Review Title: The Patient Experience in Medical Imaging: A Qualitative Systematic Review (protocol)
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**Investigators:**
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**Review Purpose:**
The purpose of this review is to retrieve and summarise all existent literature exploring the patient experience in medical imaging, to allow major themes and concepts regarding the patient experience to be identified.

**Review Question/Objectives:**
The qualitative objective is to identify and describe the patient experience, perception, understanding and meaningfulness of undergoing diagnostic imaging.

**Background:**
Medical imaging plays an important role in the patient’s journey through illness and disease. For many conditions and ailments, medical imaging, whether it is a simple chest X-ray or a complex scan, plays a pivotal role in the diagnosis and therapeutic management of illness. Diagnostic imaging may refer to a range of medical procedures, including radiographic and nuclear medicine procedures, Magnetic Resonance Imaging (MRI), Computed Tomography (CT), Positron Emission Tomography (PET), Ultrasound (US) and Single Photon Emission Computed Tomography (SPECT), along with other imaging investigations. Medical imaging is an ever changing field, and there have been significant advancements in imaging techniques and technologies over the years. The amount of imaging and the subsequent costs associated with it have been rising rapidly in many parts of the world for the last 30 years,\(^1,2\) leading to a larger percentage of people being exposed to these different imaging modalities.\(^3\) However, the improvements in imaging technology do not necessarily guarantee a similar advance in patient care.\(^4\)
modalities used in the imaging process are highly technical in nature, with sophisticated equipment utilised in everyday practice. Due to this, the patient and patient care can often be ignored or overlooked, as the focus of the imaging technician is directed largely towards the technology and not the patient.\textsuperscript{5}

In the past, there has been an emphasis on quantitative research designs in medical imaging, resulting in a significant lack of literature on the experience of the individual that is undergoing examination.\textsuperscript{6} Research in medical imaging largely stems from the positivist paradigm, where hypotheses are tested through quantitative research designs.\textsuperscript{7} However, quantitative research designs are not always suitable to answer all questions generated from the medical imaging process, as they are limited to observations and data that can be measured and analysed mathematically using statistical methods.\textsuperscript{8} For questions looking at experience, perception, meanings, understanding and acceptance of imaging, qualitative methodologies are the most appropriate.\textsuperscript{5, 8} It is thought that the information generated from qualitative studies will support the clinician when dealing with patients, and assist in improving communication with the patient and understanding and addressing their concerns, making the procedure more acceptable to the patient.\textsuperscript{8}

In recent times it has been identified that there is a role for qualitative research in medical imaging, as the paradigm shifts from technology focussed to patient focussed research.\textsuperscript{9} The aim of this research is to ‘more clearly define what radiographers do and how they do it’\textsuperscript{5} (p. 194). Equally important is the need to identify issues relating to the patient in medical imaging, and the need to highlight the patient’s experience and perspective of health care.\textsuperscript{5}

Medical imaging generates a unique interface between high-level technology and the patient, and has been described as a human-technical science.\textsuperscript{7} This is a meeting of two worlds, with technology and machines used to improve patient outcomes on the one side, and the social encounter with the patient and provision of holistic care on the other. The machine-oriented drive towards better technology and images to improve outcomes largely sits within the positivist approach of natural sciences, whilst the patient encounter is more fitting to an interpretive approach, which can lead to increased understanding.\textsuperscript{7} Both of these approaches are appropriate forms of inquiry
for medical imaging research, and can both be considered important and complimentary to each other. The question being asked should direct the choice of the research approach. Multi-method studies, incorporating both qualitative and quantitative approaches, may be useful to inform medical imaging professionals.  

