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A qualitative study of trainer and trainee perceptions and experiences of clinical assessment in post-graduate dental training

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Abstract

Background: The implementation of workplace-based assessment (WBA) needs to ensure the achievement of pre-set competences but may look different across varying contexts, such as in post-graduate dental education. The purpose of this study is to explore the perception of residents, faculty members and alumni concerning their experience with clinical assessment, and what configurations they consider as optimal to maximise the entailed learning experience.

Methods: This study relied on a qualitative descriptive design using two data collection tools: focus group sessions, and semi-structured, one-to-one interviews. Data were triangulated from three sources: residents, faculty members and alumni. The data were inductively analysed based on constructivist epistemology. This was done using the Thematic Analysis approach, facilitated by NVivo software.

Results: The analysis revealed two mutually exclusive themes: process and people. Within process, variables related to quality, workflow and feedback surfaced. As for the people theme, the main two group of stakeholders referred to in the related analysis were the trainees and the trainers.

Discussion: There are many variables that need to be considered when developing an evidence-driven WBA. In addition, factoring into the design of the WBA the perception of the main stakeholders will enable contextualisation which is expected to raise the reliability of the adapted tools.

Conclusion: This study introduced a framework that could support post-graduate universities in their journey towards developing context-specific WBA.

KEYWORDS

assessments, clinical training, dental education, feedback, post-graduate

1 | INTRODUCTION

Clinical education and assessment are essential pillars of post-graduate dental education. They provide the opportunity for teaching the required clinical and procedural skills whilst interacting with patients. In competency-based education (CBE) programmes, there is an emphasis on designing an assessment system to carefully confirm, against pre-determined learning outcomes, the attainment of respective competences by each student. CBE is defined as "an outcomes-based approach to the design, implementation, assessment and evaluation of medical education programmes, using an organising framework of competencies".[1] The concept of "assessment drives learning" has evolved to become "assessment for learning" arising from a foundation in constructivist learning theory. From this perspective, we can plan and deliver more appropriate assessment tools for post-graduate dental curricula.[2] Assessment in clinical training could be seen as a continuation of theory of situated and experiential learning with the realisation that trainees are inducted into a community.[3]

The shift of emphasis from summative towards formative assessment is one of the most noticeable recent changes in post-graduate assessment. This transition aims to further foster trainee learning over the training period [4] and to promote life-long learning. In formative assessment, the way by which the trainees and clinical supervisors undertake the assessment defines the resulting nature and extent of the learning that follows.[5]

The main reason for developing a workplace-based assessment (WBA) tool is to structure feedback following an observation in the clinical practice.[6] This tool is designed to assess clinical/procedural skills, and clinical reasoning and behaviours. The supervisors' observations and impressions of students over a specific period provide the main data source by which to assess performance with patients. Students receive comments from a variety of supervising doctors. WBAs were developed to provide a means of assessing clinical skills, within the workplace, allowing assessment of the top tiers of Miller's Pyramid.[7] The most common WBAs are direct observation of procedural skills (DOPS),[8] mini-clinical evaluation exercise (mini-CEX),[9] case-based discussion (CBD)[10] and 360° multi-source feedback (MSF), each of which is meant to assess different components of clinical practice. In theory, repeated use of these assessments can provide a holistic picture of the student's competences, and progression through training.[11] Several dental programmes have implemented clinical assessments, in general, and WBA, in specific.

Implementing WBA has its own challenges. One of the identified issues that can affect the learning value of WBA is when there is insufficiency of supervisor observations of residents (be it duration and/ or frequency).[12] Also, WBA is sometimes criticised for the absence of clearly articulated criteria. The concern is the resulting high level of subjectivity, due to the involved raters and the dynamic clinical context,[12] which is likely to solicit discomfort amongst trainers and trainees. However, Ten Cate[13] emphasises that this subjectivity is unavoidable, or rather integral, to the structure of WBA. He also stresses the importance of this subjectivity and recommends for educators and clinicians to leverage it. He portrays an evolution from bias-free objectivity to shared subjectivity (ie single socially constructed perspective) where the former will be limiting the scale and scope of the WBA. He actually goes all the way to recommend fully embracing the entailed subjectivity in order to address the complexity of the WBA training goals and to effectively represent authentic practice. From this point of view, welcoming and assimilating a range of perspectives of several stakeholders, in relation to any one competence, holds the potential of adding value to the assessment and feedback process.[13,14]

Most of these assessment toolkits have been transferred from medical to dental education. The majority of the literature on implementing and assessing WBA is from the UK, Australia, New Zealand and the USA.[11,15-17] Moreover, there is rarely any evidence focusing primarily on the post-graduate clinical assessment in the dental education literature.

