WORKPLACE-BASED ASSESSMENT (WPBA) OF POSTGRADUATE TRAINEES IN PUBLIC SECTOR TEACHING HOSPITALS OF RAWALPINDI: A COMPARATIVE STUDY

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ABSTRACT

The objectives of the study were to compare the results of the workplace-based assessment (WPBA) done to measure clinical reasoning and performance of postgraduate trainees through employing the tools of Direct Observation of Procedural Skills (DOPS), Mini-clinical evaluation exercise (Mini-CEX) and case-based discussion (CbD) and to review the strengths and weaknesses of the trainees. A cross-sectional comparative study was done among 202 university residents to compare the scores attained by them during different workplace-based assessments. The trainees were assessed by DOPS, Mini-CEX and CbD during March-April 2024 by external assessors. Standard rating scales were used for this purpose. Data was collected from the departments about the number of trainees assessed, their scores and feedback from the assessors. Data was analyzed by using Microsoft Excel 2016 software. Descriptive statistics were applied. Of the 202 trainees, 92 were from Holy Family Hospital while 81 and 29 were from Benazir Bhutto Hospital and Rawalpindi Teaching Hospital respectively. Around 109, 60 and 33 were assessed through Mini-CEX, DOPS and CbD respectively. Overall % of the Medicine & Allied and

Surgery and Allied trainees assessed through Mini-CEX were 55.4% and 55.8% respectively. Most of the Obstetrics & Gynecology trainees were assessed through DOPS with a 52.2% result while Anesthesia trainees undergoing DOPS achieved a 62.7% score. All MD Pediatrics trainees were subjected to CbD with a 58.6% score. Comparatively higher scores were achieved by trainees assessed by CbD (60.8%) than those assessed by Mini-CEX (59.7%) and DOPS (57.7%). Trainees were good in presentation and communication skills in addition to clinical reasoning. However, improvement in theoretical knowledge and clinical competencies was required. CbD assessments revealed overall higher scores than those of DOPS and Mini-CEX. The clinical reasoning, presentation and communication skills of trainees were up to the mark.

KEYWORDS
Workplace-based assessment, mini-clinical evaluation exercise, case-based discussion, direct observation of procedural skills

INTRODUCTION

Workplace Based Assessments (WPBA) encompass diverse assessment methods that are applied to measure the performance of medical students or postgraduate trainees in their actual clinical setup (Guraya, 2015). It is an assessment of the clinical skills that are practiced by our future doctors at their workplace where they are confronted with real patients (Swanwick, 2009). WPBA covers varied assessment methods like Mini-Clinical Evaluation Exercise (Mini-CEX), Director Observation of Procedural Skills (DOPS), Case-Based Discussion (CbD) and Multi-Source Feedback (MSF) predominantly known as 360-degree evaluation. These modalities have now markedly been incorporated particularly in medical and dental postgraduate training to have structured and real-time assessment (Nesbitt, 2013).

The General Medical Council (GMC) of the United Kingdom and the Academy of Royal Medical Colleges (AoRMC) revolutionized postgraduate medical education by introducing Workplace-based Assessment (WPBA) (Miller, 2010). It has considerably been employed in clinical settings for formative assessment that is followed by the provision of constructive feedback to trainees that not only facilitates them in identifying their weaknesses and polishing their skills but also makes it convenient for them to get through their summative assessments (Franche, 2005). The incorporation of different modes of formative and summative assessments in postgraduate medical curricula is of paramount significance to ensure better acquisition with all intended core competencies. It is crucial to have safe and independent healthcare professionals (Kalsi, 2013). The assessment tool employed should be valid and reliable enough to measure the intended competencies (Epstein, 2007).

Subjecting the trainees to multiple assessments at their workplace and by different examiners is a dynamic approach to have their overall judgment pertaining to the achievement of specified outcomes (Davies, 2009). Such assessments not only promote learning among trainees through feedback from assessors and reflective practice but also enhance their professional competencies by gearing up their efforts with their Entrustable Professional Activities (Norcini, 2007). No doubt, this is an era of Competency-Based Medical Education (CBME) and implementing WPBA at training sites is essential to ensure its achievement in true spirit (Frank, 2010).

