Pharmacy Education, 2017; 17 (1) 350 - 356

How is the term 'competence' defined by the pharmacy educator? A qualitative study of science-based and practice-based pharmacy educators

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Abstract

Background: A simple definition of 'competence' has resulted in a concept that is mainly related to tasks and outcomes. A more detailed knowledge of how pharmacy educators define competence can support future development of teaching and assessment of pharmacy undergraduates.

Aim: The overall aim of this research was to gain some insight into the views of different pharmacy educators and their perception of the term 'competence'.

Method: A thematic analysis of a total of 12 semi-structured, one hour interviews with four academic members of staff from three different Schools of Pharmacy in England.

Results: Both science-based and practice-based respondents defined competence in terms of a construct defined by a group of peers. Practitioners were more hesitant about the use of competence-based assessment compared to scientists**.**

Conclusion: There are indications from the interview narratives that there is a need for a deeper dialogue about competence and more emphasis on the development of ongoing, individual competence.

Keywords: *Assessment, Competence, OSCE, Skills*

Introduction

According to Schön (1983) professionals find it difficult to articulate the areas that lead to professional competence. This conclusion can be linked to Schön's detailed observation of different professions and how the science-based practitioner appears to engage in a limited reflection in action. The example is given of how a scientist when faced with a work-based problem selects the right problem from a 'stock' of already known problems from previous experience. Schön's view of the science-based practitioner can be aligned to the current emphasis within healthcare professions on a series of competencies that must be achieved to fulfil a professional role.

Competence is a term that is increasingly used within the pharmacy profession and is commonly defined in its simplest form as 'being able to perform tasks and roles to the expected standard' (Eraut and Hirsch, 2007: p.7). It is useful to trace the links between pharmacy practice and education and the evolution of a competence-based approach. During the late 1990s there was an initial attempt to link standardised outputs of the preregistration trainee with the skills required for the 'day one pharmacist'. In the hospital sector, in response to the clinical governance agenda a General Level Framework (GLF) was introduced and revised (Davies *et al*., 2002). In 2004 there was the introduction of an Advanced to Consultant Level Framework (ACLF) (Davies *et al*., 2004) which is used within the National Health Service (NHS) to support the development of advanced-level pharmacists to consultant pharmacy level. The emphasis of the ACLF is on research, leadership, education and training, and building working relationships. This was followed by various other competency frameworks such as the prescribing competency framework, global competency framework and the leadership and competency framework for pharmacy professionals.

A significant move within pharmacy education in the United Kingdom (UK) has been the General Pharmaceutical Council (GPhC) publication of 'Future pharmacists: Standards for the initial training and education of pharmacists' (GPhC, 2011). This document describes a series of standards against which M.Pharm. providers are measured when submitting a pharmacy degree course for accreditation. An important section of this document that addresses the issue of competence is the description of a number of outcomes which must be met in the training and education of future pharmacists. For each outcome there is a hierarchy of outcome levels (knows, knows how, shows how and does) based on Miller's triangle (Miller, 1990). Miller developed the triangle for clinical work, though it can be argued that this can also be applied to science. The M.Pharm. provider and preregistration tutor are required to demonstrate how they would assess each specific outcome. There have been various criticisms of Miller's

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ISSN 1447-2701 online

triangle such as the problems associated with assessing the higher level of 'shows how' and 'does' and the ongoing debate surrounding the validity, reliability and feasibility of the Objective Structured Clinical Exercise (OSCE) which is often used as an assessment tool.

