Attitudes and perceptions of radiographers applying lead (Pb) protection in general radiography: An ethnographic study

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ABSTRACT

Introduction: Since the discovery of X-rays by Rontgen in 1895, lead (Pb) has been used to limit ionising radiation for both operators and patients due to its high density and high atomic number (Z = 82). This study explores the attitudes and perceptions of diagnostic radiographers applying Pb protection during general radiographic examinations, an area underexplored within a contemporary radiographic environment.

Methods: This paper presents findings from a wider ethnographic study undertaken in the United Kingdom (UK). The use of participant observation and semi-structured interviews were the methods of choice. Participant observation enabled the overt researcher to uncover whether Pb remained an essential tool for radiographers. Semi-structured interviews later supported or refuted the limited use of Pb protection by radiographers. These methods enabled the construction of original phenomena within the clinical environment.

Results: Two themes are discussed. Firstly, radiographers, underpinned by their own values and beliefs towards radiation risk, identify a dichotomy of applying Pb protection. The cessation of Pb may be linked towards radiation risk, identify a dichotomy of applying Pb protection. The cessation of Pb may be linked to cultural myths, relying on ‘word of mouth’ of peers and not on the existing evidence-base. Secondly, radiographers acknowledge that protecting pregnant patients may be primarily a ‘personal choice’ in clinical environments, which can alter if a patient requests ‘are you going to cover me up?’

Conclusion: This paper concludes by affirming the complexities surrounding Pb protection in clinical environments. It is proposed that the use of Pb protection in general radiography may become increasingly fragmented in the future if radiographers continue rely on cultural norms.

Introduction

Ever since the discovery of X-rays by Röntgen in 1895, lead (Pb) has been used to limit ionising radiation for both operators and patients due to its high density and high atomic number (Z = 82), offering significant photoelectric absorption. Pb protection devices are often available within the general X-ray room and include gonad shields, lead-rubber aprons and various square/rectangular lead-rubber shapes, accommodating the protection of radiosensitive organs in and outside of the primary X-ray beam. It is generally accepted that all X-ray exposures carry some stochastic risk and thus should be justified, optimised and limited wherever possible by radiographers. This remains evident in current legislation in the United Kingdom (UK) whereby ionising radiation should be kept ‘as low as reasonably practicable’ (ALARP).

Whilst studies have identified the usefulness of applying Pb during general radiographic examinations, others have recognised a lack of awareness, knowledge and low standards of Pb protection. Harbron affirms that some studies may facilitate misunderstandings of protecting radiosensitive organs in practice. He suggests that Pb protection measures may become based on no more than folklore and Chinese whispers and not on evidence-based research. Further, Snaithe warns of a potential fragmentation of applying evidence-based research within radiography, challenging whether ‘evidence-based radiography’ is actually happening. These arguments are important to consider in contemporary practices and remain central in this paper.

Following the theory of Mead, it is claimed that there can be an infinite number of possible perspectives and each will give a different definition to the parts and reveal different relations between them. Whilst this may provide a rationale for limited
practice of evidence-based radiography, it remains paramount to continually explore the views and attitudes of radiographers within clinical environments to identify areas for improvement and critical reflection. Publications by the Society of Radiographers (SoR) offer guidance of applying Pb protection for dental and fluoroscopic examinations (for operators and patients), but offer little guidance for patients (and operators) in general radiography, an imaging modality that constitutes approximately 90% of all radiological examinations undertaken in the UK. It is acknowledged that the number of X-ray procedures and projections within general radiography is vast, thus advice for each examination and individual projection remains problematic. This study aims to bridge the gap between conjectures offered by Harbron and Snait finding exploring whether Pb protection is based on evidence-based radiography, or whether radiographers are beginning to rely on ‘folklore’ and/or ‘word of mouth’, to protect radiosensitive organs. Few papers have explored the application of Pb protective devices amongst radiographers within general radiography thus adding to the existing evidence-base.

