Radiography xxx (2016) 1–6

Contents lists available at ScienceDirect

Radiography

journal homepage: www.elsevier.com/locate/radi

Australian diagnostic radiographers' attitudes and perceptions of imaging obese patients: A study of self, peers and students

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ARTICLE INFO

Article history:
Received 11 January 2016
Received in revised form
1 June 2016
Accepted 2 June 2016
Available online xxx

Keywords:
Medical imaging
Obesity
Patient care
Radiography
Weight bias

ABSTRACT

Introduction and Objective: Imaging obese patients poses a number of challenges for diagnostic radiographers through positioning, radiation exposure, communication and care. Furthermore, the increasing prevalence of obesity in Australian society ensures these imaging challenges are more frequent however little is known about this area. This study aims to explore the attitudes and perceptions of diagnostic radiographers toward imaging obese patients through a mixed methods study.

Methods: Ethics approval was granted to interview and survey diagnostic radiographers about their attitudes and perceptions of imaging obese patients. Twelve diagnostic radiographers who are designated clinical educators (DR CEs) took part in a 30–45 min semi-structured interview as well as a 20 min computer-based Weight Implicit Association Test (Weight-IAT) and self-report questionnaire of explicit attitudes. An additional 25 experienced Diagnostic Radiographers who were associate supervisors completed the Weight-IAT/explicit questionnaire only.

Results: Thematic analysis of the interviews revealed that DR CEs adopted an image-focussed or patient-focussed approach to obese patients. Key themes with a negative bias included blame, tolerance and insecurity of skill. Positively associated key themes were empathy and experience in radiography. The sample overall showed a significant negative implicit weight bias ($P = 0.016$) as measured by the Weight-IAT and there was no evidence of negative explicit attitudes.

Conclusion: Australian diagnostic radiographers in this study exhibited significant negative implicit weight bias, with interview results highlighting attitudes of blame and frustration towards obese patients. DR CEs were more likely to be focussed on image acquisition rather than patient considerations, with fewer responses related to empathy and equity.

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Introduction

Obesity is a significant global public health concern. Obesity is generally classified via Body Mass Index (BMI), which is a measure of body fat based on height and weight. The World Health Organisation (WHO) defines obesity as an individual having a BMI greater than 30 and one who has an abnormal or excessive fat accumulation that may impair health.[1] Obese patients have serious co-morbidities such as cardiovascular diseases, diabetes, asthma, musculoskeletal disorders and sleep apnoea and in 2014, 600 million adults were considered obese worldwide.[1]

In 2011–2012, the Australian Bureau of Statistics reported that 27.5% of both adult Australian men and women were classified as obese. In addition, the proportion of obese people had increased across all the age groups, up from 18.7% in 1995 to 27.5%.[2] A study by Walls et al. (2012) estimated that if current trends continue, obesity projections for middle-aged Australians are expected to increase to 37.3% by 2025.[3] Obesity has a large economic impact on the Australian economy, with the 2005 Australian Diabetes, Obesity and Lifestyle study reporting the total direct cost for obesity was $14.5 billion.[4]

There are a number of challenges that diagnostic radiographers may experience when providing imaging to obese patients. These include patients who exceed the weight limits of the imaging equipment, incomplete coverage of all anatomy of interest, poor x-ray penetration and increased radiation scatter due to the patient's increased adipose tissue and positioning/centring the x-ray beam.[5–10] If these challenges are not adequately addressed or

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http://dx.doi.org/10.1016/j.radi.2016.06.002
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Please cite this article in press as: Aweidah L, et al., Australian diagnostic radiographers' attitudes and perceptions of imaging obese patients: A study of self, peers and students, Radiography (2016), http://dx.doi.org/10.1016/j.radi.2016.06.002

adapted for, the diagnostic image quality is reduced resulting in increased difficulty in providing a diagnosis and the real likelihood for repeat examinations.[11,12]

There have been multiple studies on the attitudes and perceptions of medical, nursing and groups of allied-health professionals towards obese patients.[13–16] From these studies, it has been shown that negative weight biases are common amongst healthcare professionals that interact with obese patients, with the Weight-Implicit Association Test (Weight-IAT) being a common tool used to measure bias and perception. The IAT is a well-known reaction time-based test used in cognitive psychology. It is said to measure the strength of associations between a concept, in the present case obesity, and positive or negative evaluations.[17,18]

There is a significant gap in knowledge about the attitudes and perceptions of diagnostic radiographers, a group of health professionals who interact with obese patients on a regular basis. In a previous study by Le et al., (2014), focus groups with radiography students revealed that they has observed negative attitudes towards obese patients by diagnostic radiographers they had interacted with in a supervisory role while on work integrated learning placements.[19] Hence this study aims to explore the attitudes and perceptions of diagnostic radiographers who are experienced clinical educators or supervisors regarding imaging obese patients.