There exists in the literature some discussion on the patient experience in diagnostic imaging, reported in both quantitative and qualitative studies, and in articles based on expert opinion. One example is a qualitative study utilising grounded theory methods including twenty-six individuals who underwent Computed Tomography or Magnetic Resonance Imaging. Although many of the participants were satisfied and pleased with their care, others experienced fear and anxiety. In Magnetic Resonance Imaging, this fear has been shown to stem from claustrophobia. Radiophobia can also be an issue for people undergoing diagnostic imaging, as they fear exposure to radiation through these procedures. Another issue raised in the literature is dehumanisation, as patients insides are transposed as images on a screen. Another study used a phenomenological design to investigate the experience of persons with hearing disabilities in the medical imaging department. These patients encountered a wide range of difficulties during their journey through the imaging department. There were communication problems from reception and throughout the procedure, and many found their imaging distressing. Another phenomenological study investigated patient’s lived experience of Magnetic Resonance Imaging, and identified the common theme that Magnetic Resonance Imaging procedures felt like ‘being in another world.’

When presenting to an imaging department, the person who is to be imaged is often in a vulnerable state, and out of their comfort zone. It is the role of the medical imaging technician to produce a high quality image and facilitate patient care throughout the imaging process. Qualitative research is necessary to better inform the medical imaging technician and to help them to understand the experience of the person being imaged. Some issues that have been identified in the literature include fear, claustrophobia, dehumanisation, and an uncomfortable or unusual experience. There is now a small but worthwhile qualitative literature base focusing on the patient experience in medical imaging. It is therefore timely and worthwhile to produce a
systematic review to identify and summarise the existent literature exploring the patient experience of diagnostic imaging.

**Criteria for Considering Studies for This Review:**

*Types of Studies:* This review will consider studies that focus on qualitative data or include a qualitative aspect, including, but not limited to, designs such as phenomenology, ground theory, ethnography, action research, qualitative descriptive studies, and feminist research. These will be limited to English language studies, with no time limit.

In the absence of research studies, other text such as opinion papers and reports will be considered in a narrative summary. These will be limited to English language studies, with no time limit.

*Types of Participants:* This review will consider publications that include persons of any age who have undergone medical imaging in a medical imaging department. These participants may be receiving medical imaging for a wide range of indications, and may have any pre-existing condition or disability.

*Phenomena of interest:*

The qualitative component of this review will consider studies that investigate the patient experience of diagnostic imaging, and the meaningfulness of that experience. All diagnostic imaging procedures to be included in this review are non-invasive or minimally invasive.

**Review Methods**

*Search Strategy:*

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilised in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies.
The databases to be searched include:

- ASSIA-Applied Social Sciences Index and Abstracts
- AMED
- CINHAL
- Ingenta Connect
- Embase
- Medline
- PASCAL
- PsychINFO
- Sociological Abstracts
- Web of Science
- Web of Knowledge
- SCOPUS

The search for unpublished studies will include:

- Mednar
- Intute
- Google Scholar
- Current Contents
- Dissertation Abstracts
- Conference Proceedings

Initial keywords to be used will be:

- Diagnostic imaging, medical imaging, x-ray, MRI, PET, CT, Radiography, Radiology, Nuclear Medicine, Qualitative research, patient experience, interviews, phenomenology, grounded theory, ethnography, surveys

Please refer to appendix I for a more detailed search strategy.

**Critical Appraisal:**

Qualitative studies selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using
standardised critical appraisal instruments from the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) (Appendix II).

Textual papers selected for retrieval will be assessed by two independent reviewers for authenticity prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute Narrative, Opinion and Text Assessment and Review Instrument (JBI-NOTARI) (Appendix III).

Any disagreements that arise between the reviewers will be resolved through discussion, and with a third reviewer if necessary.

**Data collection/extraction:**

Qualitative data will be extracted from papers included in the review using the standardised data extraction tool from the Joanna Briggs Institute Qualitative Assessment and Review Instrument JBI-QARI (Appendix IV).

Textual data will be extracted from papers included in the review using the standardised data extraction tool from JBI-NOTARI (Appendix V).

The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

**Data synthesis:**

Qualitative research findings will, where possible be pooled using the Qualitative Assessment and Review Instrument (JBI-QARI). This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings (Level 1 findings) rates according to their quality, and categorising these findings on the basis of similarity in meaning (Level 2 findings). These categories are then subjected to a metasynthesis in order to produce a single comprehensive set of synthesised findings (Level 3 findings) that can be used as a basis for evidence-based practice. Where textual pooling is not possible the findings will be presented in narrative form.