Methodology

The methodology utilised within this paper was part of a larger study undertaken by the author, which has previously offered originality surrounding dose creep, person-centred care and the utilisation of direct digital radiography (DDR) equipment. This article reports additional findings surrounding the use of Pb protection by radiographers from the same study. The methodological approach utilised was ethnography. Ethnography can be used to explore cultural groups and is primarily aligned with the qualitative approach utilised was ethnography. Ethnography can be used to explore cultural groups and is primarily aligned with the qualitative paradigm. Ethnography is often termed ‘practitioner ethnography’ following its use in education and other professional disciplines. The nature of ethnography enables researchers to get close to social reality with the overall aim of uncovering phenomena pertinent to a social group.

Selection of sites and participants

Research sites (A and B) were acute trauma centres, each undertaking an array of general imaging examinations. Ethical applications were submitted to two National Health Service (NHS) Trusts in the south east of England (approval numbers — site A — ref: 2012/RADIO/02 and site B — ref: R&D449). Participants were required to meet three inclusion criteria; be registered as a diagnostic radiographer with the Health Care Professions Council (HCPC), willing to participate in the study and have worked within the general imaging department undertaking X-ray examinations.

Participant observation

Participant observations remained vital in exploring the application of Pb protection amongst radiographers because if/when Pb was used may depend on an individuals’ knowledge and understanding of dose limitation. After seeking written informed consent from the radiographers, participant observation began by one observer. The author decided to be an overt researcher, requiring complete openness with his research participants in the X-ray room. As an overt observer it was less likely for the researcher to ‘go native’. This enabled the researcher to maintain an element of objectivity when recording the actions of practitioners. Observations started at 05:00 and ended at 12:00; the next set of observations began at 12:30 and ended at 17:00. Participant observation provided immersion as a ‘participant observer’. Barley recognises that to map emergent patterns of action and interpretation requires some reliance on the observation of practitioners to record interactions. Participant observation enabled the use of inductive reasoning to uncover original data. This meant that the researcher was able to record the actions and behaviours of radiographers in the clinical environment and use it to develop open-ended questions for semi-structured interviews. This remained grounded by the authors’ philosophical position, interpretivism and social constructivism. This assumed that reality of clinical practice was constructed, multidimensional and ever-changing. It does not suggest that a single, immutable reality is waiting to be observed and measured. During the observations, 36 radiographers were observed over 19 days. Observation of participants varied depending on the clinical rotation of radiographers within the department(s). For example, whilst some radiographers undertook general radiographic examinations throughout the day, some would often undertake portable and/or theatre examinations, thus demonstrating varied time with some participants in comparison with others. Information regarding radiographer experience and professional rank during observations at each site is depicted in Table 1.

Observations identified whether radiographers used Pb protective devices to limit ionising radiation to patients. Observations were detailed in nine dimensions and are depicted in Table 2. Data from sites A and B were analysed, later informing the development of the semi-structured interview schedule.

Semi-structured interviews

Twenty-two semi-structured interviews were undertaken at sites A and B. The radiographers observed were invited to attend the interview. This was important because it allowed the researcher to discuss ‘what had been seen and discussed’ with participants. Differences in radiographic experience were important in this study because it provided alternate points of view, producing rich and varied data. Interviews explored if and/or when radiographers used Pb protective devices during general radiographic examinations. The open-ended question posed to radiographers exploring the application of Pb in general radiography is detailed below:

1. During my observations I noticed that Pb was rarely used when irradiating patients – can you tell me why you think this may be?

A digital audio device recorded participants’ voices verbatim and is represented by quotations. Participants are represented by a gender specific pseudonym, maintaining anonymity. Table 3 below demonstrates the number of participants, professional rank and experience interviewed as part of the wider study.

Data analysis

Data collection and analysis throughout the observations adhered to a grounded theory approach, identifying phenomena that remained ‘grounded’ on the X-ray practices observed. This method of analysis is depicted in Fig. 1 demonstrating the

<table>
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<th>Site</th>
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<th>No. participants with experience ≥ 5 years</th>
<th>Professional rank</th>
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<td>Band 5 Band 6 Band 7</td>
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متن کامل مقاله
امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
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