It can be argued that a simple definition of competence has resulted in a somewhat narrow view of competence as a concept that is related to tasks and outcomes. For example the broader nature of competence as demonstrated in the United States (US), the UK and Australia is highlighted by Wolf (1995). Wolf draws attention to the more complex nature of 'competence' that incorporates transfer planning and personal effectiveness and is not simply the assessment of narrow skills. An independent evaluation of frameworks for professional development in pharmacy (Wright & Morgan, 2011) noted that there can be a reductionist approach to competence-based assessment, which may only be appropriate for roles of limited complexity. Using a task-focused approach can be inappropriate where an individual is required to function in different environments and communicate with individuals at a range of different levels. This evaluation draws on the complex and subjective nature of competence-based assessment. In a recent study by Atkinson *et al*. (2016) comparing the opinions of pharmacy department academics and community pharmacists on competencies required for pharmacy practice there was a mismatch between these two groups of stakeholders. The academic viewpoint places more of an emphasis on research, pharmaceutical technology and regulatory aspects of quality than the community pharmacist, who is more concerned with patient care competencies related to clinical interactions with the patient. Whilst this difference is to be expected the study provides a detailed analysis of how perceptions within the profession have changed since the 1980s with a more clinical emphasis and the use of the term competence in relation to pharmaceutical care. The use of the term competence by the pharmacist is closely linked to different perceptions of the professional identity of the pharmacist (Elvey *et al*., 2013) and how specialised knowledge is used within the profession (Waterfield, 2010).

This present study builds on our understanding of competence in relation to specific observed actions of the individual by utilising the dichotomous definition of competence by Eraut summarised in 'Competency in Healthcare' (Storey *et al*., 2002). This is a useful starting point to develop our understanding of the construct of competence as Eraut describes two types of competence as either 'socially-defined competence' or 'individually situated competence'. Socially-defined competence is the ability to perform the task required to the expected standard. By contrast, individually situated competence is an underlying characteristic of an individual that is causally related to criterion referenced effective performance. Here, there is a contrast between an absolute term defined by an external body and a relative term that is emerging and being constantly remodelled. It would seem reasonable to assume that the development of experience, knowledge and competence fluctuates throughout practice. Many definitions of competence focus on outputs and achievements in the workplace, rather than personal characteristics or attributes such as knowledge, reflexivity and understanding that will underpin future performance.

The ongoing debate surrounding the interface between knowledge, skills and application is gathering momentum within pharmacy education. The overall aim of this research was to gain some qualitative insight into the views of different pharmacy educators and their perception of the term 'competence'. A clearer understanding of the viewpoint of this important stakeholder group can be applied to the way that the academic community will teach and assess future pharmacists. The three specific aims of this research were to:

- Explore the perspective of the pharmacy educator from different Schools of Pharmacy;
- Contrast different definitions of competence between science-based and practice-based educators;
- Construct reflexive links between definitions and theoretical perspectives of competence.

Methods

The study involved semi-structured one hour interviews with four academic members of staff from three different schools of pharmacy in England. The interviews involved a series of questions that related to individual professional background, pharmacy scientific identity, practice-based teaching, undergraduate curriculum and assessment of competence. Prompt questions used in relation to competence included:

- What do you understand by the term 'competence' in relation to pharmacy students?
- To what extent do you agree with a more competence -based approach to teaching/assessment?

The schools included a research intensive university (R), post-92 university with an established M.Pharm. programme (T), and a university with a relatively new M.Pharm. programme (N).

A total of 12 interviews were audio-recorded, transcribed and analysed using a staged reflexive framework analysis as described by Gale *et al*. (2013). Respondents volunteered in response to a letter sent to all academic members of staff in 12 schools of pharmacy in England. From the 29 volunteers, 12 were selected based on obtaining a balance of gender, academic experience and subject specialism. All identifying features were eliminated from the transcripts and the study was approved by De Montfort University, Faculty of Health and Life Sciences Research Ethics Committee.

Results

The main characteristics of the respondents are summarised in Table I.