The present study is envisioned to do a workplace-based assessment of university residents who were enrolled in MS and MD training programs at 3 teaching hospitals affiliated with Rawalpindi Medical University by inviting external assessors. The supervisors were given the option to use any one of the three tools for this purpose that were Mini-CEX, DOPS and CbD. This assessment was primarily meant to exclude observer's biasness and to ensure fair and objective assessment by using a structured proforma / checklist. The feedback of external assessors following assessment will enable the policy makers related to postgraduate medical universities to do educational planning accordingly by doing necessary amendments and revisions where required.

LITERATURE REVIEW

Workplace-based assessments (WPBA) confirm the elaborative assessment of the trainees. They ensure holistic assessment which encompasses all aspects including preventive, diagnostic and therapeutic domains (Liu, 2012). WPBA tools are also renowned for their novelty and objectivity despite their limited utilization for summative assessment (Prakash, 2020). There are numerous tools for Workplace-based assessments that vary with respect to the type of learning event and the timings of giving feedback (Wall, 2012).

Workplace-based assessments confirm the learning-driven assessment of the trainees through comprehensive feedback by the trainers and reflection by the trainees (Anderson, 2016). A systematic review and meta-analysis proved the affirmative impact of DOPS and mini-CEX on the clinical performance of the trainees (Lorwald, 2018). These tools are also of paramount significance in promoting trainees' academic growth and professional development (Norcini, 2007). These assessment tools have substantially been employed nowadays in paramedical fields like those of nursing, midwifery, and dentistry (Roghieh, 2013). DOPS undoubtedly is of significant importance for observing and hence enhancing the procedural skills of the trainees; the importance of mini-CEX cannot be overlooked in assessing multiple facets such as history taking, clinical examination, communication, and professionalism. This can sufficiently be elaborated by the fact that mini-CEX has

consistently been implemented and utilized for measuring the clinical competencies among undergraduate students and postgraduate residents across the globe not only formatively but also for grading them (Weston, 2014).

Factors pertaining to implementation of any assessment should also be given due consideration while weighing the importance of any workplace-based assessment tool like quality, trainees' responsiveness, supervision, and monitoring in addition to informing the trainees well before time and experience of observers (O'Brien, 2014). Case-based Discussion (CbD) has been proven as a valuable assessment tool for holistically gauging the attainment of intended learning outcomes. It invoked the professional development of trainees as it encompasses all the principles of a good and fair assessment (Swanwick, 2005). Provision of constructive feedback from more than one examiner enhances the beauty of this assessment (Rauf, 2021). One-to-one discussion about a case enables the assessor to judge the clinical reasoning, treatment planning and communication skills and to identify the weaknesses of trainees that should be contemplated for improvement in the future (Primhak, 2019). Anyhow, it is better to use more than one assessment tool in different educational settings with more than one assessor for getting rid of subjective biasness and to confirm its fairness (Barlett, 2013).

In addition to Continuing Professional Development (CPD), workplace-based assessment tools are also meant to guarantee the integration of multiple disciplines with the prime objective of holistic case management. Despite structured and objective assessment, some time will still be required to accept workplace-based assessment tools for summative assessment of postgraduate trainees (Prakash, 2020).

RESEARCH OBJECTIVES

1. To compare the results of the postgraduate trainees on subjecting to 3 different workplace-based assessment tools
2. To identify the academic strengths and weaknesses of the trainees

RESEARCH HYPOTHESES

1. There is no training program-wise or assessment tool-wise difference in the results of workplace-based assessments of postgraduate trainees.

RESEARCH QUESTIONS

1. How do the workplace-based assessments of postgraduate trainees belonging to different training programs and subjected to different assessment tools differ?

RESEARCH METHODOLOGY

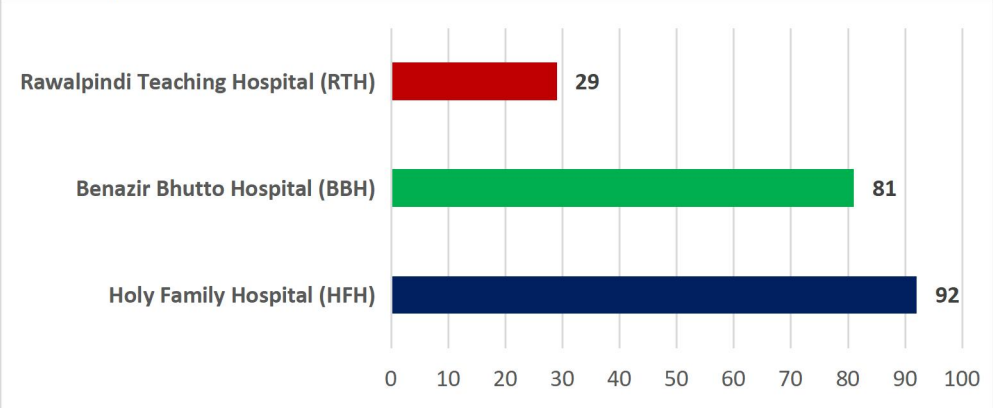
A total of 202 university residents who were enrolled in MS and MD programs of

