Adaptation of Direct Observation of Procedural Skills (DOPS) for assessments in podiatry

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Abstract

Background: The Direct Observation of Procedural Skills (DOPS) is a workplace-based assessment tool widely used in medicine to assess a learner's ability to execute a technical skill. The aim of this paper is to report on the development phase of the adaptation of the DOPS for the assessment of podiatry learners' procedural skills. Podiatry learners are required to practise and demonstrate a variety of procedural skills in the management of foot complaints. Such skills include the use of scalpel blades, needles and local anaesthetic applied to a variety of disorders. The DOPS provides an avenue by which a learner's procedural skills can be assessed and timely feedback provided in the workplace or in simulated environments.

Methods: The DOPS was initially adapted for podiatry by a faculty team consisting of a podiatry educator, a clinical education specialist and a clinical educator from another allied health discipline. The first iteration was circulated among podiatry faculty at three other Australian universities. The second iteration was reviewed by clinical supervisors from Southern Cross University (SCU). The third iteration was administered by two clinical supervisors at SCU working with 12 learners during real-time clinical events. Eleven learners used DOPS to assess their peers during five real-time and six simulated learning events.

Results: A new tool, the Direct Observation of Procedural Skills in Podiatry (DOPS-P) has emerged from this process. Face and construct validity have been confirmed, and faculty and students consider DOPS-P contributes to learning.

Conclusions: Further research is necessary to confirm the validity and reliability of the DOPS-P to support assessment decisions about students' achievement of podiatry competencies.

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Introduction

Podiatrists employ a range of minor surgical and procedural skills in the management of foot complaints. These skills include nail care and debridement, wound care and local anaesthetic injections. Assessment of the podiatry learner's application of procedural skills in-situ is routinely undertaken in the clinical learning environment. Not only are the actual procedures assessed, the assessment includes the student's ability to prioritise tasks, manage the sterile environment, manage patients' concerns and reactions and adhere to relevant workplace health and safety matters. However, there is a paucity of literature describing the tools used and/or evidence to support their use.

Internationally recognised approaches to workplace-based assessment (WBA), the concept of a programmatic approach to assessment (van der Vleuten & Schuwirth, 2005) and the tools used by other disciplines to assess student performance (Ahmed, Miskovic, Darzi, Athanasiou, & Hanna, 2011; Barton, Corbett, van der Vleuten, & Programme, 2012; Norcini & Burch, 2007) provide stimulus for discussion and consideration. They provide an avenue by which procedural skills can be assessed during patient-centred care in podiatry education. Podiatry faculty are cognisant of the importance of, and the need for, formal evaluation of WBA tools to ensure assessment practices are defensible, consistent with learning outcomes and relate to podiatry competencies and standards (e.g., person-centred care and patient safety).

Effective assessments need to provide evidence of the direct observation of learners' work as they continue to develop their clinical competency. Assessment tools provide evidence to support decision making, and it is expected that any assessment tool will demonstrate five identifiable features (Schuwirth & van der Vleuten, 2010):

1. **Validity**—whether the assessment measures what it claims to measure
2. **Reliability**—the degree to which the measurement is accurate and reproducible
3. **Acceptability**—the tools and processes are acceptable to learners, faculty and other stakeholders
4. **Educational impact**—the assessment influences learners' learning in several ways
5. **Efficient and affordable**—the time and costs associated with administering the assessment.

The DOPS has been utilised as an assessment in a variety of workplace-based settings, with some evidence in the literature to support its validity and reliability (Ahmed et al., 2011; Burnand, Fysh, Wheeler, & Allum, 2014; Naeem, 2013). The overall goal of this project was to adapt the DOPS for podiatry and to build evidence to argue for the validity of the scores derived from the adapted tool. The developmental phase was undertaken simultaneously with a preliminary exploration of the face and construct validity, acceptability, efficiency and affordability of the tool.

