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REVIEW

Radiography and research: A United Kingdom perspective

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Abstract In the past two decades radiography has experienced a wealth of changes, involving the teaching site, learning methods, curriculum, professional status, educational funding, and public expectations. Consequently this period witnessed the transition of radiography from a mainly hospital-linked to a mainly university-linked degree, from a knowledge-based discipline to an evidence-based practice. The early 1990s saw the establishment of graduate programs, the role expansion of radiographers, the technological advancements in medical imaging, the participation of the Radiography Schools in Research Assessment Exercise (RAE) schemes.

Given the educational, technological and social advancements the engagement of radiographers in research is emphasized as a priority that will bring the profession forward and help to maintain high standards of patient care.

Research in radiography is a requirement, as by definition professions are expected to contribute to the body of knowledge necessary for a profession to progress. Funding, ethical considerations, mentorship, proficiency in research methodology, commitment, and ability to work in a multi-disciplinary team are just a few of the requirements for high quality radiography research.

There has been a definite increase in the number of radiographers who are research aware and active as well as in the number of radiographers who pursue purely academic and research careers. However intensification of personal efforts and formulation of strategic decisions are required so that research forms an integral part of the profession. Recent developments in strengthening the research base of radiography are encouraging.

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Introduction

Systematic enquiry and thorough investigation to establish best practices in healthcare are vital to support the claim to professionalism by radiography practitioners. The possession of a body of knowledge added to by meticulous research has long been recognised as an essential component of professional identity [1]. Traditionally radiography has been a consumer rather than a producer of research [2] as it has a very short research track record. In the recent past research forming the knowledge base of the radiological sciences has been mainly performed by medical practitioners and physicists. Radiography as a discipline was not perceived by its practitioners to require investigation; a reliance on tradition and subjective experience has often been the norm [3].

Although the results of systematic radiography research could provide a satisfactory answer to frequently encountered clinical problems (the quest for the best treatment, the optimal imaging protocol, the most effective care pathway) undertaking research was-and still is- intimidating for many radiographers for various reasons. Strategic decisions by the relevant professional bodies, such as the Society and College of Radiographers (SCoR) supported by corresponding provisions of the radiography academic institutions as well as by personal efforts in the day-to-day clinical practice ascertain the gradual transition to a research-based education and a research-led profession.

The research ethos in radiography was introduced in the early 1980s with the instigation of a research project, called Module F [3], into the modular Higher Diploma of the College of Radiographers (HDCR). Radiography has since been in a state of flux with changes occurring both in education and in professional practice, all leading to the recognition that research in this field is ''a requirement and not an option'' [4].

The aim of this article is to critically review the pivotal historical events that highlighted research as a priority for radiography as well as to provide insights to requirements specific to research in radiography. Updates on the current situation as well as an estimation of future directions are also provided.

The ever changing world of radiography: incentives to research

In the past two decades radiography has undergone enormous changes, both educationally and professionally. These changes involved the teaching site, learning methods, curriculum, professional status, educational funding, and public expectations.

The drive for this change was a recognition by the College of Radiographers that ''the Diploma of the College of Radiographers (DCR) model imposes a didactic, authoritarian and inflexible model on Schools, and an assessment and evaluation procedure which is theoretical and remote from clinical practice'' [5]. Following this recognition actions were put together to shift the centre of radiography education from the traditional ''School experience'' to the novel ''University experience'' and from the award of a ''diploma'' to the award of a ''degree''. This involved the move of the teaching site from the hospitals to the University lecture theatres. Most importantly the responsibility for curriculum design was handed over to the radiography education establishments, free to determine both delivery methods and content [6]. The training experience provided by Schools emphasized on the demonstration of knowledge, comprehension and the application of that knowledge, all of which belong to the lower levels of the educational hierarchy proposed by Bloom [7]. On the other hand the educational experience provided by the University embraced the higher levels of Bloom's educational hierarchy, namely analysis, evaluation and synthesis, with increased weighting on the facilitation of learning. It was this establishment of the graduate radiography programmes that brought a shift in the educational focus from knowledge-based to evidence-based. Evidence-based practice, as the integration of individual expertise with the best available external evidence from systematic research [8], is by definition research-led; this research-mindedness became the ultimate target for radiography education and practice. The concept of Evidence Based Radiography emerged as ''radiography which is informed and based on the combination of clinical expertise and the best available research-based evidence, patient preferences and available resources'' [27].

Another incentive to research promotion in radiography was provided by the Research Assessment Exercise (RAE) that took place in 1996 and 2001. After nearly a decade of established graduate education it was time for the Radiography Departments in the UK to submit their research output for a peer-review process and allow exposure to external scrutiny. A varying proportion of funding a University would receive from the government would depend on the institution's research performance, academic staff research profiles and the research income generated from external sources (medical charities, funding councils). In anticipation of the imminent RAEs engaging in research activity and establishing a research culture were obviously advantageous in a personal and institutional level [2].

Along with the changes in education, training and university funding there have also been changes within the framework in which radiographers have been required to operate [9–11], that stressed the importance of research culture in the profession. The introduction of the four tier service delivery model [12] in clinical practice identified four levels of escalating competencies and responsibilities within a multi-disciplinary team, which, in ascending order of seniority were: the assistant practitioner, the practitioner, the advanced practitioner and the consultant practitioner. This model promoted new clinical roles and extended responsibilities for the radiography staff. As different studies have shown role development of radiographers was identified in the following areas: administration of intravenous injections, barium enemas, red dot system, reporting in ultrasound, skeletal, barium enemas, mammography, nuclear medicine, paediatrics and chest radiography [13,14].

Research was highlighted as one of the key tasks for the newly established level of consultant practitioner; many other functions have been assigned to this role, including expert clinical practice, professional leadership and consultancy, education, training, practice and service