thematic analysis was used for open-ended questions.

Results: Of the 20 Subjects, 15(75%) were females. Also, 11(55%) participants had received prior training for workplace-based assessment. There were 16(80%) residents who were satisfied with workplace-based assessment tools in the dental residency programme, 15(75%) agreed that the tools improved their clinical skills and helped them identify their weak areas, all the 20(100%) participants said the feedback given to them was constructive, 18(90%) reported that they were allowed to put in their views. However, 7(35%) participants reported that being observed adversely affected their performance.

Conclusion: Dental residents generally gave positive feedback related to workplace-based assessment tools in a clinical setting.

Keywords: Dental residency, Clinical competence, Teaching. (JPMA 74: 1464; 2024)

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Introduction

In the past, most types of assessments required the medical trainees to score high in written exams, completely neglecting how they would perform as a medical practitioner. With the advancement in teaching techniques, newer methods of assessing students' clinical skills have emphasised that they should be assessed in workplace settings while treating real patients.[1] Formative evaluation is done by the supervisors and teachers at regular intervals in residency programmes to modify teaching and learning activities. In the medical profession, procedural skills and competency are not only important for patient safety, but also reduce the chances of post-procedure errors and complications.[2]

Clinical competence in medical education can be assessed using Miller's pyramid of assessment, which has four levels. Level 1 indicates that the student 'knows' what is being tested by written exams. The second level is 'knows how' the application of knowledge is done. The third level 'shows how' the student demonstrates clinical skills and is tested by objective structured clinical examination (OSCE) or other clinical exams. The fourth and the highest level is 'does', meaning actual performance.[3] The trainee is assessed by direct observation in a clinical setting while providing daily patient care. These types of assessments are known as workplace-based assessments (WPBAs).[1] To assess professional competencies, several WPBA tools have been proposed out of which Mini Clinical Evaluation Exercise (Mini-CEX) and Direct Observation and Procedural Skills (DOPS) are commonly used in residency programmes worldwide.[2,4]

The American Board of Internal Medicine (ABIM) developed the Mini-CEX in 1990. It is organised into 3 levels: unsatisfactory, satisfactory, and highly satisfactory. The residents are rated against these criteria by an expert faculty member and direct feedback is given. It assesses the trainees on their history-taking, physical examination skills, communication skills, clinical decision-making process, professionalism, organisation, and efficiency. It is recommended that the trainees should be assessed throughout the course at different intervals and by a different faculty member each time.[4-6]

DOPS assesses the trainees on their procedural skills. The trainees select the procedure, time of evaluation, and setting themselves. DOPS is a student-centred assessment tool and provides timely feedback. The trainees are judged on procedural components, including their understanding,

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peri-procedural preparation, patient communication, and technical ability. It assesses whether or not the students understand the principles of procedure, demonstrate appropriate preparation pre-procedure, ensure patient safety (identification checks, adherence to standard operating procedures [SOPs], etc.), comply with health and safety requirements (assessment of risk, use personal protective equipment [PPE], adopt aseptic technique where appropriate, etc.), have technical ability and correctly use instruments, have communication skills (written and/or verbal), show consideration for patient focus and professional issues (like respect for patient dignity, consent-taking), seek help where appropriate, and have the overall ability to perform a procedure.[7]