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Methods

The study was approved by the Southern Cross University (SCU) Ethics Committee (ECN-15-141). Informed consent was obtained from all participants. The study was conducted using an action research methodology that involved eight stages:

Stage 1: A literature review to inform the first adaptation of the DOPS for podiatry. For that purpose we used the DOPS published by the Royal Australasian College of Physicans (RACP) (Royal Australian College of Physicans, n.d.) and the rating scale modified to reflect a construct-aligned scale (Crossley, Johnson, Booth, & Wade, 2011).

Stage 2: Establishing consensus. Face and content validity was initially established through feedback from podiatry academics at three Australian universities. The DOPS were sent by email, and the academics later provided written feedback or engaged in phone conference discussions to provide feedback.

Stage 3: Development of resources. Following the uptake of the former group's advice, three short video recordings were made of learners undertaking two different clinical scenarios in which the DOPS would normally be administered. This provided stimulus material for the DOPS training workshops clinical supervisors would attend.

Stage 4: Trial and moderation. Two academics from SCU critiqued the DOPS using the videos' stimulus materials and podiatry curricula standards. The critique was informed by current thinking regarding the need for learners in clinical education settings to demonstrate their readiness for an increase in independence (Crossley et al., 2011).

Stage 5: Administration of the tool in-situ. The third iteration of the DOPS was then administered on senior learners by two podiatry clinical supervisors. Supervisors and learners trialled the DOPS during the application of procedural skills in the university clinic or during simulated applications of procedural skills in a laboratory. The grades recorded on the DOPS were formative and did not contribute to the learners' grades.

Stage 6: Learner focus groups and supervisor interviews. Learners were invited to focus groups and clinical supervisors to individual interviews with the clinical education specialist. The aim of the groups and interviews was to explore impressions of the educational value and usability of the DOPS in the workplace-based teaching and learning environment. The questions during the up to 20-minute semi-structured interview included:

Q1. In principle, do you regard the DOPS to be an effective tool for assessing podiatry students' clinical procedures in simulated and during real-time, clinical events?

Q2. What are the strengths of the tool?

Q3. What are the areas, points that need improvement? Why? What improvements do you suggest?

Q4. Do you regard the DOPS tool as a useful way to monitor student progress and provide feedback?

The focus groups and interviews were audio recorded so they could be reviewed by the podiatry academic at a later stage.

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Stage 7: Data analysis. Qualitative data from focus groups and interviews were thematically analysed by two of the authors (KM and PB), who met to discuss differences until a consensus was formed. Their understanding of the responses emerged from their experience, and each applied their individual inductive, and later deductive, analysis to identify patterns and allow themes in the data to emerge. Descriptive statistics were generated from quantitative data regarding the situations in which the DOPS was administered and the associated health scenarios.

Stage 8: Writing up.

Results

During Stage 1, the RACP DOPS was adapted to provide draft one of DOPS. In Stage 2, the feedback from podiatry academics from three Australian universities was incorporated; this focused mainly on the marking criteria and the categories of skills to be assessed.

Training videos were then produced in Stage 3. In Stage 4, two supervisors at SCU further refined the marking criteria, categories of work to be assessed and the standards. In Stage 5, two podiatry supervisors and 12 learners (3 second year, 6 third year and 3 fourth years) enrolled in the Bachelor of Podiatry participated in the trial of the DOPS in the university clinic and laboratories. The DOPS was used as a formative assessment tool.

The two clinical supervisors assessed 12 different learners during 17 real-time clinical events. Eleven learners participated in peer assessment during five real-time consultations and six simulated learning events. The podiatry clinical skills observed were (with number of occurrences in brackets):

- biomechanical analysis (3)
- local anaesthetic administration (3)
- nail management (8)
- musculoskeletal chronic conditions (1)
- pre-operative consultation (1)
- sharp debridement (7)
- shockwave (1)
- and other (2).

The category "other" involved any other type of podiatric skill that is not accounted for in the other sections, for example "x-ray evaluation".