The implementation of WBA needs to ensure the achievement of pre-set competences but may look different across varying contexts. There is no "one size fits all" solution, and what works in one setting does not necessarily work in another. This sheds light on the importance of having a contextualised, evidence-driven framework to guide the design, implementation and quality assurance process of clinical assessments. Moreover, the participants' perception of the assessment process is fundamental to promoting acceptance within the respective context and has a significant influence on the extent to which learning is fostered throughout the adapted process. This involvement will also help to overcome the challenges that may be faced when introducing changes to a clinical assessment programme.

Along the same lines, the Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) is in the process of transitioning from a traditional post-graduate dental curriculum to CBE that relies on WBA. The purpose of this study is to explore the perception of residents, faculty members and alumni concerning their experience with clinical assessment, and what configurations they consider as optimal to maximise the entailed learning experience. Accordingly, the research questions of this study are as follows:

1. How do trainers and trainees perceive WBA, and its effect on the learning experience?
2. What factors of clinical assessment tools need to be considered in designing context-specific WBA to maximise acceptance amongst dental post-graduate trainees and trainers?

2 | METHODOLOGY

2.1 | Study setting

This study was conducted at MBRU in Dubai, United Arab Emirates. MBRU includes medical and dental colleges. The dental college,

Hamdan Bin Mohammed College of Dental Medicine (HBMCDM), is a post-graduate-only institution established in 2013. At HBMCDM, post-graduate dental training comprises several full-time training programmes, each lasting three years. The programmes' study plans are based on credit hours. Each academic year comprises two semesters, each consisting 20 clinical training weeks. The clinical training consists of 60 per cent of the trainees' time, supervised by faculty.

2.2 | Description of the clinical assessment under investigation

Currently, in the HBMCDM training programmes, different forms of clinical assessment are used across the four departments: endodontics, orthodontics, paediatric dentistry and prosthodontics, as described in Table 1. Assessment of residents' performance during each clinical session is recorded in logbooks.

In the endodontics and paediatric dentistry departments, DOPS and end-of-semester oral examinations are adopted. In the orthodontics and prosthodontics departments, the clinical assessment is based primarily on CBD and logbooks. Ongoing formative feedback is expected to be delivered during the daily clinical training. In some departments, by the end of each clinical course, residents meet with their clinical supervisors to receive feedback on their performance throughout that semester.

2.3 | Participants' recruitment

Our study population included three groups: second- and third-year residents in four post-graduate training programmes in, recent graduates from, and supervisors in HBMCDM. The total number of second- and third-year residents at the time of conducting the study (November 2018- February 2019) was 29. The first-year residents were excluded due to their limited experience with clinical assessment since their clinical training begins in the second semester of their first post-graduate year. A total of 20 graduates (summer 2018) were invited to participate in the study. The graduates of years preceding 2018 were excluded to avoid the concerns around recall bias. As for the supervisors, a total of 16 candidates, who had experienced the assessment of the clinical years of the programme during the academic year 2017-2019, were invited to participate in the study. In total, 6 focus group sessions and 4 semi-structured interviews were conducted. Out of 6 focus group sessions, 1 session was allocated for alumni, 2 for supervisors and 3 for the current residents. The semi-structured interviews were conducted only upon participants' request due to their time constraint or personal preferences. Details of the participants are summarised in Table 2.

All the residents, alumni and supervisors were invited to the data collection sessions via email by an administrative support staff at the college. Participation in the study was voluntary. All the individuals who showed interest to participate were accommodated and included in this study. A total of 33 candidates participated in the study, distributed as per Table 2.

TABLE 1 Brief outline of currently applied clinical assessments

Department	Clinical Assessment Tool(s)	Frequency
Endodontics	Clinical Logbook	Daily
	Mini-CEX	6/y
	DOPS	6/y
	CBD	3/y
	Oral Examination	Twice/y
Orthodontics	Clinical Logbook	Daily
	CBD	3/y
Paediatric Dentistry	Clinical Logbook	Daily
	DOPS	6/y
	CBD	3/y
	Oral Examination	Twice/y
Prosthodontics	Clinical Logbook	Daily
	CBD	3/y

2.4 | Data collection

Two data collection tools were used: focus group sessions, and semi-structured, one-to-one interviews. Data were triangulated from three sources, namely: residents, faculty members and alumni to enable the development of a comprehensive understanding of the clinical assessment experience.