Methods

This mixed methods study involved two methods of data collection and analysis. Ethics approval was obtained for this study from the Human Research Ethics Committee (HREC) at the University of Sydney, Project Number: 2015/329. Participation in this study was completely voluntary and written informed consent was obtained.

Study instrument: interview and Weight-IAT/explicit questionnaire

The first phase of the study employed a semi-structured interview between individual Diagnostic Radiography Clinical Educators (DR CEs) and two researchers associated with this study (LA and SL). Interviews were considered appropriate as it allows the researchers to obtain rich, real world data which can be used to achieve new insights from a radiographer's point of view about their professional role and attitude,[20] allowing for the exploration of themes and concepts. A copy of the interview questions can be seen in Appendix A. All interviewed participants were asked to complete the second phase of the study, the Weight-IAT/explicit questionnaire. The interviews and Weight-IAT/explicit questionnaire were completed at the DR CEs principal place of work in an unused office or radiology library.

The Weight-IAT/explicit questionnaire is a widely used laboratory task that was adapted by a member of the research team who is a psychologist (SC), to run on a stand-alone laptop computer. This included an initial consent question followed by both implicit and explicit tests. The implicit test required the individual to categorise item words into two distinct categories (see Appendix B). The premise behind the test is that the easier the association can be made, the quicker the task can be completed. Therefore the difference in milliseconds between the "compatible" and "incompatible" conditions provides an estimate of the extent of cognitive bias once effects of practice and handedness are eliminated by a crossover methodology. The Weight-IAT/explicit questionnaire was completed at the workplaces of the participants. The IAT has become a standard test to measure implicit preferences and has been used internationally to look at weight bias in a range of nursing, medical and allied health professionals.[13–16] The explicit questions were derived from four validated weight-bias tests including the Anti-Fat Attitudes Questionnaire (AFA-7),[21] the Beliefs About Obese Persons Scale (BAOP),[22] Attitudes Toward Obese Persons Scale (ATOP)[22] and the Beliefs about solutions to obesity[23] This is therefore a bespoke questionnaire with no validity or reliability data and a sample of the explicit questions can be seen as Appendix C.

Sample

The target sample and inclusion criteria for this study were registered diagnostic radiographers who are designated clinical educators (termed DR CEs) by their workplace. This criteria was extended to associate or secondary CEs who also had years of experience supervising student radiographers but may not be the primary CE as nominated by the workplace and universities – this is common in large teaching hospitals. Diagnostic Radiographers who act in a clinical educator/supervisor role were chosen for this study as they are generally considered experienced providing plain radiography for a wide range of patient presentations and regularly supervise students, imparting technical and professional knowledge. The target population was obtained from 6 district and tertiary referral public hospitals and 3 private practices across a large metropolitan area. Throughout this study, the terms radiographers describes the whole sample and DR CEs describes the sample that undertook both phase 1 and 2 of the study.

This study used a convenience sample recruited through email using a university database of clinical educators. Interested participants who replied were provided with a Participant Information Statement and a time and date for participation was set. Twelve DR CEs (6 males and 6 females) undertook a semi-structured interview of approximately 30–45 min as well as a computer-based Weight-Implicit Association Test and explicit attitudes questionnaire (Weight-IAT/explicit questionnaire will now be used throughout this study to indicate both implicit and explicit tests), taking 20 min. An additional 25 secondary DR supervisors (8 males and 17 females) completed the Weight-IAT/explicit questionnaire only. The mean years of experience for the DR CE (interview sample) was 19.2 years and for the survey only sample = 10.1 years. Table 1 details the demographics of the sample.

Data analysis

The interview recordings were transcribed verbatim. Participants and locations were anonymised and written informed consent was obtained. The transcripts were then analysed by two researchers using qualitative methods and coded using a grounded theory approach allowing for a constant comparative analysis of concepts and themes as set out by Strauss and Corbin (1988).[24] The 12 transcripts were coded manually to identify any key concepts or themes until data saturation occurred and there was a strong level of agreement between coders.

The explicit tests were administered according to their respective instructions, with responses typically registered on Likert Scale format (Appendix C). Responses to the implicit test were recorded as reaction times, which were then converted to positive and negative IAT values. A one sample T-Test was used to measure significant differences between the sample mean and neutral values for both the implicit and explicit tests (significance set at $p \leq 0.05$).

Table 1
Cohort demographics and mean experience.

	Male n = 14	Female n = 23	Mean experience (years)
Large tertiary referral hospital	5	8	13.3
Medium district hospital	6	7	
Private practice	3	8	12.4

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