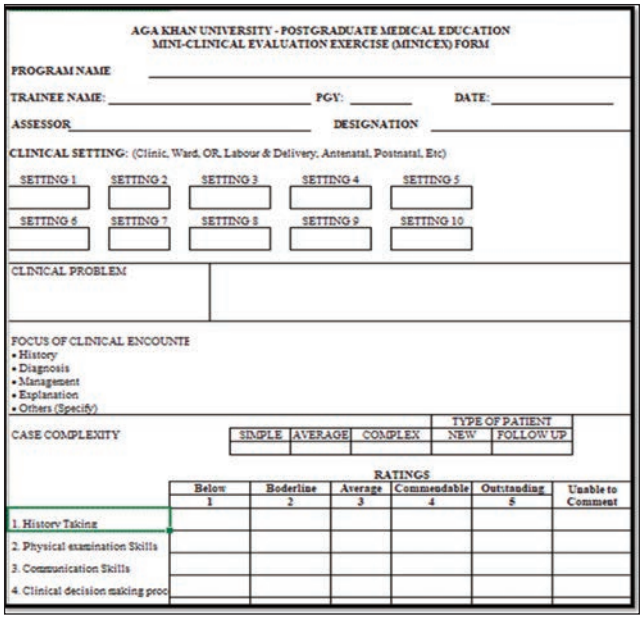
The traditional methods of clinical examinations are challenged nowadays for their subjectivity, content validity and reliability. The oral examinations assess the trainees on the 'knows how' of Miller's pyramid of clinical competency rather than on the 'shows how' aspect. An attempt to reduce these shortcomings involves moving from traditional methods to WPBAs.[8] The dental residency programmes include several WPBAs in their curriculum. Mini-CEX and DOPS are snapshot assessments of the trainees' performance in clinical settings, with feedback being provided by an experienced faculty member. Each year, 10 WPBAs are carried out in each specialty of the dental section. A series of such WPBAs should be conducted to assess trainees' clinical performance by different assessors.[9,10]

The current study was planned to explore the experience of and satisfaction with WPBA tools among dental residents in a tertiary care setting.

Subjects and Methods

The cross-sectional study was conducted from March to October 2022 at the Aga Khan University Hospital (AKUH), Karachi. After approval from the institutional ethics review committee, the sample size was calculated using OpenEPI (Version 3.01) calculator with a population size of 23, an anticipated frequency of 50%, an absolute precision of 5%, and a design effect of 1.0.[11] Using purposive sampling technique, all Operative Dentistry, Prosthodontics and Orthodontics postgraduate residents who were enrolled or had completed the dental residency programme and undergone two WPBAs. Those who did not respond to the questionnaire even after two reminder emails were excluded. Written informed consent was obtained from all those who volunteered to participate.

The study was conducted in two stages. In the first stage, the residents were assessed using WPBA tools, and feedback was given to them in a private room once the patient left. A pre-formed checklist was used to assess the residents (Figure). The process took 25-30 minutes.


AGA KHAN UNIVERSITY - POSTGRADUATE MEDICAL EDUCATION
MINI-CLINICAL EVALUATION EXERCISE (MINICEX) FORM

PROGRAM NAME

TRAINEE NAME: PGY: DATE:

ASSESSOR DESIGNATION

CLINICAL SETTING: (Clinic, Ward, OR, Labour & Delivery, Antenatal, Postnatal, Etc)

SETTING 1	SETTING 2	SETTING 3	SETTING 4	SETTING 5

SETTING 6	SETTING 7	SETTING 8	SETTING 9	SETTING 10

CLINICAL PROBLEM

FOCUS OF CLINICAL ENCOUNTE
- History
- Diagnosis
- Management
- Explanation
- Others (Specify)

CASE COMPLEXITY	SIMPLE	AVERAGE	COMPLEX	TYPE OF PATIENT NEW	FOLLOW UP

	RATINGS Below 1	Boderline 2	Average 3	Commendable 4	Outstanding 5	Unable to Comment
1. History Taking						
2. Physical examination Skills						
3. Communication Skills						
4. Clinical decision making proc						

Figure: Mini-Clinical Evaluation Exercise (Mini-CEX) checklist.

In the second phase, a questionnaire that had been predesigned in the light of literature[6,10,12] with both open-ended and closed-ended questions was used to record the experiences and satisfaction level of the residents. Likert-scale with a 3-point scale, ranging from 'agree' to 'disagree' was used to rate the responses. The usefulness, limitations, and value of feedback were recorded.[13,14] The responses from residents who had already completed their training were gathered through a Google Form link. Patients were not involved in the design, recruitment and conduct of the study.

Data was analysed using SPSS 20. Data was expressed as frequencies and percentages. Fisher's exact test was applied to assess the relationship between the responses and the residency year of the subjects. $P<0.05$ was considered statistically significant. Kruskal-Wallis test was used as appropriate, and thematic analysis was used for open-ended questions.

Results

Of the 23 individuals approached, 20(87%) responded; 15(75%) females and 5(25%) males. There were 6(30%) residents in the first year of training, 5(25%) each in the second and third years, 1(5%) in the fourth year, and 3(15%) had completed their residency training. Also, 11(55%) participants had received prior training for WPBAs.

