

Mock patient cases are valid tools for assessing clinical pharmacy skills in undergraduate students

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Abstract

Introduction: Namibian pharmacy undergraduate students are taught clinical knowledge and skills during clinical ward rotations. A method was sought to assess these skills using a ward scenario but under exam conditions.

Assessment Method: Students were given a 'mock' patient case with notes and a prescription chart, plus commonly available resources, and were asked to complete a pharmaceutical care plan. Additionally students prioritised their most important three interventions identified and discussed these with a medical internist. Students were graded using a set mark scheme.

Evaluation: Students demonstrated a consistent, systematic approach to clinical pharmacy review, at a competency level appropriate to undergraduates. At least three of the four key interventions were identified by 64% of students, and the average mark overall was 54%.

Implementation: The assessment tool is easily adaptable to a variety of clinical pharmacy situations and levels of education and is a useful benchmark on which future assessments will be based.

Keywords: *Clinical pharmacy, assessment, undergraduate, education*

Introduction

The limited access to clinical pharmacy services and education in Namibia is an obstacle to optimal health care. Despite pharmaceutical care being defined in 1990 (Hepler, 1990), and clinical pharmacy practised in countries such as the United States of America and the United Kingdom for decades (American College of Clinical Pharmacy, 2014; UK Clinical Pharmacy Association), 2014), the development and integration of clinical pharmacy education and practice in the sub-Saharan countries, a region burdened by human immunodeficiency virus (HIV) and tuberculosis (TB) has shown slow progress. There is a wealth of evidence demonstrating that clinical pharmacists are critical in optimising patient care (Kaboli, 2006), however the integration of these services, particularly in HIV/AIDS, TB, malaria and emerging diseases, remains limited in Namibia. To date, access to clinical pharmacy education at both undergraduate and postgraduate levels in these resource-limited settings remains limited. Southern Africa has the lowest proportion of pharmacists in the world, of which Namibia, an upper middle-income country is no exception (Wuliji, 2009; WHO, 2014).

Despite a high health burden of HIV/AIDS and TB, a shortage of human resources for pharmacy means clinical pharmacy services are rarely provided on the hospital wards in Namibia (Brock, 2009). In most public hospitals there are no systems to support and mentor graduates on clinical pharmacy clerkship. It is therefore important to

teach clinical pharmacy competencies at an undergraduate level, despite these traditionally being more commonly developed at a postgraduate level, such as the US PharmD programme). There is also a critical need to develop and pilot tools to assess the competence of graduates in this environment.

To address this shortfall in human resources, the Namibian government has invested heavily in healthcare education, and the country's first School of Pharmacy (SoP) was established at the University of Namibia (UNAM) in 2012, with the first cohort of Bachelor of Pharmacy (BPharm) students completing their studies in December 2014 (Rennie, 2014). The degree curriculum was developed from competencies defined by the needs of Namibia (Rennie, 2011), aiming to increase the number of pharmacists equipped with these skills. The development of clinical pharmacy competencies takes this one step further and will also help pharmacists to specialise further in their future careers. Acknowledging that students, once qualified, may not have senior colleagues to train and guide them in clinical pharmacy skills, clinical rotations have been built into the implementation of the BPharm degree in the final year of the four year programme. These involve a variety of areas, including the TB wards (which have a significant number of patients co-infected with HIV), the intensive care unit, the cancer unit and acute wards of the mental healthcare unit. They are supervised by clinical instructors who teach clinical pharmacy review skills,

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develop clinical knowledge and its application, and encourage interprofessional learning particularly with medical students. As part of the rotations, students are encouraged to review patients using a locally-produced clinical pharmacy tool, a care plan which guides the students to record relevant information (including a medication history), identify pharmaceutical issues, formulate a plan, identify relevant monitoring parameters and record interventions that they make. Coursework is set during the clinical rotations and includes reflective logs, written case studies and oral presentations. However, a way of assessing the students' clinical pharmacy skills was sought. This should be in line with the curriculum's competencies and accurately reflect a ward situation but in a controlled examination environment.

For clinical pharmacy, it is important that the practical application of skills is assessed, as well as theoretical knowledge, in order to produce a competent practitioner. Assessment of these practical skills in pharmacy undergraduate students via objective structured clinical exams (OSCEs) is well documented (Corbo, 2006), but other assessment methods, less so, particularly in a resource-limited setting. Marriot (2007) describes the use of virtual patients as case studies for assessment, but an online database of virtual patients requires considerable resource and technological expertise, which are not currently available in Namibia. Whilst OSCEs assess application of knowledge and skills amongst a range of scenarios in a short time period, a virtual patient or 'mock' patient case enables a greater length of time to be spent reviewing a patient, perhaps better reflecting of a ward environment. We developed a criterion-based assessment tool for clinical pharmacy for students at the new SoP in Namibia.

Description of Assessment Method

Consideration was made as to the skills which needed to be assessed and the type of patients the fourth year students had reviewed on the wards. The clinical pharmacy skills deemed to be important, and therefore in need of assessment, were identified following departmental discussion, taking into account the curriculum's competencies (Figure 1). Previous exercises aimed at teaching clinical skills were also considered.

