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## Engaged, but not actively involved: A narrative review and reflections on radiographers' engagement in research within the clinical setting

Eivind Richter Andersen\*<sup>1,2</sup> 

<sup>1</sup>Department of Radiotherapy, Stavanger University Hospital, Norway

\*Corresponding author's e-mail address: [Eivind.richter.andersen@sus.no](mailto:Eivind.richter.andersen@sus.no)

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### Abstract

**Aim:** To contribute to the ongoing debate of radiography research, by providing an overview of radiographers' engagement in research activities within the clinical setting. Barriers and facilitators for research engagement will be discussed.

**Methods:** An unstructured search for literature was conducted in PUBMED and Google Scholar. Snowballing on references was further conducted. The search included papers written in English published between 2014 and august 2024.

**Results:** Radiographers are generally positive about research, however, their active participation in research activities in clinical settings is limited. The primary barriers to engagement in research are systemic, while facilitators are present at both personal (individual motivators) and systemic levels.

**Conclusion:** Enhancing radiography research is critical to ensure that radiographers work according to the principles of Evidence-based Practice, which is essential for patient safety and the provision of high-quality care. A research culture must be established within the local departments. Several strategic steps are proposed to develop a research strategy within the departments. Further research should focus on evaluating the implementation and outcomes of efforts to enhance research participation in clinical radiography.

## Introduction

Radiographers are required to deliver the safest and best possible care to patients. Therefore, radiographers should work in line with Evidence-based Practice (EBP), as EBP has been consistently linked to improved quality of care, patient safety and positive clinical outcomes (1). EBP evolved from Evidence-based Medicine (EBM), which was based on the general idea that a practice would risk being rapidly outdated without the use of current best evidence (2). EBP ranges however further than EBM as it also include allied health professionals (3). It involves a cyclic process consisting of five vital steps; 1. *asking* questions and reflecting on current practice, 2. *acquiring* evidence to answer the questions, 3. *appraising* the quality of the evidence collected and the transferability into practice, 4. *Applying* the evidence in practice and 5. *Assessing* the outcome of the process (4). Both the European Federation of Radiographers (EFRS) (5) and the International Society of Radiographers and Radiological Technologists (ISSRT) (6) promote evidence-based practice, and highlights the crucial need for high-level research across all fields of the profession (5). Hence, a key element of Evidence-based Practice is the availability of evidence that is up to date. It is therefore important to gain knowledge of radiographers and radiation therapists' contribution to the development, collection and utilization of new evidence.

It is well-known that radiographers working within the academic setting contribute to the development and dissemination of research-based evidence (7-9) within many fields, such as radiographers' profession, clinical practice in radiography, safe- and high-quality use of radiation, management and leadership, and technology (10). However, radiographers who exclusively work within clinical practice have been shown to have 80% lower level of research engagement than those who balance academic and clinical practice (7). This may represent a major drawback as research within healthcare organizations has many benefits, such as benefits for patient care, improved confidence in staff, advancement of clinical practice, role extension opportunities, and increased professional visibility (8).

Consequently, research originated within clinical departments acquired from those who work closely to patient care might yield invaluable contributions to the evidence production necessary for good Evidence-based Practice. Hence, research from within clinical departments yields great importance to patient safety and the delivery of care.

Consequently, this narrative review aims to provide an overview of the 1) status of evidence-based practice in radiography, 2) the current engagement in research activities among radiographers working within imaging departments or at private institutions, 3) facilitators and barriers for involvement in research activities within the clinical setting.

## Methods

A narrative review presents a discussion of key topics in a less formal manner compared to a systematic review (e.g., it does not require strict reporting of methodology, search terms, databases used) (11, 12). Nevertheless, a brief overview of the methodology employed in this paper is provided in this section.

An unstructured search for literature was conducted in PUBMED and Google Scholar. The search terms used are listed in Table 1, and were combined to align with the topic, such as radiographer + research +involvement.