Rawalpindi Medical University and undergoing postgraduate training in public sector teaching hospitals were subjected to workplace-based assessment by external assessors of relevant specialties during March-April 2024. All university residents working in the department were enrolled in the assessment while those on medical, maternity, or ex-Pakistan leave were excluded. The trainees were assessed by using structured Mini-CEX, CbD and DOPS rating scales. Mini-clinical evaluation exercise (Mini-CEX) is a tool that is used to observe the trainee-patient interaction for about 10-20 minutes. This tool helps assess various clinical skills like interviewing skills, professionalism, communication, and counseling skills apart from physical examination (Batra, 2022). DOPS is a concise modality to assess the procedural skills of the trainees on real patients by using a structured rating scale and is followed by comprehensive feedback to the trainees (Lagoo, 2021). Case Based Discussion (CbD) is a structured formative assessment method used for discussion of a clinical case between trainer and trainee followed by feedback. This tool is meant to enhance clinical knowledge and decision-making of the trainees (The UK Foundation Programme Office, 2021). CbD assesses the trainees' clinical reasoning and measures the ability to apply basic medical knowledge for patient management (The Royal College & New Zealand College of Psychiatrists, 2013).

DATA ANALYSIS

Data was collected from the departments about No. of trainees assessed, their scores and feedback from the assessors. Data was analyzed by using Microsoft Excel 2016 software. Descriptive statistics were applied. A total of 202 university residents who were undergoing postgraduate training in RMU-affiliated tertiary care hospitals were subjected to workplace-based assessment by external assessors. The number of trainees assessed from each hospital is shown below in Figure 1.

Fig 1: ***Hospital-wise trainees enrolling in Workplace-based Assessment during March-April 2024***



Almost 109 trainees were assessed through Mini-CEX while 60 and 33 were subjected to DOPS and CbD methods for assessment. Out of 109 trainees undergoing Mini-CEX, most (47) were from Surgery and Allied training programs followed by those from Medicine & allied disciplines (45). The percentage obtained by trainees in Mini-CEX is depicted below in Table 1.

Table 1: ***Average % of the trainees assessed through Mini-CEX (n=109)***

Departments	No. of trainees assessed	Average % of score	Average of allied departments
Surgery & Allied departments (n = 47)			
Surgical unit-I, HFH	4	45%	
Surgical unit-II, HFH	6	60%	
Surgical unit-I, BBH	4	65.5%	
Surgical unit-II, BBH	6	55%	
Surgery, RTH	3	65%	55.8%
Orthopedics, RTH	2	44.4%	
Orthopedics, BBH	6	54.4%	
Orthopedics, HFH	4	52%	
Neurosurgery, HFH	1	71.4%	
Neurosurgery, RTH	9	41%	
Pediatric Surgery, HFH	2	60%	
Medicine & Allied departments (n = 45)			
Medical unit-I, HFH	15	60%	
Medical unit-II, HFH	7	49%	
Medical unit-I, BBH	3	62.5%	55.4%
Medical unit-II, BBH	4	60%	
Gastroenterology, HFH	5	70%	
Nephrology, HFH	2	69%	
Psychiatry, BBH	9	57.5%	
Other departments (n=17)			
ENT, HFH	2	49%	64.5%
ENT, RTH	3	80%	
Ophthalmology, HFH	4	62.5%	63.7%
Ophthalmology, BBH	4	65%	
Obstetrics & Gynecology, RTH	4	74.8%	

Table 2: ***Average % of the trainees assessed through DOPS (n=60)***

Departments	No. of trainees assessed	Average % of score	
Obstetrics & Gynecology departments			
Obstetrics & Gynecology Unit-1,	9	37.8%	52.2%