A 'mock' patient case was drawn up, based on commonly observed conditions in Namibia and clinical aspects that the students had covered in rotations. The case consisted of two pages of mock medical notes with information about the patient's presentation, current condition, past medical history, a brief medication history and other relevant information. Additionally students were given an accompanying prescription chart for the patient. The test consisted of a 90-minute written test where students were expected to complete a pharmaceutical care plan for the patient according to a set format (the clinical pharmacy tool), followed by an observed, ten-minute verbal discussion with a medical internist from the School of Medicine regarding the patient's care and the

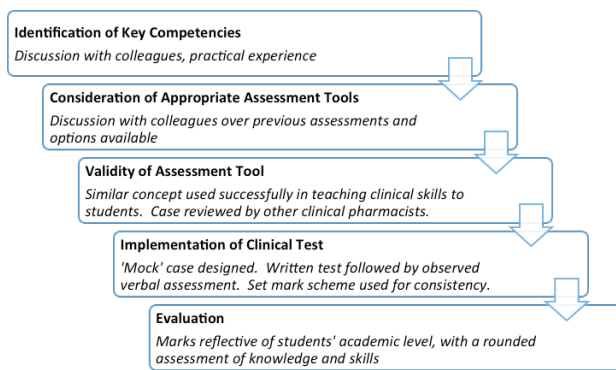
interventions they wanted to make. Students were told to prioritise their three most important interventions, but could also discuss other issues once these had been addressed. Students were briefed about the format and given an opportunity to ask questions about its logistics, prior to the test. For the written test, students had a copy of the British National Formulary and/or the South African Medicines Formulary (the choice of the student), as well as a copy of the Namibian TB guidelines (MoHSS, 2012) and the Namibian HIV guidelines (MoHSS, 2014), plus a printout of interactions of all 'prescribed' medicines from an online tool (University of Liverpool).

Figure 1: Skills the clinical test aimed to assess

- Using a systematic approach to clinically reviewing patients
- Identifying relevant information in healthcare records
- Identifying pharmaceutical care issues
- Formulating a pharmaceutical care plan, incorporating monitoring
- Effective use of basic medicines information resources
- Identifying interventions and queries
- Prioritising issues
- Time management
- Communication skills
- Ability to discuss and debate issues with other healthcare professionals who may not agree with the proposed intervention
- Sound clinical knowledge

The case that was chosen was a psychiatric patient admitted with acute psychosis, who was HIV positive and newly started on TB treatment. The patient had issues of adherence and the medicines history was not fully known. Other interventions included doses that were too high, significant interactions, the need to add in medicines to manage side effects and other clinical conditions, appropriate management of substance withdrawal and incorrect routes of administration. The case was developed by the clinical instructor who had supervised the students on rotations, and was verified by the clinical instructor working on the TB ward and another clinical pharmacist within the SoP. The format was based on a previous exercise delivered as a seminar in developing clinical skills. See below for a diagrammatical representation of the development process of the assessment tool.

Students were graded according to a set mark scheme which incorporated identification of issues, plan, interventions and discussion with the doctor. Important interventions were allocated higher marks. Students were negatively marked for dangerous recommendations, and extra marks could be allocated for issues raised that were valid but not on the mark scheme.

Figure 2: Development Process of Assessment Tool

Evaluation

Final marks for the 14 students ranged from 38% to 66% with an average mark of 54%. Although this seems low, the mark scheme applied regardless of clinical experience, and so a postgraduate student or practising pharmacist would be expected to gain higher marks. Most students (64%) identified at least three of the four main issues for the patients with these predominantly presented to the doctor as their most important interventions. This was encouraging, as the main issues included errors, whereas the other interventions were generally optimisations of treatment. As the student gained in experience, it would be expected that not just errors are identified, but that treatment is optimised, demonstrating a broader knowledge and a better application of clinical skills. Observationally, approaches to the doctor varied, with some students very confident and articulate and others nervous and occasionally confrontational. The latter approaches perhaps reflect the limited time spent working as an interprofessional team on the wards during undergraduate training. Care plans were, on the whole, completed well, with relevant information from notes identified and a systematic method for working through pharmaceutical issues used. Relevant monitoring parameters for the drug therapy were generally well chosen. Some issues were raised which had not been considered, such as nutrition, and some of the interventions made, although not necessarily correct, had good reasoning behind the decisions. The use of a mock patient case to assess undergraduate students on their clinical pharmacy skills gave an accurate assessment of students' abilities to formulate care plans and identify pharmaceutical issues. The assessment is potentially difficult for students at an undergraduate level, and is reflected in their marks, as clinical review is usually undertaken as a qualified pharmacist. However, the students demonstrated that they understand the method of effective clinical pharmacy review, even if their knowledge and application was not necessarily sufficient to enable all key pharmaceutical issues to be identified. This firm basis can be built on in their future careers as knowledge is gained, and skills utilised on hospital patients on the wards.

Implementation

As an assessment method, the test is easily adaptable to a variety of clinical pharmacy situations and levels of education, and can be used to successfully and consistently assess several core skills of a clinical pharmacist, in both a written and practical format. The assessment tool may be used for acute and chronic conditions, tailored to the assessor's and country's needs. Similar 'mock' cases have since been utilised in teaching interns (who were the final year students first tested using this method), although formal assessment and grading has not been made. Cases were developed around common disease states and ward scenarios, e.g. surgical patients, diabetes, asthma etc. The assessment tool is likely to be utilised again in future years for undergraduate students and, with a postgraduate clinical Masters degree in development, in future assessments for students practising at a postgraduate level.

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