SPECIAL COMMUNICATION

EFFECTIVENESS OF DIRECT OBSERVATION OF PROCEDURAL SKILLS (DOPS) AS AN ASSESSMENT TOOL IN SURGERY

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BACKGROUND

The introduction of the Modernising Medical Careers (MMC) program in England has produced a shift towards a competency based system for training and assessment in postgraduate medical education in the UK and rest of the world[1]. This change also influenced post garduate training in Pakistan and the College of Physicains and Surgeons also shifted to competence based post graduate curriculum. Introduced as part of a new curriculum in April 2005, it was designed to be a groundbreaking world-leading programme providing graduates with a broader exposure to medical practice and specialist training. To meet this challenge the curriculum identified a range of competencies that had never been met before including communication skills, leadership and teamwork[2].

PURPOSE

These work-place based assessments assess a trainee's professional skills and attitude with the advantage of high content validity through close integration between assessment and feedback[3]. Although there is no universal agreement on what defines competency, competency based assessments are seen as measures of what doctors would do in testing situations[1]. The methods of assessment being used by the Royal Colleges for foundation and specialty training vary. The UK surgical training in particular has undergone a series of major changes as the traditional apprenticeship model is replaced by a more structured training programme with clearly defined objectives[4].

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General workplace based assessment tools shared across the specialties include:

1. Clinical evaluation exercise (CEX)
2. Direct observation of Procedure (DOPS)
3. Case base discussion (CBD)
4. Mini-CEX
5. Multi-source feedback.

For the remainder of this review I will be taking one of the above assessment methods, DOPS, and highlighting its effectiveness as an assessment tool in detail with particular reference to its role in surgery.

INSTRUMENT

Direct Observation of Procedural Skills (DOPS)

Direct observation of procedural skills (DOPS) is one of a number of exercises used in the clinical setting to help the teaching and assessment of a clinical skill[5]. The theory underpinning DOPS is derived from other observational methods of assessing technical skills such as the objective structured assessment of technical skills (OSATS)[6]. To distinguish DOPS from other assessments, a few key features have been identified. These include the fact that DOPS is the assessment of procedural rather than clinical skills, it evaluates a specific patient encounter rather than that over a length of time and thirdly, involves assessment of procedures on actual patients as apposed to cadavers/manikins[7]. The assessments are made by different assessors and cover a wide range of procedures expected for the trainee's current stage of training[8]. The 'Surgical DOPS' is the surgical version of the DOPS originally developed and evaluated by the UK Royal College of Physicians. This is applicable to short,

diagnostic and interventional procedures, or part procedures, that comprise of relatively few steps that will be most useful during the early years of surgical training[5]. Although not a new instrument, the use of DOPS for junior doctors has been invigorated in recent years replacing other instruments of assessment such as logbooks and supervisor evaluations[7]. Assessment should not be approached like an examination rather, after completion, the assessor should provide immediate feedback to the trainee in an appropriate environment[8].

EFFECTIVENESS

The recent change in working pattern for doctors in training has meant that the traditional systems of education are under increasing pressure for the need to maximise new opportunities for learning.[10([2-8][9]] All methods of assessment have strengths and intrinsic flaws, these being partially compensated by multiple observations and differing assessment methods[10]. Epstein RM[11] describes five criteria for determining the usefulness of any particular assessment method: reliability, validity, impact on future learning, acceptibility to learners / faculty, and costs. A review by Wilkinson et al in 2003[12] found that there were no validated methods of procedural performance assessment described in the literature. There is also very little psychometric data on DOPS, perhaps due to the fact that direct observation is often carried out informally[7].

