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Radiographers' and radiology practitioners' opinion, experience and practice of benefit-risk communication and consent in paediatric imaging

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ABSTRACT

Objectives: To investigate radiographers' and radiology practitioners' opinion, experience and practice of radiation benefit-risk communication and consent for paediatric imaging examinations.
Methods: A cross-sectional survey was conducted amongst radiographers and radiology practitioners working at a primary paediatric referral centre in Malta, so as to acquire information about their interactions with paediatric patients and/or their parents, particularly their opinion and practice of communicating benefit-risk information and seeking consent for imaging examinations.
Results: The return of 112 questionnaires provided a response rate of 66.7%. Findings revealed varied practice relating to the provision of benefit-risk information, whereby details concerning examination benefits and potential risks are not always conveyed. For 89% of participants, parental consent was sought for paediatric imaging examinations in their current practice. Only 36.7% of participants indicated that they were highly confident in their ability to communicate benefit-risk information. The study findings also revealed that parents can truly be worried about the associated radiation exposure, with some even refusing an imaging examination as a result of such concerns.
Conclusions: The practice of communicating benefit-risk information to paediatric patients and/or their parents is varied. A possible gap in benefit-risk communication education and/or training was identified, which may impact radiographers' and radiology practitioners' confidence in conveying such information. Education/training activities for radiographers and radiology practitioners are therefore necessary to foster improved benefit-risk dialogues and help provide reassurance to parents/guardians about the benefits of appropriately indicated paediatric imaging examinations.

Introduction

Since there is still much scientific uncertainty relating to the risks of low radiation dose exposures commonly associated with most medical imaging examinations (<100 mSv),[1,2] it is not surprising that any study, report or opinion suggesting any increased risk will generate substantial interest. This was evident recently when large population studies in the United Kingdom, Australia and Taiwan similarly reported a very small, albeit increased, risk in the number of observed brain cancers and/or leukaemia in patients who had undergone a computed tomography (CT) scan when they were younger.[3–5] Indeed, despite significant limitations noted in such studies,[6,7] considerable media attention was drawn to these findings, with some choosing to over dramatise the reported findings so as to raise safety concerns about the use of CT scans in children.[8–10]

In times where information is so easily accessible, such coverage can raise alarm and concern amongst those who are referred for any medical imaging examination. Similarly, it may raise concern amongst parents of children being referred for medical imaging examinations, particularly since they might already be overwhelmed, confused and worried about the wellbeing of their child.[8] It is in this context that radiographers and radiologists have an important responsibility to fulfil when meeting with patients and/

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or their representatives: to provide adequate benefit-risk information relating to the medical imaging examination to be performed. This responsibility is now reflected in Council Directive 2013/59/EURATOM, which lays down revised basic safety standards for the protection against dangers arising from exposure to ionising radiation, and which needs to be transposed into national legislation of each Member State by February 2018.[11] In fact, Article 57 (1d) specifies that *'wherever practicable and prior to the exposure taking place, the practitioner or the referrer, as specified by Member States, ensures that the patient or their representative is provided with adequate information relating to the benefits and risks associated with the radiation dose from the medical exposure.'* Consequently, the provision of benefit-risk information is essential as it helps fulfil the patients' right to information; it respects their autonomy; it empowers them to provide informed consent and allows them to become more involved in a shared decision making process relating to what is best for them or for their child.[12–15]

For this reason the authors of this study deemed it was opportune to attain an insight into current benefit-risk communication practices at a large general teaching hospital in Malta, and which also serves as the primary paediatric referral centre where thousands of medical imaging examinations are performed on paediatric patients each year.[16] Consequently the authors sought and obtained ethical approval from the governing institution to conduct a prospective cross-sectional survey with radiographers, as well as with radiologists, nuclear medicine physicians and radiology residents (hereafter collectively referred to as 'radiology practitioners') at this hospital. Furthermore, since the provision of benefit-risk information may be influenced by radiation knowledge, the survey also sought to assess the level of radiation dose awareness amongst potential participants, with some initial findings being provided in a previous publication.[17] Therefore the aims of this article were to investigate radiographers' and radiology practitioners' opinion and practice of providing benefit-risk information and seeking consent for paediatric imaging examinations; as well as attain an insight into their experience of situations where parents choose to refuse a medical imaging examination for their child.

Materials and methods

The study consisted of a prospective cross-sectional survey conducted among radiographers and radiology practitioners at a large general hospital in Malta. Since a comprehensive literature review revealed that no standardised tool existed to investigate the aspects being considered in this study, the authors specifically developed a questionnaire for this purpose.[17] Overall the questionnaire contained 20 questions, the majority of which were close ended, although it was also possible for participants to elaborate on the answers provided or even add their own response. Apart from seeking to establish participants' demographics and their level of awareness of typical radiation doses associated with different paediatric imaging examinations, the questionnaire also asked participants to express their opinion, experience and/or practice regarding (i) whether parents/guardians should be informed of the potential risks and/or benefits of the imaging examination to be performed on their child; (ii) what type of information, if any, they generally provided to paediatric patients and their parents/guardians in such circumstances; (iii) how confident they were in their ability to communicate benefit-risk information to parents/guardians of a child who is to undergo a medical imaging examination; (iv) who should be responsible to provide parents/guardians with benefit-risk information for medical imaging examinations that are to be performed on their child; (v) how often parents/guardians would generally ask about risks associated with a medical imaging examination; (vi) whether they had encountered parents/guardians refusing a medical imaging examination for their child within the previous year; (vii) the type of concerns expressed by parents/guardians refusing a medical imaging examination, and (viii) whether any type of consent was currently sought from parents/guardians prior to undertaking a paediatric imaging examination. As described in a previous publication, measures to test the questionnaire's reliability and validity were undertaken, with a mean reliability intraclass correlation co-efficient of 0.948 and mean content validity index of 0.99 being obtained.[17]

A list of all radiographers (160) and radiology practitioners (29) working at this large general hospital in July 2014 was sought and obtained by the authors, so as to facilitate the distribution of questionnaires. From this list, fourteen radiographers and two radiology practitioners were excluded since they were either away on long leave, or else they solely worked in mammography and therefore were not involved in aspects related to imaging of paediatric patients. An information letter and a questionnaire were delivered in person to 146 radiographers and 22 radiology practitioners (9 radiologists/nuclear medicine physicians and 13 trainee radiology residents). The other 5 radiology practitioners were not willing or were unable to participate in the study, citing that they did not have the time or else that they were not involved in any aspect related to paediatric imaging. The information letter briefly outlined the purpose of the study, highlighted the voluntary nature of participation, assured anonymity and emphasised the importance of a truthful response. No incentives were offered to any of the participants. Data collection was completed in 4 weeks, after which the quantitative data was coded and inputted into IBM SPSS version 20 (IBM Corporation, New York, USA). The Chi squared test of significance was used to explore possible associations between the responses provided, with the overall value for statistical significance being $p \leq 0.05$. Qualitative content analysis of the data arising from open ended questions was conducted with the use of NVivo qualitative data analysis software (QSR International Pty Ltd. Version 10, 2012). In accordance with established methods,[18] the participants' responses were read and re-read, coded and categorised into related themes. The frequency by which participants' responses matched the relevant themes was noted so as to identify dominant phrases and sentiments expressed by the participants.

Results

A total of 112 questionnaires were returned from the 168 distributed, resulting in an overall response rate of 66.7%. These comprised of 100 radiographers and 12 radiology practitioners (consultant/specialist radiologists/nuclear medicine physicians {n = 7}, trainee radiology residents {n = 5}). The characteristics of the study participants are summarised in Table 1, with the majority being female (58.0%), aged 35 years or younger (77.7%) and having a maximum of 10 years working experience (69.6%). With the exception of 1 question, no statistically significant difference was noted between the responses provided by radiographers and radiology practitioners. For this reason, most findings will be discussed collectively for both radiographers and radiology practitioners.

Provision of benefit-risk information

Nearly all participants (98.2%, n = 110/112) were of the opinion that parents/guardians should be informed of the potential benefits and risks associated with paediatric imaging examinations. When asked to reflect on their own practice, the majority (82.6%, 90/109) indicated that they 'very often' or 'always' provided information about the imaging examination to paediatric patients and/or their parents/guardians. However when asked to indicate the type of

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