There were 16(80%) residents who were satisfied with WPBS tools in the dental residency programme, 15(75%) agreed that the tools improved their clinical skills and

helped them identify their weak areas, all the 20(100%) participants said the feedback given to them was constructive, 18(90%) reported that they were allowed to put in their views, and 13(65%) said WPBAs improved teacher-student relationships and they were receptive to negative feedback. However, 7(35%) participants reported that being observed adversely affected their performance (Table 1).

Table-1: Responses to closed-ended questions.

Closed-ended questions	Participant's response [n (%)]		
	Agree	Not sure	Disagree
WPBAs tools improved my clinical skills and helped me identify my weak areas.	15 (75)	4 (20)	1 (5)
It was easy for me to engage a faculty member to observe me?	12 (60)	7 (35)	1 (5)
The feedback I was given was constructive	20 (100)	(0)	(0)
The time given for feedback was adequate	19 (95)	1 (5)	(0)
I was given the opportunity to put my views	18 (90)	1 (5)	1 (5)
The exercise motivated me	18 (90)	2 (10)	(0)
The fact that I was being observed adversely affected my performance	7 (35)	8 (40)	5 (25)
I am satisfied with the WPBA exercise.	16 (80)	2 (10)	2 (10)
These are effective teaching-learning tools	16 (80)	2 (10)	2 (10)
They create an opportunity for learning	18(90)	1 (10)	1 (10)
They improve student-teacher relationship	13 (65)	5 (25)	2 (10)
Trainees are receptive to negative feedback	13 (65)	7 (35)	(0)

WPBA: Workplace-based assessment.

Of the 12 questions, 2(16.7%) showed significant difference when the responses were stratified on the basis of the year of residence (Table 2).

Responses to open-ended questions led to the formation of 4 main themes (Table 3).

Discussion

The process of medical education is wrought with many challenges due to the nature of the procedural work and the impact on the quality of patient care during training. Theoretical information, while forming the foundation on which procedural knowledge is based, lacks in providing an accurate simulation of real-life scenarios that can test the competency of a healthcare provider. In the present study, dental residents of several sub-specialties were approached to evaluate their experience of regular WPBAs throughout the their postgraduate residencies. The residents reported that they found that the WPBAs improved their clinical skills and helped identify important avenues for improvement in their procedural skills due to the constructive criticism provided by the faculty.

Traditional examination methods, such as Task-Oriented Assessment of Clinical Skills (TOACS) or theoretical models, are

Table-2: Responses stratified on the basis of year of residency.

Question	Response	n (%)					Fisher's Exact test *p*-value
		Year 1	Year 2	Year 3	Year 4	Graduate	
WPBA tools improved my clinical skills and helped me identify my weak areas.	Agree	4 (20)	4 (20)	4 (20)	1 (5)	2 (10)	0.79
	Not sure	2 (10)	1 (5)	0	0	1 (5)	
	Disagree	0	0	1 (5)	0	0	
It was easy for me to engage a faculty member to observe me?	Agree	5 (25)	4 (20)	3 (15)	0	0	0.03
	Not sure	1 (5)	1 (5)	2 (10)	0	3 (15)	
	Disagree	0	0	0	1 (5)	0	
The feedback I was given was constructive	Agree	6 (30)	5 (25)	5 (25)	1 (5)	3 (15)	
The time given for feedback was adequate	Agree	6 (30)	5 (25)	5 (25)	0	3 (15)	0.05
	Not sure	0	0	0	1 (5)	0	
I was given the opportunity to put my views	Agree	6 (30)	5 (25)	4 (20)	0	3 (15)	0.06
	Not sure	0	0	0	1 (5)	0	
	Disagree	0	0	1 (5)	0	0	
The exercise motivated me	Agree	6 (30)	5 (25)	4 (20)	1 (5)	2 (10)	0.45
	Not sure	0	0	1 (5)	0	1 (5)	
The fact that I was being observed adversely affected my performance	Agree	3 (15%)	0	2 (10)	1 (5)	1 (5)	0.42
	Not sure	3 (15%)	3 (15)	1 (5)	0	1 (5)	
	Disagree	0	2 (10)	2 (10)	0	1 (5)	
I am satisfied with the WPBA exercise.	Agree	5 (25)	5 (25)	4 (20)	0	2 (10%)	0.16
	Not sure	1 (5)	0	0	0	1 (5%)	
	Disagree	0	0	1 (5)	1 (5)	0	
These are effective teaching-learning tools	Agree	5 (25)	5 (25)	4 (20)	0	2 (10)	0.16
	Not sure	1 (5)	0	0	0	1 (5)	
	Disagree	0	0	1 (5)	1 (5)	0	
They create an opportunity for learning	Agree	5 (25)	5 (25)	4 (20)	1 (5)	3 (15)	1.00
	Not sure	1 (5)	0	0	0	0	
	Disagree	0	0	1 (5)	0	0	
They improve student-teacher relationship	Agree	6 (30)	2 (10)	3 (15)	0	2 (10)	0.13
	Not sure	0	2 (10%)	2 (10)	1 (5)	0	
	Disagree	0	1 (5%)	0	0	1 (5)	
Trainees are receptive to negative feedback	Agree	5 (25%)	3 (15%)	3 (15%)	¬¬0	2 (10)	0.66
	Not sure	1 (5%)	2 (10%)	2 (10%)	1 (5%)	1 (5)	