A total of 3 focus group sessions were conducted with residents: 2 with faculty members, and 1 with alumni. Each focus group session had 3 to 5 participants. In addition, 4 interviews were conducted: 1 with alumnus, 1 with faculty member and 2 with residents.

The focus group sessions and interviews followed the same protocol. The study protocol comprised of 15 open-ended questions. The first section solicited feedback regarding the participants understanding and opinions around the current assessment structure. The following section was about "feedback", and what would be considered ideal on that front by the participants. The protocol then inquired about the engagement of stakeholders in the assessment, and the impact of assessment on the various stakeholders, including but not limited to peers and patients. The following section inquired about who should be responsible of defining the intricacies of the assessment (eg timeline, tools and assessors). As for the last segment of the protocol, it was designed to obtain the feedback of the participants regarding what they would perceive as optimal practice.

In order to ensure that the participants express themselves freely, the study facilitators did not belong to the HBMCDM. This also helped in keeping bias, due to conflict of interest, to a minimum. Two researchers (RAG and EK), who are trained in collecting

TABLE 2 Distribution of the participants

Group	Female Participants	Male Participants	Total Participants	Participation Rate
Residents	12	7	19	65.52
Alumni	4	1	5	25
Supervisors	0	9	9	56.25

qualitative data, facilitated the data collection initiatives. Moreover, those two researchers had not been involved, neither directly nor indirectly, in clinical teaching and assessments. At the start of each session, the moderators built rapport with the participants, reassuring them of the data confidentiality and anonymity, and urged the participants to share their thoughts openly, even if they are divergent in nature. The interviewers withheld their ideas and opinions during interviews to avoid data contamination. The sessions were scheduled on different days. Each session took around an hour. To ensure consistency between the focus group sessions, a pre-established protocol was used. For the most part, the individual items came from other questionnaires,[18,19] although some were created especially for this project. The generated data collection tool underwent two validation phases. Firstly, several experts in assessment of learners in Medical Education were contacted for the content validity. Guidelines for selecting those experts included:

- Experienced academic faculty involved in assessment of learners in medical education (≥5 years)
- Familiarity with the thematic domains/concepts in evidence-based medical education (teaches or undergoes academic research in this field)

Secondly, the questions of the generated tool were discussed with 5 members of the University's community, who do not belong to the HBMCDM (2 simulations educators, 2 faculty members and a digital learning manager from the Center for Outcomes and Research in Education) to assess the readability and comprehensibility of the questions and the sequence by which they are presented (i.e. face validity).

The sessions were recorded, and another researcher (FAR) took notes to set the stage for the transcription. All the data were then transcribed. Each participant was assigned a unique indicator. The first letter of this indicator represented the group which they belong to: R for resident, F for faculty and A for alumni. This letter was followed by their serial number in their respective group, and then by letters M or F representing their gender.

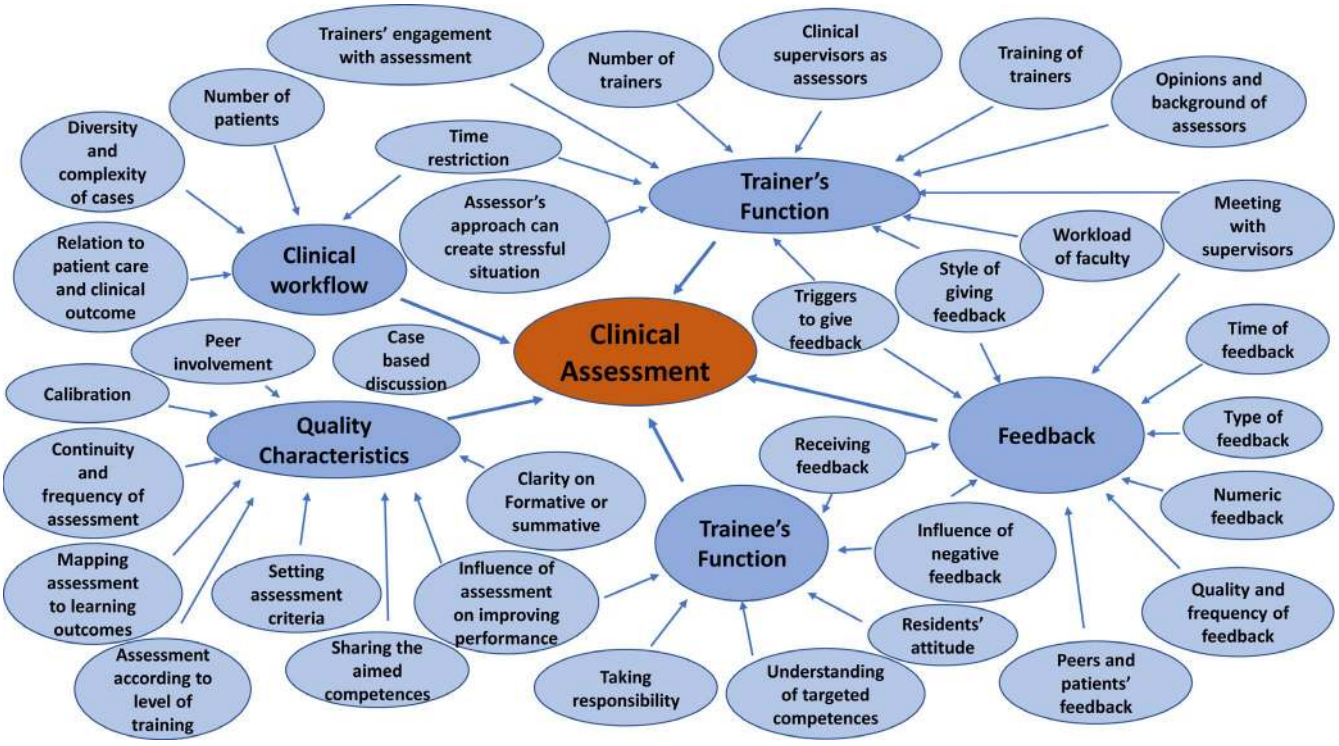

FIGURE 1 Mind-mapping as part of the Thematic Analysis. This figure is meant to reflect a snapshot of how the stage was inductively set for step three of the adapted multi-staged thematic analysis, where datasets were investigated, and prominent patterns were identified and extracted. Following this stage, the themes, sub-themes and categories were identified. Then, the NVivo software was used to expedite coding of the relevant text fragments across all datasets [Colour figure can be viewed at wileyonlinelibrary.com]

FIGURE 2 The study's conceptual framework. This figure constitutes the study's conceptual framework which served as the basis of step six of the adapted multi-staged thematic analysis: reporting upon the thematic analysis. The framework is composed of two themes of clinical assessment, namely: process and people. The following sub-themes were all grouped into the process theme: quality, workflow and feedback, and the people theme encapsulates the following sub-themes: trainees, trainers and other roles [Colour figure can be viewed at wileyonlinelibrary.com]

2.5 | Data analysis

The data analysis started after the completion of the data collection phase. The data were analysed using thematic analysis by two researchers (FAR and FO). The process was iterative and inductive, based on the constructivist epistemology.[20] Consistency, in relation to the underpinning theories and assumptions, was assured throughout the study. This interpretative approach enabled the researchers to gain a thorough understanding of the phenomenon under investigation. It involved the examination of the datasets to identify and extract prominent patterns.[20,21]

The subjectivity of the researchers was acknowledged in order to avoid affecting the integrity of the data. The process of analysis followed the six-step framework initially introduced by Braun and Clarke (2006).[22] This multi-staged approach to Thematic Analysis has been widely used and proved efficacious in health professions education research.[20] NVivo software version 12 plus (QSR International Pty Ltd, Vic, Australia) was used to code the data and in turn facilitate the categorisation of the relevant text fragments. The analysis process started with the researchers familiarising themselves with the data without any attempt to code them.

Then, as the second step, the transcripts were examined whilst coding the text fragments until no new information was observed in the data, and hence saturation was attained. The researchers drew upon areas of consensus and disagreement mentioned by the participants. The discrete concepts underwent several rounds of reflections, where the different ways by which the concepts could relate to one another were identified. This led to the generation of categories that extensively cover all that surfaced in relation to the research questions, which set the stage for the researchers to work on step three (Figure 1). The researchers examined the categories, again, to find the best way to combine them into higher order themes. The generated themes, sub-themes and categories were then reviewed as part of stage four to ensure that the data within each cluster (i.e. three levels of themes, sub-themes and categories) have sufficient commonality and coherence, and data between the clusters are distinct enough to deserve partition. All the themes, and encapsulated sub-themes and categories were then labelled and defined to complete stage five. This constituted the basis of the study's conceptual framework which guided the last step of reporting upon the findings.

Ethical approval for the study was granted by the MBRU, Institutional Review Board (Reference # MBRU-IRB-2018-018). All participants were provided with information sheets about the research work to ensure that they all were well informed about the aim of the study and about the voluntary nature of their participation. In addition, participants were told about means of contacting the study's principal investigator in case of queries or concerns. They were assured regarding anonymity and confidentiality of the generated data. Written consents were obtained right before the data collection took place.

3 | RESULTS

The thematic analysis resulted in two mutually exclusive themes: Process and People, as illustrated in this study's conceptual framework (Figure 2). Within the process theme, three sub-themes surfaced: quality, workflow and feedback. As for the people theme, it encapsulated three other sub-themes labelled as: trainees, trainers and other roles.

3.1 | Theme 1: Process

This theme refers to factors related to the foundations and characteristics of WBA.

3.1.1 | Quality

The participating residents and alumni raised concerns around calibration and consistency, and highlighted the value of establishing continuity in the assessments. Although some of the residents required assessments to be based on some sort of universal criteria, they acknowledged the value of tailoring the assessment to their learning needs and their level of training to make clinical assessments meaningful for learning.

R2F: "…different assessors assess differently…some faculty members tend to assess all the residents, across the different years of study, using the same mechanism. I am not sure how fair that is. I want to be assessed based on my level of expertise…"

The study participants value the continuity of assessment and guidance since it gave them several chances to compensate for suboptimal performance. It also enabled the demonstration of progressive longitudinal development.

R17F: "…the assessment should not be for each session separately. It should be for the overall case treatment…"

Participants clearly articulated the value of CBD to their development. This tool seemed to stand-out, amongst the differing techniques used in clinical assessments, to the participants. The participants value that the CBD enables and maximises engagement, along with spreading the benefits of any one clinical exposure to more than one resident.

A3F: "…we had at least one Case-Based Discussion per week. We used to sit together, discuss the plan and approve it before proceeding. Those sessions were very helpful…"

F5M: "…collectively discussing a particular rare case, seen by a resident, benefits other residents who may not otherwise get exposed to such a case throughout their 3 years of training…"

The participants also highlighted the importance for the assessment to have a clear structure, and how the absence of structure could result in unnecessary confusion. The residents value knowing ahead of time what exactly is required of them in terms of competences and learning outcomes. Along the same lines, the faculty members highlighted the challenges that they face in forming a system with pre-set criteria for assessment.

F9M: "…it is challenging for us to put specific criteria for cognitive skills, including analytical thinking and case assessment…"

3.1.2 | Workflow

The clinical workflow, which is the basis of clinical assessments, was also brought-up. Participants reflected upon patient load, and diversity and complexity of cases. The common agreement amongst the residents, alumni and faculty members was that when the complex cases are insufficient in numbers and of limited diversity, the residents end-up not getting enough opportunities to practice certain complex skills. This limits the range of skills getting assessed. Integrating the feedback generated from those assessments becomes challenging, as well, since the residents will not be put in similar situations, again, as part of their training.

R19F: "…I need to have larger number of each case to assess if I am progressing. We do not have that diversity. The flow of patients, all together, is quite low…"

F6M: "…I think one of the obstacles for our clinical assessments is getting enough patients as well as a diverse mix of the cases…"

3.1.3 | Feedback

Residents also expressed concerns around certain characteristics of feedback, such as: type, timing, frequency and nature. The residents seem to realise the value of effective feedback and would like for it to be substantial in order to maximise its learning benefits. All the participants favoured the narrative feedback over the numeric grades. They disagree, though, on their preference around delivery and receipt of feedback. Some expressed their preference of learning from “keeping a written record of their strengths and weaknesses” (R7M), whilst others valued the feedback dialogue “which is more reflective in nature” (R18F). The importance for the feedback to have structure, and for it to be properly integrated into the process of learning, was also reflected upon by the participating faculty members.

R6F: "…having a feedback schedule would add value. For example, the instructor can assign a standing monthly meeting with the respective resident to reflect upon the resident’s performance to date. For that to work, all feedback in between these scheduled sessions need to be documented in a pre-set template, that can be used across the residents…"

F8M: "…our time is tight. We have to make sure that we cooperate in a structured way. Maybe towards the end of every clinical session, there could be a time slot, of 10 minutes or so, for feedback…"

3.2 | Theme 2: People

This theme refers to factors related to the various stakeholders that can be involved, directly or indirectly, to the designing, implementation, and/ or quality assurance of WBA.

3.2.1 | Trainees

Some of the study participants perceived the value of the assessment to be highly dependent on different attributes of the residents. A few of the residents and alumni referred to their own level of awareness about the technicalities of assessments, and how their level of awareness affects the value that they get from the assessment. They emphasised that keeping the residents fully informed and involving them as active members is critical for the success of the assessment. A few of the residents were evidently confused about the nature of the implemented assessments and their intended purpose.

R9F: "…we do not have specific assessment system shared with us; we do not know what is included as part of our summative assessment…"

The residents' level of autonomy, and in turn their extent of engagement in the educational process, was also highlighted by the study participants. According to them, residents should have the autonomy to direct their own learning, in agreement with their supervisors. By empowering residents, they will become more proactive in addressing their weaknesses, and in their continuous learning and development. It was recommended by the study participants for residents to be sufficiently engaged in decisions concerning the choice of assessors, and of the clinical encounters and/ or of skills to be assessed, and in determining when they are ready to be assessed.

A2F: "…we should be allowed to give our feedback on the criteria set for the assessment…these criteria need to be shared with the residents, so we know what we are assessed against…"
R5F: "…both trainer and trainee should be involved in selecting the tool and time of assessment…"

Although, as highlighted previously, all participants agreed on the centrality of feedback in assessment, the residents' openness to and interest in receiving feedback were also emphasised. Participants expect the residents to be proactive in their own learning process, to seek feedback and to get actively engaged in this two-way dialogue, in order for them to truly reap the benefits of the overall clinical assessment experience. A couple of participating residents and faculty members pointed-out that some trainees take feedback personally, and misunderstand and question the intention behind constructive criticism. This attitude reduces the degree of resonance, acceptability and utility of the feedback amongst the residents.

R13F: "…some of us do not accept negative feedback, no matter how constructive it is…"
F9M: "…also important is the receptor of the message. In order for the feedback to be useful, it has to be well received and effectively taken into account…"

3.2.2 | Trainers

The study participants also referred to how different characteristics, around the trainers, affect the quality of the assessment experience. For example, some of the study participants highlighted the sufficiency and exhaustivity of the observations as variables that influence the experiences around clinical assessment (be it in relation to the number and level of engagement of trainers, or otherwise).

R11M: "…it is not possible for one supervisor to grade or conduct Direct Observation of Procedural Skills whilst supervising 7 other students at the same time…"

In addition, personal attributes of the trainers, such as their personality, background, and training, were perceived by the residents and alumni, to impact the added value of the clinical assessments on the entailed learning and development. The knowledge, skills and competencies in clinical assessments, and the supervising style of the trainers were also reflected upon during the discussions.

R8M: "…supervisors have different backgrounds and opinions- they come from different schools of thoughts…"
R17F: "…some of the supervisors are difficult to handle, compared to others. Some have a short temper…"

When describing their approach to assessment, faculty members highlighted the need to "train the trainers" for them to gain the competencies to effectively engage in the assessment process. Residents argued that deriving meaning from the experience becomes more challenging with the noticeable variation across supervisors. These discrepancies across trainers come in the form of styles and approaches, level of engagement, and/ or understanding and expectations around elements of attained competences. The consistency of any one trainer over time, and across the multiple trainers, when it comes to assessment approaches was highlighted to be crucial to maintaining the reliability of the adapted tools.

R16M: "…some supervisors give us the negative feedback in front of the patient…this can get really embarrassing and it could affect the patient's trust…"
F8M: "…I think supervisors need to know the tools of assessment beforehand… it is important to make sure that those who we are supervising understand the technicalities of assessment and that of the tools used…"
F2M: "…the faculty members must be calibrated to use the same assessment tool with the same scale…."

The trainers themselves (ie faculty members) referred to the difficulty of maintaining balance across their differing, in some cases competing, commitments. Documentation of ongoing assessments

and feedback provisions was viewed as avoidable workload by a few trainers.

F8M: "…lack of time… a lot is asked of us… we are clinicians, researchers, and teachers…"

F6M: "…I usually give the feedback towards the end of the session. Sometimes, however, I must attend right after the assessment to other responsibilities, such as teaching, I end-up leaving without any reflection with the students which of course is suboptimal…"

Moreover, there seems to be a difference in what constitutes a trigger for giving feedback across the different participants. Some of the residents assume trainers only give feedback as a consequence to observing mistakes or suboptimal performances. Along the same lines, a few other residents highlighted that they rarely get any form of positive reinforcement when they do their job right. Apparently, some faculty do not like giving feedback, unless it is necessary. Others are more reflective in nature, and tend to capitalise upon every other opportunity to provide feedback, and to engage in a two-way dialogue that encourages trainees' continuous development. Some faculty members explained that their provision of feedback is highly reliant on students' openness and eagerness to receive feedback.

F8M: "…what stimulates me to give feedback is how they perform … there are certain standards that should be met, these are international benchmarks that we try to maintain… I do not hesitate to congratulate the residents when they perform well. On the other side of the spectrum, when they do not perform well, I make sure I create the space to let them know how to improve their performance…"

3.2.3 | Other roles

The participants also discussed the roles of patients and peers in clinical assessments. The participants had differing perceptions around the value of involving these parties in clinical assessments. Some residents and alumni shared major concerns regarding involving peers and patients in clinical assessments, in general, and provision of feedback, in specific. This group of participants believe that only supervisors are qualified and competent enough to assess performance of residents. These participants view the peer-assessment to be invalid or insufficient. For example, one residents mentioned that "peers can be biased, especially friends, they may assess me better than my actual performance" (R15F) and another one stated that "colleagues are at the same level of their training, how can we expect them to reliably evaluate my work?" (R17F). On the other hand, other residents and faculty members saw the value of patients and peers feedback and mentioned the usefulness of adapting reliable multi-source feedback tools. Some participants referred to incorporating relevant feedback collected via the routine patient satisfaction survey (which might shed light on specific soft, interpersonal skills).

R12M: "…neither peers nor patients should be involved. Only my supervisor can assess me. The rest are not qualified to do so…"

R13F: "…competent peers and well-informed patients can evaluate us; they offer an interesting perspective…"

F8M: "…our patients know that they are coming to a teaching institution and they realise that a form of assessment is taking place… their insights and their impression of us are worthwhile and need to be taken into account…."

4 | DISCUSSION

This study demonstrated many variables that need to be considered when developing a contextualised, evidence-driven WBA. It is important to factor into the design, implementation and quality assurance of WBA the perceptions of the various stakeholders, namely: residents, faculty members and alumni. Accordingly, this study introduced a versatile framework that universities of medicine and health sciences, similar to MBRU, can adapt in the process of developing their own context-specific WBA.

The feedback of the stakeholders revealed several aspects that need to be considered when implementing WBA. To start with, calibration and consistency need to be at the core of any WBA. The competences to be mastered and the learning outcomes for each year of residency need to be identified, all of which need to be shared with the residents ahead of time. Furthermore, faculty learning and development opportunities are essential to ensure that the preceptors realise the true value of formative assessment. Moreover, they need to comprehend the competences that are to be assessed and to be capable of assessing the residents against them, and of providing observation-based feedback.

The inconsistency in the assessment and feedback from different supervisors, coming from varying backgrounds, was raised several times by the residents and alumni. These concerns, according to Ten Cate,[13] may be indicative of the residents insufficient preparedness for expected variability that they face in real-life clinical practice. Moreover, some of the study participants expressed concerns around the subjective nature of clinical observations and judgments. This subjectivity is reflective of the range of interpretations of performance, from the multitude of stakeholders in the dynamic clinical context, that dentists have no option but to maneuverer through it.[12] That is why both parties: the trainers and trainees need to develop the resilience to tolerate this useful subjectivity that is integral to WBA.