**Table 1.** Search terms used.

<b>Status of evidence-based practice</b>	<b>Engagement in research activities</b>	<b>Facilitators and barriers for research involvement</b>
Radiographers	Radiographers	Radiographers
Radiation therapists	Radiation therapists	Radiation therapists
Evidence-based practice	Research	Research
Evidence-based radiography	Engagement	Facilitators
	Involvement	Enablers
	Role	Barriers
	Attitude	
	Interest	

Snowballing on references was further conducted. The search included papers written in English published between 2014 and august 2024. Papers were included if they focused on radiographers who are working within hospitals or private institutions, and addressed their engagement with research, or facilitators/barriers towards research involvement. Relevant information was extracted into Microsoft Excel and categorized into the following categories: information about the paper, engagement and attitude towards research, facilitators/barriers, and implications (Supplementary file 1). While the literature reviewed included radiographers, radiation therapists and ultrasound radiographers, these terms are collectively referred to as “radiographers” in this paper.

## Results

### **The status of evidence-based radiography within the clinical practice**

The literature indicates that Evidence-based Practice is not well established within the clinical setting of radiography. In a scoping review investigating how diagnostic radiographers make clinical decisions, the conclusion was that radiographers rely on their colleague’s point of view, rather than the evidence (13). This conclusion is supported by research that was not included in the scoping review. A study from the Nordic countries found that only 19% of the respondents reported that current practice is developed based on research evidence (14). While a qualitative study from the United Kingdom (UK) showed that EBP is not frequently used to implement optimization strategies (15), a single center UK-based study concluded that a strong evidence-based culture needs to be prioritized (16). Also, in line with international literature, one study from Australia reported that radiographers are mostly positive towards EBP, however, the workload was reported too great to keep up with new evidence (17). However, there are exceptions to this positive attitude. Nalweyiso and colleagues (18) reported that 63% of their respondents in Uganda scored themselves as having a negative attitude towards EBP.

### *Radiographers' attitude towards research*

The studies indicate that radiographers are mostly positive towards research (7, 14, 16, 19-31) as it might improve patient care and outcome, promote personal development, and be an important pillar towards advanced practice. One systematic review that included 376 articles concluded that clinical radiographers globally are highly motivated for and interested in research activities (20). However, two studies were found where radiographers had a somewhat more negative view towards research. Alymami and colleagues (32) found that the radiographers lacked an interest in conducting research (47%) and saw no benefits for their department to engage in such activities (46%). Hence, generally negative attitude towards research was demonstrated. Interestingly, the radiographers found research important if it was deemed relevant and would then willingly take responsibility for implementing relevant findings. As Nalweyiso and colleagues (18) found that 63% of their respondents scored themselves as having a negative attitude towards EBP, one could assume that these radiographers had a negative attitude toward research within the clinical setting. However, participants with higher education seemed to express a more positive attitude.

### *Radiographers' engagement in research activities*

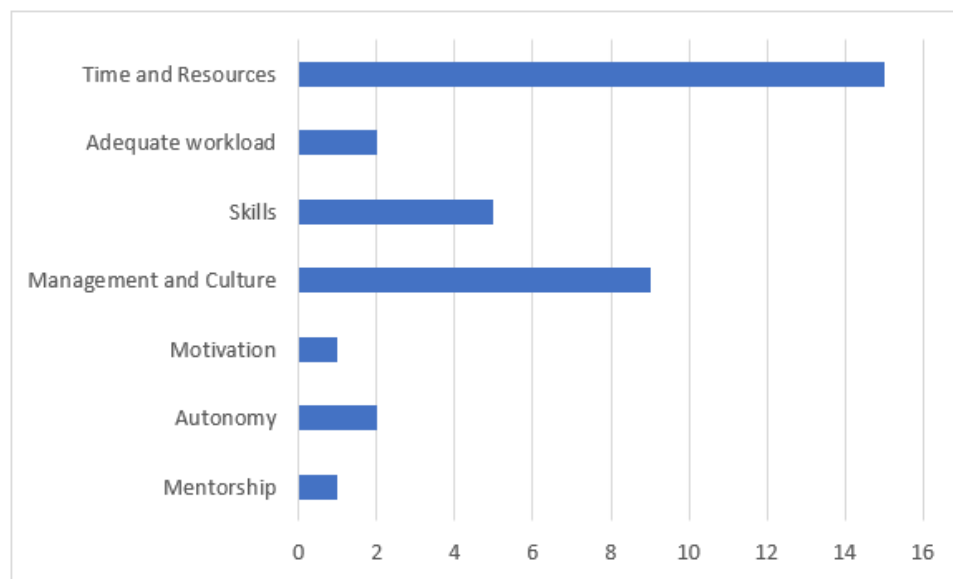
Despite clinical radiographers' positive attitude towards research activities, their engagement with research seems to be limited in terms of participating, conducting and implementing their own research. Among an international sample of 420 radiographers participating in a survey, only a minor segment of respondents indicated involvement in research activities (7). Watts and colleagues demonstrated that the percentage of radiographers engaging in research is low, even when research activities are clearly stated in job descriptions (16). Corresponding, in a study from five Arab countries, limited engagement in research-activities were found (19). The literature seems consistent that the engagement is especially low when it comes to tasks such as presenting and publishing research findings, and the main activity when engaging in research is in data collection (14, 22, 24, 28, 29). Correspondingly, Halkett and colleagues (24), demonstrated that out of 296 respondents, 46% (n=136) had either been involved in or were currently engaged in a research project. Out of these, 33% were involved in determining research questions or hypotheses, whereas 21 % were project managers. This illustrates that clinical radiographers seldom conduct research seeking answers to their own clinical questions.