WPBA: Workplace-based assessment.

Table-3: Themes identified from the responses to open-ended questions.

Purpose of Workplace-based Assessment Tools
• To assess and improve clinical skills.
• To assess the real-time performance of the residents
• To evaluate if the resident is oriented with the procedure protocols and will be able to perform them independently.
• To assess the quality of workplace, training, and the provided treatment
WPBA tools improved my clinical skills and helped me identify my weak areas
• To identify and improve my weak areas.
• It polishes skills.
• I disagree because I feel that performing under direct supervision affects my performance. Additionally, it is difficult to explain the process to the patient and manage this task in between busy clinics.
• Because of direct coordination with the supervisor
• got to know about the mistakes, reinforcement from faculty works as a reminder that as a clinician we need to be more responsible and alert during clinics.
• I was able to evaluate what can be done better in a certain procedure.
• I am not sure since I did not have enough opportunities to evaluate the exact impact these tools had on my skills and knowledge (Graduate).
• WPBA helps me review my performance and identify errors in my approach to a procedure from my supervisors.
• Because I was given constructive feedback
Obstacles preventing effective utilization of the WPBA tools
• More practice should be added.
• The assigned clinical tasks are not the most common in our clinical practice, making it difficult to meet the requirements.
• Lack of awareness among programs
• Lack of time, During a busy clinic it is not possible, availability of place and Patient waiting
Suggestions for improvement in WPBA tools for dental residency training
• By continuing it!
• More diversity should be added.
• Setting aside separate time for WPBA assessment may help.
• By more strict incorporation of it
• I believe if trainees are randomly observed by faculty during clinics without being told that they are being assessed, that would tell more about their clinical work and skills
• Keep Revising the clinical procedures list.
• Should be more comprehensive.
• By incorporating more time for a consultant in each patient procedure
• The assessment done online can be discussed in an interactive session.
• It could be randomly assessed by the consultant on any procedure rather than selecting one and having all focus on that case.
• Give some extra time and space to think to make our own decisions.
• Integrated into the curriculum and scheduled to be held routinely, at least once every quarter or more.
• It could be done once for every clinical procedure by the Residents to identify any errors in execution and to rectify them.

WPBA: Workplace-based assessment.

limited in their scope of evaluation as they include only a surface-level understanding of the residents' competencies.[15] Both these methods focus on Miller's first three levels of assessment, which are more focused on the cognitive domain with a high priority given to the acquisition of knowledge.[3] Healthcare as a field, especially onwards of postgraduate training, is based more on the performance of procedures on patients compared to a display of knowledge. This delineates that the application of knowledge becomes a more important avenue of assessment compared to its acquisition, which is better evaluated through level four methods, such as WPBAs.[16,17]