Textual papers will, where possible be pooled using the Narrative, Opinion and Text Assessment and Review Instrument (JIB-NOTARI). Where textual pooling is not possible the conclusions will be presented in narrative form.

**Conflicts of Interest**
None noted

Acknowledgments
Professor Alan Pearson AM and Zoe Jordan for their assistance and feedback.

References:
8 Freudenberg LS, Muller SP, Boskich A. Subjective perceptions of patients undergoing radioiodine therapy: why should we know about them? European Journal of Nuclear Medicine and Molecular Imaging. 2009;36(11).
12 Freiherr G. We have to calm dose hysteria…RIGHT NOW! Diagnostic Imaging. 2010.


Appendices

Appendix I
Detailed Search Strategy
The identifiers will be combined with the phenomenon and design with ‘and.’

Identifiers (combine with ’or’)
Radiography
Nuclear Medicine
Magnetic Resonance Imaging
Radiology
Diagnostic Imaging
Medical Imaging
Radionuclide imaging
Molecular Imaging
Computerized Tomography
Computed Tomography
Single Photon Emission Computed Tomography
Positron Emission tomography
PET
Computer Axial Tomography
CT
CAT
Ultrasound
Sonagraph
Sonography
MRI
x-ray
Ultrasonography

Phenomenon (combine with ’or’)
Patient experience
Understanding
Meaningfulness
Experience
Journey
Perception
Fear
Anxiety
Claustrophobia
Enlightenment
Apprehension

Design (combine with ‘or’)
Qualitative
Phenomenology
Ethnography
Ground theory
Qualitative description
Qualitative research
Survey
Interview
## JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer:  
Date:  
Author:  
Year:  
Record Number:  

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
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<td>1. Is there congruity between the stated philosophical perspective and the research methodology?</td>
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<td>2. Is there congruity between the research methodology and the research question or objectives?</td>
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<td>3. Is there congruity between the research methodology and the methods used to collect data?</td>
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<td>4. Is there congruity between the research methodology and the representation and analysis of data?</td>
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<td>5. Is there congruity between the research methodology and the interpretation of results?</td>
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<td>6. Is there a statement locating the researcher culturally or theoretically?</td>
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<td>7. Is the influence of the researcher on the research, and vice-versa, addressed?</td>
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<td>8. Are participants, and their voices, adequately represented?</td>
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<td>9. Is the research ethical according to current criteria, or, for recent studies, is there evidence of ethical approval by an appropriate body?</td>
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<td>10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?</td>
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**Overall appraisal:**  
Include:  
Exclude:  
Seek further info:  

Comments (including reasons for exclusion):  

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Appendix III

JBI Critical Appraisal Checklist for Narrative, Expert opinion and text

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<tr>
<td>Author_________________________ Year ___________</td>
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</tbody>
</table>

1. Is the source of the opinion clearly identified? [ ] Yes [ ] No [ ] Unclear

2. Does the source of the opinion have standing in the field of expertise? [ ] Yes [ ] No [ ] Unclear

3. Are the interests of patients/clients the central focus of the opinion? [ ] Yes [ ] No [ ] Unclear

4. Is the opinion's basis in logic/experience clearly argued? [ ] Yes [ ] No [ ] Unclear

5. Is the argument developed analytical? [ ] Yes [ ] No [ ] Unclear

6. Is there reference to the extant literature/evidence and any incongruency with it logically defended? [ ] Yes [ ] No [ ] Unclear

7. Is the opinion supported by peers? [ ] Yes [ ] No [ ] Unclear

Overall appraisal:  Include [ ] Exclude [ ] Seek further info [ ]

Comments (including reason for exclusion)

________________________________________________________________________
________________________________________________________________________
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### JBI QARI Data Extraction Form for Interpretive & Critical Research

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<td>Data analysis</td>
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<td>Authors Conclusions</td>
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<td>Comments</td>
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Appendix V
JBI Data Extraction for Narrative, Expert opinion and text

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<td>Cultural:</td>
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<tr>
<td>Logic of Argument:</td>
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</table>

Authors Conclusion:

Reviewers Comments: