



# Evaluating the role of the diagnostic radiographer in identifying child safeguarding concerns: A knowledge, attitude and practice survey approach<sup>☆</sup>



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## ABSTRACT

**Introduction:** Child safeguarding and the appropriate identification of suspected victims represents a global phenomenon. Diagnostic imaging is acknowledged as a contributory diagnostic service but the role of the radiographer in the identification and escalation process is less well understood.

**Method:** A Knowledge, Attitude and Practice (KAP) survey was constructed to evaluate knowledge base in the context of the patient–radiographer interaction, the shaping of attitude towards child safeguarding and attitudes held towards their role plus the actual practical experiences of managing child safeguarding concerns.

**Results:** Respondents demonstrated an inconsistent knowledge base with respect to physical, social and radiographic signs and symptoms of child safeguarding concern. A positive attitude towards the role of the radiographer in child safeguarding was demonstrated but one that was shaped more by experience than pre-registration education.

Assessment of concerns was chiefly influenced by clinical history and appreciation of aetiology. Practically, radiographers have infrequent involvement with the identification and escalation of concerns. Whilst some statistically significant relationships between responses and demographics did exist, these were either sporadic or argued to be a result of natural variation.

**Conclusion:** Assessment of physical and social signs of child safeguarding concern are argued to be becoming more challenging. Radiological signs continue to be visible to radiographers but with increasing use of other imaging modalities these signs are becoming more varied in nature and are providing new challenges. Radiographers are capable of escalation when required to do so.

**Implications for practice:** To maximise the contribution of the profession, education needs to account for imaging modality worked with, in combination with an understanding of related aetiology. Previously existing concerns with respect to escalating processes are no longer in evidence and radiographers are both willing and able to contribute to that process.

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## Introduction

Child safeguarding is far from a modern phenomenon. However, the discourse around the subject has seen a shift in social thinking over recent times. Within the late 20th and early 21st century, the emphasis has moved from an isolated focus on the perpetrators to

greater analysis of the professional conduct of those involved in the victim's care.<sup>1</sup> Notably, the death of Victoria Climbié in 2000 and the subsequent public inquiry placed increased scrutiny on those professionals who work closely with children and their competence in child safeguarding.<sup>2</sup>

The Health and Care Professions Council (HCPC) requires all registrants (including diagnostic radiographers) to take appropriate action if concerns about the well-being of children exist.<sup>3</sup> To date, much of the emphasis within diagnostic radiography literature has been placed on the role that imaging, in its different formats, has in investigating concerns, including the undertaking of the radiological skeletal survey.<sup>4,5,6</sup> Previous research has highlighted uncertainty over the radiographer's role, a lack of clarity over processes

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and limited training.<sup>7,8</sup> In 1999, Hogg et al. made reference to the unique, and potentially advantageous, position of diagnostic radiographers with concurrent access to physical, social and radiographic information.<sup>9</sup> Subsequent changes in imaging practice including the move from film to direct digital radiography, expansion of the range of modalities (notably cross-sectional imaging) and role development within the profession mean that the patient–radiographer interaction is more varied in nature than in previous generations. This has developed a paradox of imaging technology and patient care which has been identified in the literature.<sup>10–12</sup>

International research around radiography and child safeguarding has placed emphasis on the observations of physical and radiographic findings and the behaviour of caregivers.<sup>13</sup> Influential factors have been identified as training, knowledge of reporting regulations, and escalation processes.<sup>14</sup> Whilst acknowledging the importance of observation in exploring the role of the diagnostic radiographer in child safeguarding,<sup>13</sup> it is beneficial to establish the nature of the patient–radiographer interaction to permit the framing of those observations. Unlike other professional groups, interactions between the patient and diagnostic radiographer occur only within a clinical setting.

Part of a larger study, this article explores how the radiographer's knowledge, attitudes and practical experience may impact upon their decisions in child safeguarding. Three distinct phases in the interaction can be identified as: pre-imaging, imaging and post imaging which provide opportunities to identify, as Hogg et al. stated, social, physical and radiographic information and these were used to frame the evaluation to ensure it is reflective of current practice.<sup>9</sup>

## Method

### Study design

A national cross-sectional survey was undertaken of HCPC registered diagnostic radiographers working in clinical practice in England. The decision to restrict to England was due to difference in both legal and NHS practice across the devolved countries of the UK.

The KAP (Knowledge, Attitude and Practice) survey is an established method of data collection in child safeguarding.<sup>15,16,17</sup> The World Health Organisation (WHO) regard the KAP survey as a tool that can both identify knowledge gaps, cultural beliefs, and behavioural patterns that may identify needs and deepen the understanding of commonly known information, attitudes, and factors that influence behaviour.<sup>18,19</sup> The notions of knowledge, attitude and practice have been regarded as separate, empirically supported constructs for understanding behaviour.<sup>19</sup>

### Knowledge

The concept of knowledge within child safeguarding needs to be shaped by the context that a patient (and potentially parent or guardian) and radiographer interact in a clinical setting. Guidelines on child maltreatment and systematic reviews were used to construct questions that tested the knowledge base expected to be held by diagnostic radiographers on the subject.<sup>20,21</sup> By utilising a *true, false or don't know* format, an understanding of the underpinning knowledge base could be obtained and subject to statistical analysis.

### Attitude

Attitude is a different concept from knowledge and assessing attitude towards child safeguarding required the formulation of statements that were derived from a review of existing literature.

These were further subdivided into categorising of: shaping of attitude and attitude towards own role. By using a Likert scale in relation to attitudinal statements, diagnostic radiographers were able to indicate the factors that they believed influenced their attitudes most and least significantly.

### Practice

Practical questions were posed to establish the frequency that child safeguarding concerns may or may not have been experienced and how often those concerns may have been acted upon. By assessing the frequency that the respondents have taken an active role in child safeguarding, an understanding of the realities of clinical practice can be achieved.

The final survey instrument comprised 50 questions and following an introductory section asked respondents to provide anonymous details related to their circumstances before separate sections on knowledge, attitude and practice were presented.<sup>22,23,24</sup> Following institutional ethical approval (E693 19/11/2018) and piloting it was released as an electronic survey (online-surveys.ac.uk; JISC, Bristol, UK) over a period of eleven weeks in Spring 2021. Diagnostic radiographers working in clinical practice in England (September 2019 n = 22,720 – HCPC personal communication) were approached using snowball sampling through clinical practice and academic networks together with social media.

### Statistical analysis

Data obtained from the survey were downloaded into Microsoft Excel (2018) before being exported into SPSS Version 14.0 (IBM Inc, Armonk, NY) for analysis. Basic descriptive statistics were obtained for each question. The produced statistics were analysed using Chi-square and likelihood ratios with multivariable linear regression to investigate linkages between KAP and demographic data.

## Results

A total of 188 responses to the survey were received. Representation across all demographic categories was achieved, with respondents being predominately white female (Table 1).

The majority of respondents were primarily employed in the projectional radiography setting, although variation in experience and geographic location was noted (Table 2). In terms of geography, 65.8% of respondents stated that the catchment area served by their Trust was mixed urban and rural with 87.7% indicating that they perceived that catchment area to include an area of deprivation.

### Knowledge

There was inconsistency in the underpinning knowledge base demonstrated in response to the question statements regarding “red flag” and other pathologies which have strong associations with child safeguarding concerns (Fig. 1). An element of uncertainty as to which pathologies did not have an association was also evident.

### Attitude

With respect to attitude, the respondents demonstrated a highly positive inclination to act if confronted with child safeguarding concerns and a distinct feeling that it was their role to respond appropriately (Fig. 2). However, they felt that pre-registration training had not prepared them for this role but rather their post-registration experience had shaped their attitude. The referrer's

**Table 1**  
Personal demographic data.

Factor	Participants n (%)
Male	44 (23.7)
Female	133 (75.1)
Age (years)	
21–30	47 (26.6)
31–40	53 (28.5)
41–50	50 (26.9)
51–60	24 (12.9)
>60	8 (4.3)
Parent/guardian	105 (58.6)
Ethnicity	
White	168 (89.8)
Black	4 (2.1)
Asian	7 (3.7)
Mixed heritage	8 (4.3)

**Table 2**  
Occupational circumstances.

Factor	Participants n (%)
UK trained	175 (98.8)
Overseas trained	3 (1.6)
Qualified	
Less than one year	11 (5.9)
1–6 years	51 (27.3)
7–12 years	41 (21.9)
13–18 years	18 (9.6)
>18	66 (35.3)
Location	
East of England	27 (14.4)
London	23 (12.3)
Midlands	47 (25.1)
North East	5 (2.7)
North West	26 (13.9)
South East	11 (5.9)
South West	12 (6.4)
Yorkshire and Humber	36 (19.3)
Imaging modality worked in	
Projectional radiography	132 (70.6)
Cross sectional imaging	32 (17.1)
Other imaging settings	23 (12.3)
Paediatric setting	26 (13.9)

clinical history was identified as particularly significant and a positive inclination towards their ability to differentiate between accidental and deliberately inflicted injuries on imaging.

*Practice*

Over half of the respondents indicated that they had escalated child safeguarding concerns at least once (Table 3). Additionally, in the majority of cases, there was follow up of the incident by the radiographer. The fact that not all have been followed up by the individual could be as a result of changing HCPC requirements and/or a by-product of the naturally restricted patient–radiographer interaction.

*Statistical analysis*

No statistically significant relationships between demographic and categorical variables that could not be explained by natural variance were identifiable, although some sporadic relationships were noted. Of note is that personal experience of the respondents acting as a parent or guardian did not demonstrate a statistically

significant relationship with greater knowledge of child safeguarding.

**Discussion**

Assessing conceptual knowledge via a KAP survey is acknowledged to be challenging and limitations are accepted with respect to the matter-of-fact nature of the questions which cannot be wholly placed in an individual’s clinical context. However, assessment of knowledge is argued to be difficult regardless of approach and questioning of this nature was seen to assess respondents’ ability to associate particular signs and symptoms with child safeguarding concerns. Allowing for the limitations, an inconsistent knowledge base in terms of what represents a concern was demonstrated. Whilst some pathologies were appropriately and strongly linked, uncertainty at a level below these “red flag” pathologies was evident.

In analysing the results holistically, the evolution of clinical radiographic practice needs to be considered as it impacts upon the lens through which radiographers can view potential child safeguarding concerns. The technological advances within the profession have resulted in efficiency with decreased examination times and together with increasing service demands, could be argued to reduce the time for interaction between patient and radiographer. In turn this could reduce the scope for identification of physical and social signs that represent a child safeguarding concern.<sup>25</sup> However, the changes do not extend to radiographic signs as the resultant image remains a constant in the patient–radiographer interaction. A key evolution is the increased utilisation of cross-sectional imaging with a larger and potentially less experienced workforce. This provides impetus for radiographers working within these modalities in terms of appropriately linking imaging appearances with child safeguarding concerns. In moving from projectional radiography to cross-sectional imaging at an earlier stage in their career, there is an arguable requirement in terms of child safeguarding to move education foci from the predominantly musculoskeletal trauma to include the assessment of intra-cranial pathology. The Royal College of Paediatric and Child Health (RCPCH) systematic reviews demonstrate that certain intra-cranial pathologies should raise concerns whereas others do not and this was reflected in the survey questions that highlighted particular uncertainty around this concept. An additional factor for consideration when considering intra-cranial trauma is the associated mortality risks (up to 25% of victims dying as a result).<sup>26</sup> Such presentation is likely to see patients supported by a senior clinical team with arguably greater insight into the wider circumstances. However, the radiographer still has the potential to offer their insight and indeed this is still mandated by HCPC standards that do not take into account different imaging modalities.<sup>3</sup> In order to maximise the contribution of the radiographer, it is therefore critical that their initial and ongoing safeguarding education takes into account their modality focus.

The traditional association that exists between radiography and child safeguarding was related to radiographic presentation of particular fractures on projectional radiographs, still the most frequently used modality.<sup>27</sup> The results indicate that certain pathologies are acknowledged as being strongly associated with child safeguarding concerns, posterior rib fractures and retinal haemorrhage representing examples.<sup>20,21</sup> The semantics of language could be argued to be significant in terms of recognition and it can only be speculated that if the term “anterior” had been used in the question (as opposed to “posterior”), a similarly confident response would have been elicited, given that the other rib fractures do not have as strong an association. A similar dichotomy is seen in relation to subdural versus extradural haemorrhage with the former having

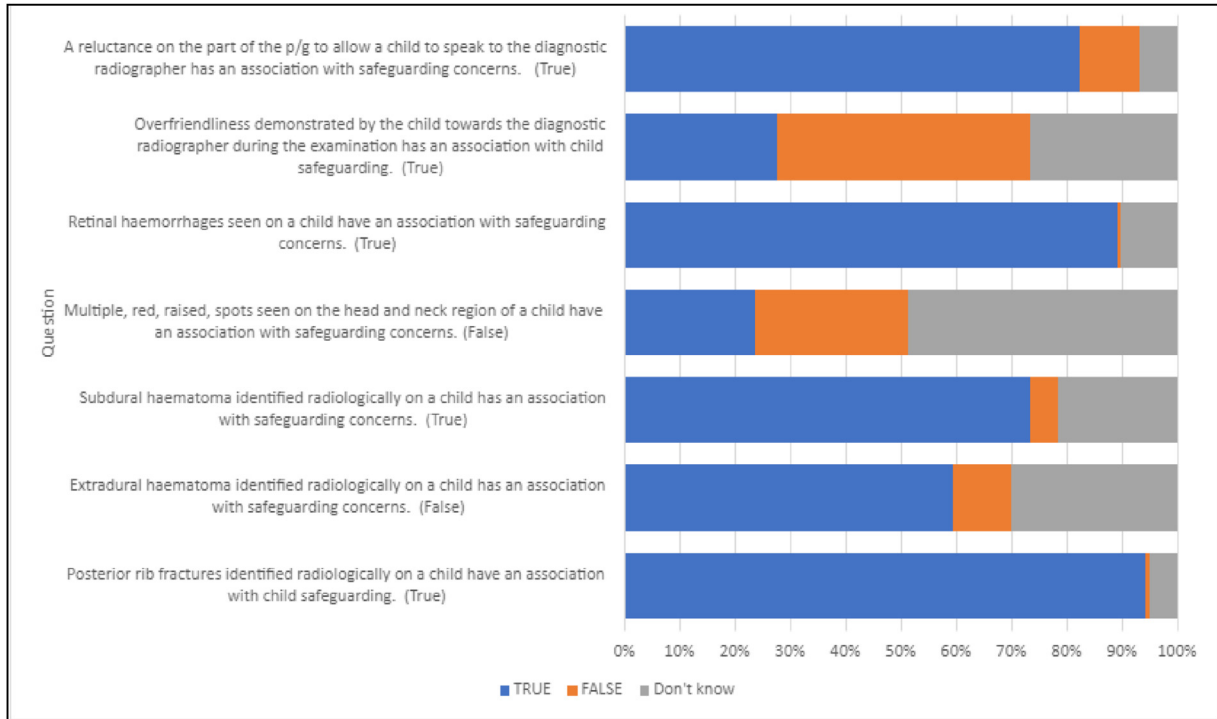


Figure 1. Responses to questions on knowledge of physical, social and radiographic signs of child safeguarding concerns.

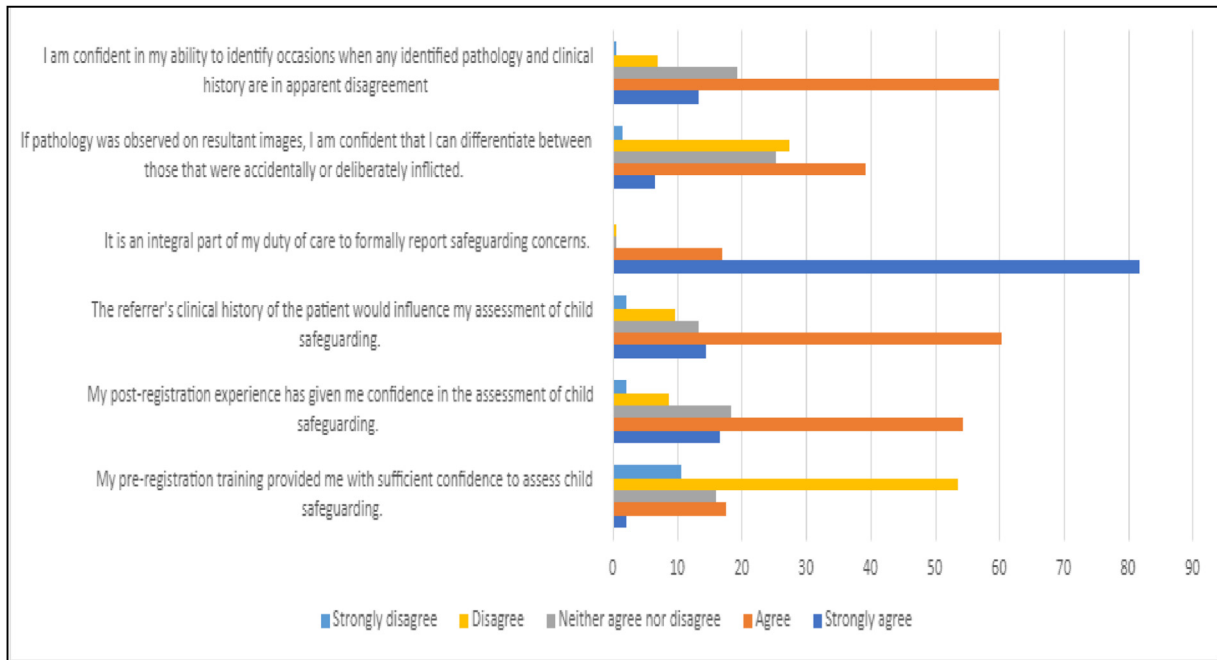


Figure 2. Responses to attitude questions regarding the role of the diagnostic radiographer and the influences that impact on that role.

Table 3 Responses to questions on practical experience of child safeguarding concerns.

Question	Never % (n)	Once % (n)	Twice % (n)	Multiple times % (n)
During your career, how many times have you reported child safeguarding concerns?	46.5 (87)	24.6 (46)	13.9 (26)	15 (28)
During your career, on how many occasions have you followed up your reporting of child safeguarding concerns?	60.8 (113)	19.4 (36)	8.6 (16)	11.3 (21)

the association and the latter with a more accidental aetiology.<sup>21</sup> Subtlety of language used in imaging can be seen to be significant in the association of findings with child safeguarding given the potential legal consequences.<sup>28</sup>

Collectively, survey respondents were less able to associate radiographic signs of child safeguarding than in relation to physical and social signs such as the retinal haemorrhages and reluctance to allow communication. With respect to physical and social, such outward signs can be regarded as universal, whereas the resultant radiographic signs are very much within the natural domain of the radiographer; more so than other professions. The mandatory training that exists for radiographers employed within the NHS is interprofessional in nature and will therefore not regard radiographic signs as central to the identification and escalation processes.<sup>29</sup> An additional, more radiographic orientated education programme could enhance the profession's ability to contribute to identification and escalation of concerns. Other professionals, such as social work, may have a more holistic overview of their patients but the scope of the radiographer to see physical, social and radiographic in combination could be maximised by more bespoke training.<sup>9</sup>

The results affirm that radiographers were certain of their own role in escalating child safeguarding and that, exceptionally, this escalation has occurred in practice. This contrasts with previous publications that introduced some doubt over that role.<sup>7</sup> The impact of high-profile cases (including Victoria Climbié) in the 2000–2010 decade and the subsequent response of the media, government and regulatory bodies is suggested as to the reason for the increased confidence.<sup>30,31</sup> In addition, the computerisation of the escalation process at an organisational level within England could also be a factor. Greater confidence was identified in terms of identification of disagreement between pathology and clinical history than was seen in relation to differentiating accidental aetiology from deliberately inflicted trauma with the latter still perceived as significant. Related to that confidence, clinical history was identified to be an important factor in the radiographer's assessment. The completeness and accuracy of referrer's history provided as part of the imaging request is therefore regarded as key in terms of assisting radiographers make informed judgements over child safeguarding concern.<sup>32</sup> A need to see the imaging and the imaging process as part of a wider, inter-professional overview of the patient is acknowledged.

With regards to education, the attitude towards pre-registration education (in contrast with what was felt towards post-registration experience) demonstrates that provision could be improved to ensure newly qualified radiographers are better prepared for their role, particularly given the changes to HCPC Standards of Proficiency for 2023 but also in terms of providing a sensitive and informed contribution to child safeguarding once qualified. It therefore is a requirement for all pre-registration programmes to include specific education on safeguarding, not only for children but the whole patient population.<sup>33</sup> The new HCPC standards state that registrants should “be actively looking for signs of abuse”.<sup>33</sup> This requires improved understanding of aetiology and recognition of pathologies with links, dependent on the imaging modality.

A footnote to the research is the recent publication of the Education and Career framework for the radiography workforce (4th Ed) which makes reference to safeguarding across all patient groups and levels of practice.<sup>34</sup> Recognition of signs of abuse are referred to from clinical support worker level upwards and this acts to reinforce the need for those who work in imaging to be familiar with safeguarding procedures within their sphere of practice.

Reflecting on the methodology overall, it is necessary to acknowledge the limitations. The survey was unavoidably released

at the time of the COVID pandemic which will have impacted on the number and range of participants, with the resultant response rate of <1% of registrant radiographers. Greater diversity in terms of some of the demographic data would have assisted in achieving a more holistic evaluation of the population.

## Conclusion

Respondents to the KAP survey demonstrated an inconsistent knowledge base with respect to physical, social and radiographic signs of child safeguarding concern. Accounting for the evolution of practice that has occurred, the expectation that radiographers have the scope to identify physical and social signs is argued to be improbable, but not impossible. In order to maximise the opportunities for radiographers to identify relevant pathology within spheres of practice education on child, and indeed all patient's, safeguarding needs to account for different imaging modalities. Accurate clinical history in particular, and an ability to assess aetiology are perceived as important aspects of the radiographer's assessment and should be significant factors in education at pre and post registration levels.

The participants demonstrated a positive attitude towards their role in safeguarding but have limited experience of identification and escalation, partly due to the relative infrequency of this phenomenon. However, the results suggests that escalation processes are operational for radiographers who, as a profession, are willing and able to act when appropriate.

## Conflict of interest statement

None

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