The supervisors and some of the learners found the rating of the complexity of the individual criteria difficult to manage and superfluous to assessment needs. Clinical supervisors and learners were asked to indicate, on a 6-point Likert scale, their satisfaction in using DOPS (1 = low to 6 = high). The median score was 5. The average time taken for the assessment was 10 minutes and the time for feedback 4 minutes.

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During the interview process, the learners were asked whether the DOPS was a valuable contributor to their education. The response was positive, although specific grey areas were identified. For example, one learner commented:

> *The question on "demonstrates patient awareness", I think that needs to be explained more.* (Learner 1)

Another learner commented:

> *For different locations the task might be the same, but the patient might be harder, so obtaining consent from a patient at a homeless clinic is different from a usual clinic.* (Learner 2)

An interview with one of the clinical supervisors brought the following comment.

> *It is a fine balance between making it complicated enough to give us the information we need and not making it too complicated that people just say, "That's too much".* (Supervisor 1)

The second supervisor provided written comments that the usability of the DOPS improved with use. Supervisor 2 did not support including grading the level of complexity of each criterion. One learner commented:

> *It [DOPS form] was quite easy to fill out.* (Learner 4)

There were also queries regarding how case complexity is determined between the relevant year levels.

> *If a second year and a fourth year complete the same task, is the complexity the same?* (Learner 2)

Another learner commented on the time commitment required, suggesting:

> *Assessing others was more time consuming.* (Learner 4)

Finally, another comment was:

> *Although it flows well and is accurate with what we are doing, … the section on communication is very broad.* (Learner 3)

Overall, learners reported DOPS easier to use each time they used it, either as a learner being assessed or when assessing peers. They asked for a manual to support the process, in particular, to explain terminology. The feedback from staff and students and discussions within the investigative team resulted in the final version of the DOPS (Figure 1).

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Podiatry Direct Observation of Procedural Skills (DOPS-P)

Date:

Student name: **Assessor name:**

Year level: ☐ 2 ☐ 3 ☐ 4

Patient age:

Gender:

Case type:
- ☐ Real-time/clinic patient
  - ○ New
  - ○ Return patient
- ☐ Simulated/Mannequin

Assessor:
- ☐ Clinical supervisor
- ☐ Peer
- ☐ Near peer
- ☐ Student self-assessment

Patient complaint:

Case complexity:
☐ Low ☐ Medium ☐ High

Rational for the choice of complexity

Clinical Reasoning:
- ☐ Demonstrates through understanding of the patient's presenting complaint.
- ☐ Clearly justifies rationale for procedure (including indications and contraindications).

Observed component:
- ☐ Nail management
- ☐ Sharp debridement
- ☐ Local anaesthetic administration
- ☐ Woulnd management
- ☐ Nail surgery
- ☐ Biomechanical analysis
- ☐ Orthotics management
- ☐ Other:

Obtains valid consent	1	2	3	NO
Demonstrates patient comfort awareness	1	2	3	NO
Demonstrates risk awareness	1	2	3	NO
Demonstrates appropriate infection control	1	2	3	NO
Demonstrates proficient technical ability	1	2	3	NO
Seeks help where appropriate	1	2	3	NO
Demonstrates appropriate post-procedure management and advice to patient	1	2	3	NO
Demonstrates appropriate communication with patient during and about the procedure	1	2	3	NO
Demonstrates organisation & efficiency	1	2	3	NO

- ☐ Aspects of the prodedure performed exceptionally well
- ☐ Aspects of the procedure for development and improvement
- ☐ Agreed actions and learning plan

Time taken for assessment				Time taken for feedback				
Examiner satisfaction using DOPS-P	(Low)	1	2	3	4	5	6	(High)
Student satisfaction using DOPS-P	(Low)	1	2	3	4	5	6	(High)

Assessors signature: **Student signature:**

Marking Key

1	Unable to demonstrate the element. Requires high level of supervision for this procedure.
2	Able to demonstrate without minor lapses in process that are unlikely to compromise patient care and safety. Requires moderate level of supervision for this procedure.
3	Able to demonstrate the element. Requires low level supervision for this procedure.
NO	Not observed

Figure 1. Podiatry direct observation of procedural skills (DOPS-P).