Despite the lack of evidence on its quality, direct observation of an individual's procedural skills certainly has high face validity with examinees being observed in situations closely resembling normal clinical practice[13]. One of its key design considerations is the importance of maximising feedback for trainees. Feedback for DOPS is provided for at the time of encounter, and is an important positive characteristic of this tool[12]. Interactive feedback is important to help doctors improve and develop professionally[9]. Cox and Irby[10] also highlight feedback by credible experts as one of the key features of DOPS. Although DOPS is similar to procedural skills log books, the purpose and nature of these methods differ significantly. The recording of procedures is common to both of them, but log books are usually designed to ensure that the trainees have simply performed the minimum number required rather than being given specific feedback based on direct observation[14]. In addition to a global rating, the DOPS form includes ratings of a number of possible components of clinical competence[15]. A pilot study by the Royal College of Physicians London with SpRs found a generalisability coefficient of 0.89 with six encounters recommending that for each procedure a trainee should be observed by at least three assessors observing two procedures each to achieve adequate reliability[16]. The RCPL pilot study also showed evidence for construct validity as more senior trainees received higher scores. Direct observation of real procedures using structured check lists based on OSATS can demonstrate high inter-rater reliability and test-retest reproducibility[17]. Instruments for the direct observation of surgical skills can be adapted to use in other sub-specialities and remain highly reliable with good construct validity[18]. Individual DOPS assessments are however not designed to be a sign off for independent practice but become more reliable through multiple observations and multiple observers[15].

CAUTIONS

A survey by the Postgraduate Medical Education and Training Board UK (PMETB) suggests that only around 40% of foundation trainees found the feedback from DOPS helpful[19]. This may reflect a lack of assessor training and time available for assessment[15]. It has been found that DOPS and mini-CEX carry a degree of stress and artificiality with discussion of performance in the assessments rarely prominent in trainees' annual summative reviews[20]. A particular limitation of DOPS highlighted by Epstein[11] states that selective rather than habitual behavior is observed during the assessments which can also be quite time consuming. There is also the danger

that these narrowly defined competencies will dominate the curriculum, which would not be suitable for learning in higher education. The approach using check lists is superficial and often proves demotivating, as it encourages trainees to do the right thing to pass than to think critically and excel[21].

FUTURE CHALLENGES

For Educators

McKinley et al comment on reliability issues as they apply to direct observation of history taking and physical examination skills, although their observations are probably equally applicable to DOPS[22]. There can be significant inter-case variations in direct observation, which decreases reliability due to both poor content sampling and significant variation in case difficulty. This problem might be able to be controlled to some extent by increasing the number of cases on which students are assessed and selecting cases according to set criteria. There can also be significant inter-rater variation in direct observation. McKinley et al suggest that examiner variability can be reduced by using multiple assessors, ensuring that they use explicit assessment criteria and by training them. A number of new techniques are replacing direct observation like videotaping and review, use of bench models in OSCE, hand motion analysis, integrated procedural performance instrument and virtual reality[23,24]. However there are as yet few studies validating these methods. It is suggested that educators will need to keep abreast of the literature in this field as newer technologies emerge and there are further studies validating them.

For Researchers

Norcini JJ et al[25] in 2009 published the results of DOPS encounters in 3640 trainees (foundation first year assessment)and 8701 assessors . There were 22700 encounters with encounters-trainee ratio of 6.2 and assessor-encounter ratio of 2.6. Unsatisfactory encounter rate was only 1.6. This study and some other simmilar papers concluded that there is a demand for further research to determine the validity and reliability of DOPS. One of the main issues is determining the number of DOPS required achieving adequate reliability and validity[26,27]. Future investigations will need to investigate the use of DOPS with different procedures.

CONCLUSION

There can be no doubt that competency based assessment of all doctors is essential in the light of reduced working hours, shorter training programmes and the need to maintain public confidence in the medical profession[28]. DOPS is a relatively new instrument with limited published data on utility[15]. There is a general consensus that there is very little information in the literature regarding feedback after DOPS at the present time and further work will need to be done to assess the value of feedback given to trainees after these assessments[9]. It is imperative that specialists must be seen to have reached the high standards expected of them. Under new systems where specialist doctors have undergone competence based structured training,they should perform more operations without direct supervision as soon as they have been accredited as having the right skills'[23]. To fully exhaust the positive impact on postgraduate medical education, the assessment frequency has to rise. The discrepancy between the generally high satisfaction with the format and the low number of performed assessments might be explained and resolved if the formative assessment character of work place base assessment (WPBA) is communicated more clearly[29]. To further strengthen the link between teaching and assessment, and to deal with the practical expediencies of wide scale implementation, a workplace based assessment should be locally assessed and based on the collection of evidence[30].

The above review highlights clearly that not only are there no randomised controlled trials on the actual use of DOPS as a assessment tool, but also, no quantification of effectiveness has been documented. In answer to this, it is recommnded

that studies should be carried out that tackle not only the issues above, but also addresses the variable of inter-rater DOPS reliability.

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