### **Barriers and facilitators for research involvement**

Munn (26p.14-15), writes that the "potential limited awareness and willingness for research or evidence-based change is (...)due to a set of environmental, educational and societal forces that inhibit sufficient engagement (...)". Consequently, in this section barriers and facilitators for research involvement will be explored.

Figure 1 shows the number of articles describing specific barriers to conducting research within the clinical setting.

**Figure 1.** Barriers towards research engagement



The most common barriers reported in the research literature were the lack of time and resources (4, 7, 13, 14, 16, 19-22, 24, 26-36). However, the lack of support from management, and lack of research culture within the clinics are prominent (4, 7, 14, 16, 19-22, 26, 27, 29-31, 36), which might yield a lack of time and resources being prioritized for research. Accordingly, Balushi and colleagues (20) concluded in their systematic review that radiography managers should develop strategies to stimulate radiographers to initiate research projects.

Several factors perceived as motivators for conducting research within the clinical setting were found. The motivators seemed to be linked to a personal drive, while facilitators are systemic factors facilitating engagement in research activities. Findings from the literature are grouped into motivators and facilitators and are presented in Table 2.

**Table 2.** Motivators and Facilitators for conducting research within the clinical setting

Motivators	Facilitators
Receiving support from colleagues	Program for radiographers who are interested in research
Increased salary	Professional requirement/demand to obtain higher education
Professional development	Early exposure to research to students
Opportunities to participate in national and international congresses and courses	Dedicated research positions/ combined clinical and academic positions
Participation in research projects with radiographer colleagues	Allocated time
Projects relevant to clinical practice	Transparency of ongoing research

The factors that promote research and EBP and the barriers that inhibit such activities are interconnected. For example, a higher degree of education seem to be a significant promoter for research utilization (37). Consequently, a lack of competency or mentorship in the departments might reduce research engagement. Interestingly, one study found that managers did not seem to know how to utilize the competencies of radiographers undertaking a masters' degree (31). Thus, a lack of a strategy for using available resources might threaten research engagement.

## Discussion

While radiographers are required to work evidence-based, this paper presents literature that indicate that this is not common practice within the clinical field. Ahonen and Liikanen (37) concluded over a decade ago that important EBP and research utilization promoters were reading scientific journals, participating in research activities, a higher degree of education, and senior posts at the workplace. However, radiographers' engagement with research literature is still mostly due to "interest to do so" (38), and radiographers working exclusively in clinical practice exhibit a significantly lower level of research involvement compared to those balancing clinical and academic practice (7). As a result, there is insufficient infrastructure to support and encourage clinical radiographers' active engagement with Evidence-Based Practice (EBP). Moreover, when radiographers do not engage in research, the evidence-base needed for establishing an EBP might be lacking. Yet this paper has demonstrated that radiographers are motivated for engaging in research activities, especially when the departments offer training and support, allocated time and when projects are relevant to clinical practice (39).

Several barriers, motivators, and facilitators for conducting research within the clinical setting were identified. While the barriers were mainly systemic (lack of time, resources, management, and research culture), facilitators for conducting research were both found on a personal level (motivators) and at the system level (facilitators, which were mainly the inversion of the barriers). As the barriers are at the system level, changing the system to facilitate research should be the most promising strategy for increasing clinical radiographers' involvement in research activities. Still, personal-level factors must also be addressed, such as ensuring the availability of essential competencies, including appropriate training and education, and facilitating their effective application.