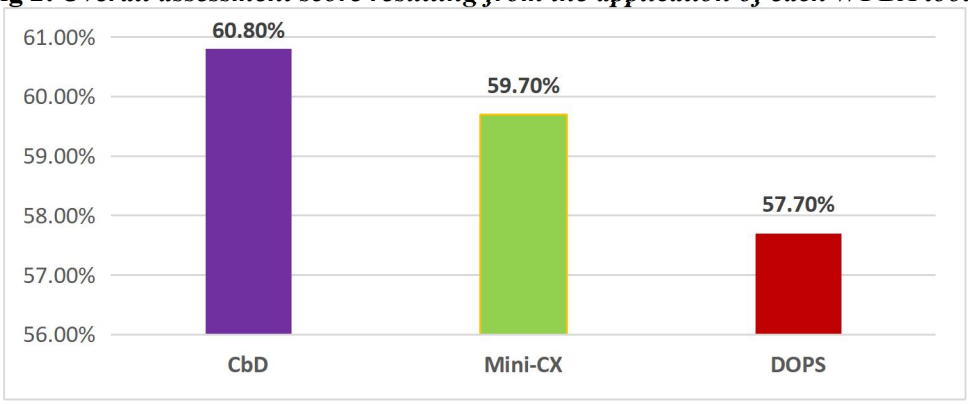
HFH			
Obstetrics & Gynecology Unit-1, HFH	7	58.2%	
Obstetrics & Gynecology Unit, BBH	6	60.5%	
Anesthesia departments			
Anesthesia, HFH	6	63.3%	62.7%
Anesthesia, BBH	7	62.1%	
Other departments			
Ent, BBH	6	66.4%	
Cardiology	4	53.7%	
Radio, BBH	4	58%	
Medicine RTH	8	54.4%	
Urology, BBH	3	63%	

Table 3: ***Average % of the trainees assessed using CbD (n=33)***

Departments	No. of trainees assessed	Average % of score	
Pediatrics departments			
Pediatrics, HFH	9	53.3%	58.6%
Pediatrics, BBH	10	64%	
Other departments			
Radiology, HFH	6	70 %	
Dermatology, BBH	5	47%	
Plastic Surgery, HFH	3	69.6%	

The overall score attained from each assessment tool is revealed below in Figure 2.

Fig 2: ***Overall assessment score resulting from the application of each WPBA tool***



The strengths and weaknesses of the trainees assessed by external assessors during

workplace-based assessments are illustrated below in Table 4.

Table 4: ***Strengths and weaknesses of the trainees assessed.***

Strengths	Weaknesses
Good communication skills	Inadequate theoretical knowledge
Professional approach towards diagnosing the cases	Clinical competencies were below expectations
Good presentation skills	Haphazard examination of the cases
Performed by year of training	Poor elaboration of clinical findings
Confident and focused	-------

DISCUSSION

The overall score of the trainees during DOPS in the present study was found to be the lowest (57.7%) compared to those of Mini-CEX (59.7%) and CbD (60.8%) as shown in Fig 2. Although university residents of RMU-affiliated teaching hospitals are assessed for their procedural skills by using DOPS twice a year; the score was comparatively less than those of the other 2 assessing modalities used in the current study. DOPS score was the highest in ENT (66.4%) followed by Urology (63%). Both were surgical disciplines. However, the average score of anesthesia trainees was also above 60% while trainees of obstetrics and gynecology had an overall borderline score (52.2%) as illustrated in Table 2. DOPS tool undoubtedly is very useful in measuring and hence improving the procedural skills of the candidates (Hassan, 2011). Structured tool has also been verified as a feasible tool and effective to promote learning (Farajpour, 2018). The assessors need to be cognizant of the curriculum of the trainees as well as their level of training to measure their competencies accordingly (Chuan, 2016). Of the 60 trainees assessed by DOPS in the current study, around 22 were trainees of Obstetrics and Gynecology and the average % of their score was 52.2% (Table 2). On the other hand, Obstetrics and Gynecology residents subjected to Mini-CEX had an average % of score equivalent to 74.8% (Table 1). Mini-CEX and DOPS are two different modalities and on comparing their scores, trainees need more practice to polish their procedural skills than those of history taking, professionalism, communication, counseling, etc. The procedural skills of the trainees are directly observed by the assessor in DOPS while trainee-patient encounter is particularly observed by the examiners by using a structured checklist that finally ends with giving comprehensive feedback to the candidates. A prospective interventional study done by Wanjari S et al among the postgraduate trainees of Obstetrics and Gynecology revealed substantial improvement in DOPS score during 3rd encounter as compared to that of 1st encounter (Wanjari, 2019). According to a study by Inamdar P et al among General Surgery trainees, subjecting trainees to more DOPS assessments led to statistically significant improvement in their scores and hence enhancement of their procedural

competencies (Kathirgamanathan, 2011).

The average % of anesthesia residents subjected to DOPS was 62.7%. This score is illustrative of the adequacy of procedural skills among anesthesia residents. Royal College of Anesthetists introduced DOPS as a tool for assessing the procedural skills of anesthesia residents in 2007. However, the residents must have substantial encounters with real patients during DOPS (Kundra, 2014). DOPS encompasses the topmost level of competence in Miller's pyramid destined for assessment of competence (Inamdar, 2022). Contrary to this, a study by Bould MD et al revealed that DOPS should not be practiced for assessing anesthesia trainees; rather recommendation was to work on developing test stimulators instead of using real patients for assessing skills (Bindal, 2013). Due to the busy operation theatre list and high-risk cases, it sometimes seems quite difficult to carry out DOPS for assessing the anesthesia trainees, but scrupulous planning and vigorous training and involvement of the faculty can make it successful (Bould, 2009). Although patient safety should be the priority; it is also imperative for the trainees to learn procedure on real patients, and this should preferably be allowed following practice in controlled environment with simulated patients.

The Mini-CEX score of Medicine & Allied and Surgery & Allied residents was observed to be almost the same with averages of 55.4% and 55.8% respectively. Although most of these departments individually had above 50% scores, however; trainees from one of the neurosurgeries, orthopedics, surgical and medical units have below 50% marks that should preferably be counseled for better performance in future assessments. One of the aspects found objectionable about Mini-CEX was that assessment was done following interaction with one patient or case (Norcini, 2003). However, such biases can adequately be addressed by taking an average of two or more inter-rate scores or encounters with two or more patients. Another solution given was to have mini-CEX in different clinical settings like in emergency, out-patient department, ward etc. to get multiple results for comparison and to exclude biasness (Norcini, 1995). Moreover, trainees should also have an insight into their formative assessments to make them effective.

Of the 33 trainees assessed by CbD, most (19) were doing MD Pediatrics training in tertiary care hospitals of Rawalpindi and their overall average % was 58.2% (Table 3). This assessment tool has also been employed to assess the pediatric trainees of the United Kingdom and the selection of a challenging case for discussion provided them with a golden learning opportunity (Mehta, 2013). A study by Khuong YL et al illustrates greater satisfaction among Radiology residents concerning learning opportunities and optimization of clinical reasoning and decision-making with Case-based education (Khuong, 2022). Assessment of the residents through CbD prove

beneficial if case-based learning strategy is adopted during undergraduate teaching (Datta, 2022). This would enable them to be proficient in clinical reasoning and comprehending applied clinical aspects in connection with basic medical sciences. Strengths of the trainees identified during WBPA in the current study were their good presentation and communication skills, their positive approach to clinical reasoning and diagnosis apart from being confidence. However, recommendations were to enhance theoretical knowledge for correlating it with clinical examination of the cases and their management. Moreover, steps of examination and competencies to elaborate clinical findings were in dire need of practice. According to a study carried out by Mehta F et al, numerous factors seem to influence the feedback given by assessors. Most important among them were the time given for assessment, choice of cases or procedures and environment of assessment (Mehta, 2013). The seniority of the assessors also seems to affect the feedback of workplace-based assessments to some extent that should thoroughly be scrutinized by planning another study. WPBA measures all three domains of knowledge namely cognitive, affective and psychomotor. It is also used to analyze the higher order thinking skills of the residents (Pulse International, 2024). Anyhow, formative assessments followed by feedback also enable trainees to go through the phase of reflective practice and facilitate them to make action plans for improving their competencies.

RECOMMENDATIONS

Although most of the trainees were assessed by mini-CEX, the overall score of trainees assessed by CbD was comparatively higher than those of mini-CEX and DOPS. Trainees had adequate communication and presentation skills with a professional approach to diagnosis and management of the cases. However, they must pay more attention to gain theoretical knowledge and work on enhancing clinical competencies by doing more practice for long and short cases apart from taking history and doing physical examinations.

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