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Discussion

The present study has reported on the development and initial implementation of the DOPS in the Bachelor of Podiatry at an Australian university. Hitherto, no standardised assessment tools are available for assessing podiatry student's procedural skills. This study, and the new tool development process and outcomes, the DOPS-P, facilitates the specific observation and assessment of podiatry procedural skills in-situ and in laboratories.

In line with the five features of assessment tools that provide evidence to support decision making (Schuwirth & van der Vleuten, 2010), in this case study, we have established the DOPS-P:

- Demonstrates construct and face **validity** according to podiatry academics at four universities and supervisors and students at SCU.
- Is **acceptable** based on feedback from workplace-based clinical supervisors and learners, who indicate familiarity with the tool is the key to efficiency.
- Has **educational impact**—students and supervisors agreed DOPS-P assessed the application of learning in-situ and in laboratories.
- Is **efficient and affordable**—15 minutes for a clinical supervisor to assess a learner's application of a procedural skills.

With respect to the time taken for the assessment, it has been suggested that this "is the actual time" taken to do the procedures reported (Wilkinson et al., 2008), and this must be factored into the supervisor's workload. Although the cost of supervisors' time must be considered, we do not regard it as prohibitive, and this has been confirmed in other settings (Wilkinson et al., 2008). Depending on the situation and setting, it is possible to give students feedback at a more convenient time, thereby removing time pressures. Furthermore, an online version of the DOPS-P could potentially expedite the administration of the tool and reduce workload.

Workplace-based assessment feedback is an essential process to ensure the delivery of consistently high-quality education within the academic and clinical setting. The DOPS-P offers a time efficient process through which clinical skills can be reviewed and feedback offered against standards. This is critical given the podiatry profession requires its graduates to demonstrate competence at a particular standard for the safe use of scalpels, needles and application of surgical procedures, for example.

Discussions with a wider team of academics can be expected to develop a manual for the administration of DOPS-P for both clinical staff and learners. These resources will moderate the different interpretations, thus improving the consistent application of the DOPS-P and, therefore, assisting in the generation of transparent and defensible assessment judgements. There is every indication that DOPS-P is a useful tool for assessment of podiatry students' procedural skills and for use in peer or self-assessment, but as in medicine (Naeem, 2013), further research is required to prove its value in practice.

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Limitations

The limitations of this research are that the administration of the DOPS-P took place at only one university with a small cohort of podiatry supervisors and learners. Nevertheless, the involvement of podiatry academics from three other universities, an academic from another discipline and a clinical education specialist added to the depth of discourse throughout the process.

Conclusion

A tool for assessing podiatry learners' procedural skills has been developed through a robust process involving podiatry academics from four Australian universities, a clinical education specialist and a clinical educator from another allied health discipline. Each iteration was modified according to feedback, mainly related to marking criteria and categories of podiatry procedures. The process outcomes infer that the construct and face validity of the tool is sound and that the design is acceptable.

At this initial phase, we report that the DOPS-P is feasible and time efficient in both real-time and simulated learning scenarios, providing the learner with feedback about their performance across a range of procedural skills required for practice as a podiatrist. There is the potential for the DOPS-P to be developed as an online tool and used in peer assessment and self-assessment.

What is yet to be determined is if the weighting of each criteria needs to be calibrated to emphasise the importance of different knowledge, skills or attributes in order to avoid rewarding learners inaccurately and to align with university bands for grades from fail to high distinction. Agreement needs to be established as to the balance between comprehensiveness and manageability.

Further research is needed to explore whether the DOPS-P is able to provide the projected defensible and reliable decisions about learners' progressive acquisition of podiatry skills. Collaboration with partner institutions is now necessary to ensure there is no conflation of their criteria or standards and that the interpretation of the cognitive, psychomotor and affective learning outcomes expected from the application of procedural skills is acceptable more broadly.

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