In the current study, trainee satisfaction with the WPBA format was high across all the years of residency, with 100% of the subjects citing constructive feedback at the end of the activity to be beneficial for the improvement of their skills. WPBAs allow the residents to demonstrate their skills during a procedure with a qualified faculty member present to assess their work.[17] After the procedure, prompt feedback is provided to the trainee by the faculty which touches on subject knowledge and procedural complications. The current trainees reported that the WPBAs helped improve their procedural skills and highlighted their weak areas which can be attributed to the constructive feedback provided by the faculty. These observations were in concurrence with literature.[19,20]

Another aspect of WPBAs that the closed-ended questionnaire highlighted was the trainees' satisfaction with the exercise. A majority of the trainees reported that the assessment motivated them to improve themselves and that they were satisfied with the exercise. The trainees felt that the assessment methods helped create a bridge between the trainees and the faculty while providing a learning opportunity. The trainees further agreed that the exercise allowed them to put forward their views on the topic and target the areas they felt required improvement. This was in concordance with Norcini et al.[20]

While most trainees were satisfied with the activity, some delineated that they felt that they were not able to perform at their best while they were being monitored. This has been a routinely encountered problem with DOPS due to the methodological nature of observation by the faculty.[22,23]

The responses received from the trainees through the closed-ended questionnaire were stratified according to the year of residency training. This allowed the observation of any differences that may have existed due to the level of experience of the trainee. Statistically significant differences were observed across the years when asked about engaging faculty members for the assessments with a decreasing trend of ease with an increase in the year of training. Year I residents found it easier to engage the faculty members during clinics to assess their procedures, whereas the senior residents faced difficulties in doing so. These differences can be attributed to the differences in the complexity of procedures that were assigned to the different years, with a larger turnout for procedures for first-year residents compared to final-year residents. Year III and IV residents can be assumed to have greater responsibilities in the clinics which can be another reason why the senior trainees found it difficult to engage their faculty members for WPBAs. Differences were also observed in satisfaction with the time provided for feedback with a decreasing trend with an increase in trainees' level of experience. This

difference can be postulated to exist due to the increase in expectations of the residents along with the subtleties incorporated into the procedures.[24] Year I residents can be assumed to require shorter feedback due to the simple nature of the procedures, whereas the senior residents require more time due to the increasing complexity of their procedures, and their questions towards them. Senior trainees would have a greater understanding of the performed procedure which increases the opportunity for a discussion rather than instruction from the faculty members. Such an assessment of senior residents can require more time from the faculty members to reach the same level of satisfaction as the junior trainees.

The open-ended questionnaire used in the current study allowed a keen insight into the assessment methods and their impact on daily clinical practice and residents' training. When asked about the necessity of WPBAs, the trainees' assessment was in line with the objectives of the assessment methods with an understanding that these methods were aimed at improving and assessing the trainees' procedural skills along with their understanding of the SOPs. The trainees remarked that the constructive feedback helped them identify areas of improvement and actively work on them. On the other hand, some trainees found it difficult to manage these assessments during busy clinics, and found that direct observation deteriorated their procedural skills, not allowing an accurate assessment of their work.[25] The trainees further suggested that an increased number of procedures included in the assessment list along with more time allotted for each procedure would help their performance. They further commented that the observation can be alternatively performed on any procedure according to the faculty member's discretion without alerting the trainee as it would allow a more accurate simulation of clinical practice.[26]

To the best of our knowledge, the current study is the first to assess WPBA tools in dental residency programmes in Pakistan. However, the study had its limitations as it was conducted at a single centre with a limited sample focussing on a single section of the hospital. Besides, the sample size requirement could not be met as not enough residents had undergone WPBAs. Finally, recall bias was another limitation of the study since the sample also enrolled residents who had already completed their training.

Conclusion

Dental residents showed increased satisfaction with the updated assessment methods, with junior residents outscoring the senior residents. The residents felt that the feedback provided by the faculty was constructive and led to an improvement in procedural skills. They also suggested that a larger pool of procedures should be introduced in the WPBAs.

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Author Contribution:

FA: Literature search, protocol and questionnaire development, data analysis, data interpretation, writing and final approval.
MM: ERC approval, data acquisition, writing and final approval.
RHS: Concept, topic confirmation, data analysis, interpretation and final approval.
MF: Topic confirmation, data acquisition support and final approval.