Table I: Types of institution and respondent profile

Code for institution	Type of institution and defining characteristic	Code for respondent	Respondent profile
N	Post-92 university with new M.Pharm. programme	N1	Pharmaceutical Scientist Male Aged 50-59
		N2*	Pharmacy Practice Female Aged 40-49
		N3	Pharmaceutical Scientist Female Aged 30-39
		N4*	Pharmacy Practice Male Aged 40-49
T	Post-92 university with established M.Pharm. programme	T1*	Pharmaceutical Scientist Female Aged 60-69
		T2*	Pharmacy Practice Male Aged 30-39
		T3*	Pharmaceutical Scientist Male Aged 50-59
		T4	Pharmaceutical Scientist Female Aged 30-39
R	Research-intensive university with established M.Pharm. programme	R1*	Pharmacy Practice Male Aged 40-49
		R2*	Pharmacy Practice Female Aged 30-39
		R3	Pharmaceutical Scientist Male Aged 50-59
		R4*	Pharmacy Practice Female Aged 40-49

*indicates respondent is a registered pharmacist

From the framework analysis, four major themes emerged from the interview transcripts. Table II describes the four themes with examples from the transcripts.

Table II: Major themes on competence defined by different pharmacy educators

Theme	Example
Competence as defined by a group of peers. Both the science-based respondent and the practice-based respondents referred strongly to a socially-defined competence	R3: *"It's the ability to do a task to the standard set by the norm for a group of people who do it, that's our standard ..."*
Competence is about the present rather than the future A concern expressed is that competence-based assessment is essentially a snapshot activity where you limit what is being observed and this can have implications for future competence or lack of competence in a changing practice setting.	T1: *"You can have training to produce competence I am sure you can do that. And I am sure that when our students leave here they can begin the process of becoming into the job as it is currently. But I am not convinced that it's* ***future proofed*** *for future competence and I am not terribly convinced that if pressed they could answer questions where they would have to reach back on their logical ability or their ability to use logic in a scientific arena. And so in that respect I am not sure that they can be truly competent."*
Competence-based assessment: hesitation from practitioners compared to scientists. It is not until the issue of competence-based assessment is discussed in more depth that a difference starts to emerge between the pharmacy practitioner and the scientist.	R3: *"Yes, I think it is a good thing because we run OSCEs where they actually have to go through working with a customer or a patient and actually have to show they are competent in what they are going to be doing in the real world, versus you know just being kind of book smart or just reading out of a book."* N2: *"Well I think the danger of that is it's an absolute term, it's completely meaningless and urr and it leaves out any sort of maturation in terms of how people have varying degrees of competence. I am very unhappy, I know you can't be half competent or anything, it is an absolute term, but urm I am a bit unhappy with it. Because once you declare someone to be competent in something at what point when something changes do they cease to be competent, and who will judge the beginning and the end of competence."*
The contrasting view of competence. There is a general difference in views between science-based educators who offer a more positive view compared to practice-based educators.	R3: *"I am certainly happy for the challenge. It's probably for a subject like pharmacy and perhaps other health care subjects, it is the direction to be moving in."* N2: *"I am fundamentally opposed to it really, as a practice person, yes I am, I am. Because I think until you start to learn things you can have no idea what you are going to need."*
Respondents: N2 (practice), R3 (science), T1 (science).	

Table III: Definitions of absolute (A) or relative (R) competence by practice- and science-based respondents

Practice-based respondents	Science-based respondents
(1) Competence as defined by a group of peers	
T2: *"I think students do need to be able to show that they can do things that are necessary for the job."* **(A)**	N1: *"A competence is what the General Pharmaceutical Council defines as a competence."* **(A)**
(2) Competence is about the present rather than the future	
N2: *"Well I think the danger of that is it's an absolute term, it's completely meaningless and it leaves out any sort of maturation in terms of how people have varying degrees of competence. I am very unhappy, I know you can't be half competent or anything, it is an absolute term, but urm I am a bit unhappy with it. Because once you declare someone to be competent in something at what point when something changes do they cease to be competent, and who will judge the beginning and the end of competence. I suppose, you know, you are going to monitor competence how are you going to do it, weekly, monthly, yearly, you know."* **(A)**	T1: *"You can have training to produce competence I am sure you can do that. And I am sure that when our students leave here they can begin the process of becoming into the job as it is currently. But I am not convinced that it's* ***future proofed*** *for* ***future competence*** *and I am not terribly convinced that if pressed they could answer questions where they would have to reach back on their logical ability or their ability to use logic in a scientific arena. And so in that respect I am not sure that they can be truly competent."* **(A)**
(3) Competence-based assessment: ***hesitation from practitioners compared to scientists.***	
N2: *"As undergraduate schools we are not demonstrating our confidence. We release people who have never passed an OSCE, not our criteria, they passed everything else. But nobody is making OSCEs absolutely critical, no one at all, to progressing to the next year or passing the degree."* **(R)**	N3: *"But until you actually are faced with going through and speaking and knowing what to say, you can only get that by practising and doing. ..... so I think it is very beneficial."* **(A)**
N2: *"I don't know why they* [GPhC] *have just suddenly launched on Millers triangle now.....why talk about does in terms of undergraduate education? You are not doing it until you are doing it, nobody is. Do you remember that first day of being qualified, flipping heck, there are all sorts of things coming down and you think what now. But that's does, I was in the same dispensary a week before that wasn't does."* **(R)**	
(4) The contrasting view of competence	
R2: *"And if competence is a way of describing perhaps more what I do like, which is being able to apply that knowledge and use it and think a little bit differently, show that you can use that knowledge to the benefit of the patient and profession, that's what, yes competence I would say is probably the right way to go."* **(R)**	N1: *"In fact if pharmacy is a university based subject, it must not be just about gaining certain competencies that you are able to do certain things. Because robots can do certain things it doesn't mean that they can think. And It's important that people can actually take part in pharmacy as a subject and be involved to a greater or lesser extent in the development of the subject."* **(A)**

Table III provides a distinction between Eraut's socially-defined (absolute) competence labelled (A), compared to individual (relative) competence labelled (R) in relation to comments from respondents considering the term 'competence'. The table contrasts practice-based respondents with science-based respondents and uses the four main themes as headings. Statements assigned an absolute (A) definition of competence imply reference to standards set by a peer group. By contrast, statements from respondents assigned an individual (relative) R competence suggest a more flexible interpretation of competence in relation to the development of the individual.

The four main emerging themes from the respondents associated with the use of the term 'competence' within pharmacy education include:

1. Competence as defined by a group of peers
2. Competence is about the present rather than the future
3. Competence-based assessment: hesitation from practitioners compared to scientists.
4. The contrasting view of competence

1. Competence as defined by a group of peers

Both science-based respondents and the practice-based respondents referred strongly to a socially-defined competence. This definition of competence is not surprising as this is the dominant culture within pharmacy education with an emphasis on GPhC's standards or outcomes and how these standards can be achieved. However, as the conversation of the interviews progressed and the comments were unpicked there was a more complex response and a move down the continuum from an absolute to a more relative definition of competence.

2. Competence is about the present rather than the future

Again, both respondents N2 (practice-based) and T1 (science-based) continue to display a tendency towards an absolute term and express their concern that competence-based assessment using absolute assessment standards is not future-proofed. For respondent T1 the main issue with an absolute definition of competence is that it does not make students fit for future practice, as skills and practice change rapidly. This view was also echoed by respondent T3. A concern expressed was that competence-based assessment is essentially a snapshot activity where you limit what is being observed and this can have implications for future competence or lack of competence in a changing practice setting. Respondent T1 was anxious that students are able to solve a problem by working their way backwards from a practice situation by applying scientific principles they have learnt at university. There is no articulation of the potential for using a relative model of competence at this stage or a discussion of the issues surrounding application of knowledge, skills and understanding within a continuing professional development framework.

3. Competence-based assessment: hesitation from practitioners compared to scientists.

It is not until the issue of competence-based assessment is discussed in more depth that a difference starts to emerge between the pharmacy practitioner and the scientist. Respondent N2 in particular was very clear about her hesitation in the use of the term competence within pharmacy education. Respondent N2 quoted the lack of confidence in the Miller's triangle approach of knows, shows, shows how and does and the problems associated with competence-based assessments such as OSCEs. By contrast the science-based respondents were more positive about the value of OSCEs and viewed these exercises as useful in terms of contributing to the education of the student in a different way compared to a more traditional curriculum. The overall impression from School N was that OSCEs were well established but not used as the definitive way of assessing knowledge. Respondent N2 was clear that a socially-defined (absolute) definition is inadequate as it develops a formulaic approach which is not always appropriate in the uncertain environment of everyday clinical practice. By contrast N3 was more comfortable to speak of a socially-defined model of competence that is achieved by practising and doing. The isolation of competence from subject knowledge and understanding was also a concern for practice-based respondent T2. The example of speaking to a patient and applying a competence-based framework provides a useful example that highlights the importance of this skill for the pharmacist.

> T2: "*I think competency is not something you can take separate from the knowledge, you need to have knowledge there as well assessed in its own separate way....But if they don't have any underlying knowledge there it might be that a question comes back from the patient and that completely stumps them at that point because they have got no library of information to access, to work on it.*"

This respondent uses the term information in the example of responding to a patient query to illustrate his view. The retrieval of information portrays a lower level of skill than applying understanding and working back to answer a patient question using scientific principles as described by respondent T1. Respondent T2 recognised the culture of working towards competence but did not feel that the necessary support infrastructure was in place to help students improve.

4. The contrasting view of competence

Practice-based respondent R2 provided a succinct definition of a relative model of competence when she spoke of competence being knowledge application and using knowledge differently for the benefit of the patient and the profession. By contrast science-based respondent N1 was confined by an absolute definition of competence and did not see subject development and individual development as part of a competence-based framework and viewed this as a separate issue.

One of the important areas to emerge as a result of the discussion on competence was the essential difference between the pharmacy and medical curriculum. Pharmacy was viewed as a scientific programme of study with some patient context whereas the medical programme was seen mainly as a patient orientated programme. There was also a discussion of the problems within pharmacy education caused by using paper-based exercises of the "fictitious Mrs Jones":

> R1: "*Whereas our students go out in the third and fourth year but they still for the majority of the time here they are talking about Mrs Jones who doesn't exist she's on paper. And to be honest if Mrs Jones doesn't take her medicine in the end it doesn't really matter because she doesn't exist. Which is very different from actually dealing with someone sitting over the road and going to see them. That lack of patient contact I think is probably a drawback for our students, they don't treat the patient early enough*."

Discussion

The analysis of how pharmacy educators define and articulate 'competence' aligns to the suggestion from Storey *et al*. (2002) that there is no common consensus or approach to the term competence and there is a wide range of definitions used by different organisations and disciplines.

Overall the discussion of competence revealed that the use of this term by pharmacy educators is mainly restricted to frameworks that assume that assessment is based on directly-observable actions. The competence-based approach consists of functional analysis of occupational roles, translation of these roles into outcomes, and assessment of trainees' progress on the basis of their demonstrated performance of these outcomes. The medical literature provides examples of a lack of confidence in a competence-based approach that is based on a functional analysis of the end point (job) of the practitioner. For example in an evaluation of competence-based medical training Leung and Diwaker (2002) state that caution should be exercised in adopting a competency-based approach universally across all stages of medical training for which clearly defined and validated competencies are unavailable.

From a theoretical viewpoint competence that is defined socially and has an absolute perspective should fit in well with a view of the profession that it is more concerned with outcomes rather than processes. It could be predicted that the objective culture of pharmacy should align well with a competency framework where specific outcomes can be observed and documented. However, the views of practice-based respondents draw out a number of disadvantages of this viewpoint of competence. The main issues are the lack of future proofing associated with this approach and the pragmatic problems linked with competence-based assessment. The

practical issues including the time resources of implementing competence-based pharmacy education are well documented and one of the key challenges is understanding how the student learning is constructed and aligned during the teaching sessions (Koster, Shalekamp & Meijerman, 2017).

In her discourse on competence Wolf (1989) states that whilst competence is about the ability to perform against set standards, it is the setting of these standards that is context specific. Furthermore, competence must always be thought of as a construct so cannot be observed directly. Wolf's view is that the emphasis on observed consistency of outputs has resulted in the confused notion that competence is about very specific practical activities. The results from this interview study suggest that the blurred interface between knowledge, understanding and competence needs further exploration. The challenge for the pharmacy educator is how to integrate a range of multidisciplinary knowledge and apply this in a realistic practical situation whilst at the same time gaining some insight into the ability and potential of a future practitioner. It is clear that direct measures of competence are themselves highly contextualised and it is difficult to acquire evidence by focusing on competence alone (Wolf & Burke, 1989).

It was noted that two respondents when speaking of competence used the word "incompetence" as being a possible outcome if a narrow vision of competence was envisaged. This highlighted how the use of language was particularly important when examining this theme. The McDonaldisation theory proposed by Ritzer (2000) based on the social pressure for efficiency and predictability and erroneously applied to professional tasks can be linked to an oversimplified, absolute standards-based competence model that depends on direct observation. This can also be linked to the view of Parker (1994) who highlighted the importance of an individual subjectivity as opposed to a collective objectivity and how this is important in the foundation of a professional mentality and approach to an unpredictable clinical situation. For example, the inclusion of areas such as clinical reasoning, expert judgement, and individual management of ambiguity are all context specific and are not always directly observable. The concern expressed by respondent N1 that as pharmacy is a university course there must be a move to develop the subject and integrate the disciplines within pharmacy. The challenge for the pharmacy educator is that the use of a competence-based framework is not necessarily the most effective vehicle to achieve this aim. In order to communicate the value of pharmacy to the wider healthcare agenda it is important that the pharmacist is able to structure and develop understanding of a clinical problem as well as offering structure through a competence-based approach. This respondent has a somewhat negative view of a programme of training that is based on specific competence-based outputs (viewed as formulaic and structured) compared to more of an emphasis on holistic education where the aspiring pharmacist is able to structure and align their knowledge within a clinical environment.

A competence-based framework does not always appear to draw on the use of tacit knowledge as described by Polanyi (1967) as a tool to improve the understanding of the area in focus. Many competence-based exercises can be quite formulaic and some of the respondents described how students look for certain markers or clues in the scenario or task before applying a pre-packaged piece of learning. This has echoes of Schön's (1983) analogy of selecting the right problem from a stock of already known problems. This implies that a narrow interpretation of a competence-based approach can lead to a fragmented approach to pharmacy knowledge. This concern in relation to vocational education is expressed by Young (2008) in an analysis of a standards-based approach to knowledge that collapses and oversimplifies the distinction between theoretical and everyday knowledge. This viewpoint is echoed in some of the interview narratives and reveals the potential impact that this interpretation of competence-based assessment may have on the learner such as a lack of preparation for an uncertain clinical environment.

There are indications from the interview narrative themes that there is a need to move the discussion of competence to a deeper level and examine the relative aspects of individual competence. The underlying concern that context specific, competence-based exercises may tend towards a formulaic assessment process is an area for further research as this implies that a shallowness of student response may impact on future safe working practices.

This research highlights some of the challenges of competence-based assessment as viewed by the academic community. Whilst there does not appear to be major differences between educators from different types of school of pharmacy there is a contrast in the perspective of science-based and practice-based educators. The less confident language of pharmacy practitioners about competence–based assessment compared to science-based colleagues is at the heart of a complex tension between perceived objective science and subjective clinical practice. A limitation of this research is the small sample size of 12 respondents from three schools of pharmacy, and so further work is needed to examine the views of a wider range of pharmacy educators and other stakeholders such as undergraduates, preregistration trainees and practising pharmacists. There is the implication from Benner (1984) that a competent practitioner is one who views their actions in terms of long term goals and competence is only seen as a specific level and does not imply proficiency or expertise which goes beyond the competent level. Further exploration of the academic perspective will support future teaching, learning and assessment associated with competence-based aspects of pharmacy education.

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