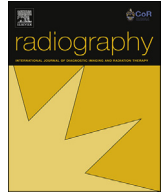




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Informing radiography curriculum development: The views of UK radiology service managers concerning the ‘fitness for purpose’ of recent diagnostic radiography graduates

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ABSTRACT

Introduction: Recent years have seen significant changes in the way medical imaging services are delivered, rapid changes in technology and big increases in the number and ranges of examinations undertaken. Given these changes the study aimed to critically evaluate the fitness for purpose of newly qualified diagnostic radiography.

Method: The study employed a grounded theory approach to analyse the interviews of 20 radiology managers from a range of medical imaging providers across the UK.

Results: Four key themes emerged from the analysis. These were: curriculum content and structure review; diversification in the role of the radiographer; professionalism and coping and the reformation of career structures.

Conclusion: The results indicate the role of the radiographer is now in a state of flux and challenge radiology managers and educators to design curricula and career structures which are better matched the role of the radiographer in the very rapidly changing technological, organisational and social contexts of modern society.

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Introduction

When preparing a radiography curriculum in the UK, one of the first touchstones for any planning group is inevitably the Health and Care Professions Council (henceforth HCPC) standards of proficiency for radiographers,¹ which must be achieved by any student in order to become registered. The current standards, first published in 2003 and revised in 2007, require registrants to be able to perform ‘... the full range of standard imaging techniques and standard contrast examinations, including those undertaken on service users suffering from acute trauma.’¹ Additionally, they require that registrants be able to perform a standard CT head examination, while also having the capacity to assist with other forms of CT examination, MRI, ultrasound and nuclear medicine procedures. These regulatory standards, in conjunction with stalwart historical trends in professional practice itself, have prospectively resulted in many contemporary undergraduate radiography programmes focussing chiefly upon developing student competence in

projection radiographic imaging, perhaps at the expense of other imaging modalities.^a

While the HCPC standards have not changed significantly since their initial publication, a simple examination of current NHS medical imaging workload data and case mix^{2,3} reveals that real-world medical imaging practice itself is undergoing a period of sustained change. Substantial increases in the number of examinations undertaken using cross-sectional imaging modalities are widely reported. For example, the number of MRI examinations conducted in England grew by 220% between 2004 and 2014.² There have also been conversant increases in the number of CT examinations, currently showing an annual growth rate of 10% per annum, and Ultrasound (a 5.3% annual expansion),² while the most recent reliable figures indicate that the frequency of PET/CT examinations rose by 14% between 2008 and 2012.³ Radiography programmes which remain fundamentally grounded in the development of projection radiographic imaging skills may increasingly find themselves out-of-step with the demands of the workplace.

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This is prospectively disadvantageous for both new graduates and their employers in the short-to medium terms, as extensive on-the-job training may well be necessary before a freshly-qualified professional can actually be deemed fully competent to handle the demands of working in a modern medical imaging department.

Given the development of radiography into evolving areas of practice, Thomas et al.⁴ describe an approach to the effective development of medical education curricula, the first step of which always involves identification of current problems and a general needs-assessment. This centrally involves (a) a critical analysis of the current context, and (b) a wide review of extant services. Regarding (a), in particular, the specific requirements of patients, healthcare professionals and educators themselves become of key concern. To develop an effective and (immediate) future-proof curriculum, it is crucial to develop an unambiguous, evidence-based understanding of the practical experience of pertinent agents within a defined contemporary social and structural healthcare milieu. This knowledge will then be central in informing the subsequent stages in the planning process.

Against a context of the rapid and ongoing reconfigurations in the delivery of UK care services,⁵ thus, the manifest aim of this enterprise, in line with the first step of the approach advocated by Thomas et al.,⁴ is to seek key informants' understandings of graduate fitness for purpose. By exploring the experiences of radiology service managers in the UK, the investigative model is designed to concurrently open-up debates and deepen understanding of current workplace issues, with a view to positively informing the work of curriculum development groups.

Methods

A Straussian model of Grounded Theory⁵ (henceforth SGT) was adopted as the core framework herein, which is an established qualitative approach within healthcare research that facilitates close-detail analysis with a view to building cohort-specific theories that hold over the quality of data collected.⁶ The value of this approach has, to date, been expounded in a range of radiography-related studies,^{7,8} and has also produced practice-relevant findings elsewhere in healthcare education.^{9,10}

Participants

Ethical approval was granted by the researchers' governing institution to recruit participants and execute the study as described herein. All activity relating to data collection, handling and dissemination remained in strict accord with these conditions. N = 20 department heads (male = 5; female = 15) were recruited through an opportunity sample, whereby an invitation-to-interview was sent out to department heads across the UK, and those that agreed to take part within the temporal and fiscal restraints of the project were included. These participants worked (geographically) across N = 20 trusts. Within the sample, N = 19 worked within the public sector and N = 1 within the private. Conditions of ethical approval delimit any further elucidation of participant demographics, on account of potential identifiability within a professional community.

Data collection

A semi-structured interview (SSI) was developed by both authors, drawing on current literature and the practical experience of the first author, an experienced clinical and academic radiographer. As Silverman¹¹ and Rhodes and Smith¹² note, and as well-illustrated by some recent studies in the radiography domain,^{13–15} SSIs are optimally suited to allow for analytic comparison between

cases without stifling the emergence of topical “novelties” (i.e. pertinent issues originally unanticipated by the researchers). All interviews were conducted by the first author, by phone, and audio-recorded at that point. Transcription was then conducted by an experienced transcriber, who was also signed within the ethical standards of the project, and both authors reviewed all transcripts against original sound files to establish that they provided a clear account of what was said.

Analysis

In line with a SGT approach, close attention was paid by both authors to the fine detail of the transcripts, rather than simply addressing the overarching thematic matters that might arise within a traditional (Glasserian) model of GT,¹⁶ or a more formal model of thematic analysis.¹⁷ Core textual codes were initially developed by the first author, and then reviewed by the second. Both authors further addressed how these codes might inform higher level (axial) codes; the final emergent themes were then developed through a principle of triangular consensus validation,¹⁴ in which a third academic skilled in qualitative research reviewed and evaluated the entire process.^b All input was incorporated into the analysis presented below.

Trustworthiness

As noted above, and with reference to the business of handling data, the key concerns identified by Yardley¹⁸ were observed. For example, *sensitivity to context* in this corpus is maintained through only making statements about the specific, rather than the general, when addressing the data at hand. *Transparency and coherence*, meanwhile, is evidenced in the data diagrams below; the process of initial codification to thematic discussion is not made unclearly, nor without direct evidential support (in the form of direct quotation).

Results

The analysis of the data from the participant interviews revealed four broad global themes:

- 1) Curriculum content and structure;
- 2) Diversification in the role of the radiographer;
- 3) Professionalism and coping, and;
- 4) Reformation of Career Structures.

Each of these themes is considered in turn below, supported by graphical models which demonstrate the process by which initial codes were grouped into axial sub-themes and, ultimately, the global themes noted. It should be noted that these charts demonstrate the range and depth of the themes, but do not quantify the number of responses.^c

Curriculum content and structure review

The first major theme to emerge from the participant feedback was pertinent to the design of current and future radiography curricula (Fig. 1). Of particular relevance here was the participants' attention to critical and interpersonal skills. Participants foregrounded a graduate's ability to source and utilise evidence, and their capacity to show leadership abilities, over a need to retain

^b As noted in the paper's acknowledgements.

^c To do so would be to equate statistical rates of occurrence of a theme with its importance, which is anathema to this order of investigation.²⁰

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