Although the consensus between trainees and trainers was very positive regarding the use of CBD, which was found to be very a beneficial assessment for learning tool, a deeper understanding of other WBA tools may enable better leveraging of CBE

in HBMCDM. In addition, for CBE to be effective, there needs to be more flexibility around the structure of the programmes and the learning experience. There was agreement on the suitability and usefulness of having a continuum of assessments, as opposed to inserting such instances, sporadically. Many formative assessment opportunities are already available throughout the residency training under investigation. These loops need to be properly documented and effectively leveraged to maximise learning. An increase in the number and variety of assessment experiences (eg the cases, timings, and/or the assessors) can provide a better longitudinal assessment of progress, providing a comprehensive view of a resident's ability. Keeping a record on the entire clinical learning trajectory is key. Accordingly, there needs to be a reliable system of developing and maintaining portfolios for each enrolled resident. This sheds light on the importance of having a consortium of seasoned specialists and educators collectively agreeing on the number of interventional observations that a training resident needs to successfully undergo in order to be judged proficient in the respective competence. This applies for all competences across all specialties, where the pre-requisite of proficiency expectedly varies from one competence to another.

Providing constructive feedback is the backbone of assessment for learning and is crucial in competence development. There is an obvious demand to allocate more time and structure to feedback in HBMCDM. Although many faculty members stated that they provide verbal feedback, residents emphasised that they wanted that to be complemented and reinforced by written feedback. They also called for the creation of the space for them to reflect, along with their preceptors, upon the received feedback. It is established in the literature that adapting feedback journals, and/ or allocating in the pre-set templates a larger space for written narratives have a more sustainable impact on residents.[23] In addition to ongoing feedback on specific skills, decision making and diagnoses, there is added value in asking the faculty members to take a step back and reflect upon the overall performance of each of the training residents. This macro perspective can guide the residents to truly understand their current and desired state of competence, and what they need to do to acquire and integrate to bridge performance gaps. Explicitly illustrating the expectations and providing nurturing guidance on what steps need to be undertaken will empower the residents. The key benefit of understanding the individual resident learning needs is customising the clinical assessment experiences to match the respective, and in turn foster the learning in the areas that need most attention.

Another aspect of feedback that requires attention is training for both feedback-givers and -recipients. Pelgrim, Kramer, Mokkink, Van der Vleuten[24] have indicated that interventions to improve the learning effectiveness of this two-way process should focus more on the users than on the tools. Faculty members may avoid giving what can be perceived as a negative information to avoid uncomfortable interpersonal dynamics. In the absence of proper training, preceptors probably replicate the feedback mechanism that they went through as part of their own training. As for the residents, if they are not trained to be open and receptive to feedback, constructive but negative feedback may feel discouraging or embarrassing to them and may solicit their defensiveness.

Proper understanding of roles and responsibilities between trainer and trainee is also essential. There was an agreement amongst the study participants that the selection of assessment tool needs to be handled by the faculty members. As for the timing of assessment and the assessor, the alumni and residents wanted to have a say. Encouraging residents to hold this responsibility fosters self-regulating learning skills which in turn enhances life-long learning.[25] This can also nourish the autonomy needed as part of three psychological pre-requisites: autonomy, competence and relatedness, to stimulate intrinsic motivation according to self-determination theory.[26,27]

This study can be characterised by several limitations. This study provides an in-depth understanding of experiences. Yet the generalizability of the results is limited to institutions and settings that are similar to MBRU. It will be favourable for future studies to investigate clinical assessment in CBE, in general and in WBA, in specific, across several institutions of differing characteristics, and perhaps triangulate the qualitative with quantitative data analyses. By virtue of design, the focus group sessions of the faculty members were not specific to any one specialty, but rather were open for whomever is interested to participate. This attribute of the design may have imposed some social pressure on the faculty members to conform to the opinion of the majority. This may have also introduced desirability bias since each faculty member would like to show their respective departments in the best light. Upcoming studies may choose to dedicate different sessions to different departments. This, however, can create other challenges related to power gradient, where junior staff may feel reluctant to sharing and reflecting on their experiences, when their superiors are in the same room listening.

5 | CONCLUSION

This study showed that there is an interplay between the processes of WBA and the stakeholders who play an active role in these processes, mainly: trainers and trainees. Many variables need to be considered when tailoring a context-specific WBA in post-graduate level education. It is very important to take into account the perception of these stakeholders when designing the system since there is no "one size fits all" approach. Despite this, calibration, consistency and continuity remain at the core of WBA. To maximise the effectiveness and value of this learning tool, acceptance of change, the right mix of skills, and ample of efforts are needed from both the trainees and trainers. For that to take place, institutions need to organise and conduct reliable learning and development opportunities not only for the trainers, but also for the trainees.

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CONFLICT OF INTEREST

The authors confirm no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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