Changing current practices and culture takes time. In Norway, a call for increased participation in research was published as early as 2008 (40). Ten years later, the conclusion was still that radiographers must take leading roles in research, but very few are engaged in research activities (29). Moreover, in 2023, a small study concluded that there is a need to develop a research culture within Norwegian radiology departments (31). However, change is needed as the lack of radiography research originating from within the clinical setting might yield a poor foundation for Evidence-based Practice in radiography.

Establishing a culture that promotes clinical research is key to engaging radiographers in conducting research within the clinical setting. Leadership are central to achieving by promoting reflection to uncover opportunities for change, to plan for change and to take action (41). Important factors in building a research culture are the provision of training and support, adequate resources (e.g., allocated time), and to ensure that projects are relevant to clinical practice (39). Interestingly, Boljeko and colleagues (36) propose a framework to establish a research culture. This framework consists of six non-hieratic steps: 1. Management and support, 2. implementing reflective practice, 3. promoting a research lead, 4. supporting and acknowledging colleagues, 5. attending research education, 6. networking and collaboration (36). The framework introduces and describes many important factors for establishing a research culture and is an important contribution to promoting radiographer-led research within the clinical setting. However, due to the non-hierarchic structure, it fails to recognize the importance of management, which should be an overarching component facilitating the five other steps. Hence, to promote a research culture, research needs to be prioritized. This could be done following four steps. Firstly, the work should be organized so radiographers can pause and reflect on their practice (26). Secondly, competence must be utilized. In a study among radiographers holding a master's degree within the clinical environment, the radiographers perceived themselves as pioneers and their managers did not know how to utilize their research competencies within a clinical setting. They reported that a lack of interest, appreciation, support and understanding from managers and colleagues was a barrier for utilizing their acquired competence. Moreover, they conveyed minor changes in tasks and a less formalized application of their competence. The participants said that radiographers must initiate projects themselves and not wait for others to invite them (31). This might be reasons why radiographers with higher education and research skills tend to pursue a career in academia (7). Thirdly, a strategy to overcome the challenge of lack of resources must be implemented. Fourthly, the value of research might not be sufficiently measured using quantitative measures. A strategy for evaluating research outcomes should be developed.

Consequently, when research is prioritized, allocated time and support can be provided, and the main barrier for research involvement will then be eliminated. Accordingly, to ensure research prioritization and resources, I propose that each department should establish a research strategy that includes:

1. *The involvement of adequate persons* to ensure that available competencies are used and that radiographers take leading roles in research with the multidisciplinary team and external parties (e.g., cooperation with academic institutions and other imaging facilities). A systematic plan on how to identify areas of inquiry (e.g., using Instant learning systems and feedback from staff) should be part of the strategy.
2. *Resources needed* (including a strategy for grant applications)
3. *Prioritization of projects* (e.g., based on estimated outcome and perceived value)

4. *Time schedule* for conducting the research.
5. *Plan for dissemination* of ongoing work and results.

The strategy should be developed in cooperation with managers to secure anchoring in the organization. It should also be presented to staff regularly and include a plan for how relevant findings might be integrated into clinical care.

### **Limitations**

This study includes a selection of literature to provide an overview of radiographers' current involvement in research within the clinical setting. The search was conducted within a limited number of databases. However, a narrative review is not exhaustive and does not follow the rigorous steps of a systematic review. The studies found included various study designs, e.g., surveys, reviews, narrative debates and mixed method studies that make comparisons somewhat difficult. Also, most studies included are surveys with small sample sizes. Furthermore, the descriptions of the samples in the literature are sometimes unclear, and it is therefore difficult to say for sure that all findings represent radiographers working within the clinical setting. Moreover, the studies include various types of radiographers (diagnostic radiographers, radiation therapists, sonographers). Nevertheless, the findings seem consistent to provide an overview, despite the limitations. Accordingly, a narrative review is suitable as the aim is to discuss important topics (42).

## **Conclusion**

This narrative review adds to the debate on radiographers' role in research by focusing on radiographers working within the clinical setting. The study demonstrates that radiographers perceive research as important while they are only limitedly engaged in research. Data collection is the most frequent activity when engaging in research. More radiography research is essential to ensure that radiographers adhere to the principles of Evidence-based Practice. Hence, a research culture must be established within the local departments. Several steps are proposed that are deemed necessary when developing a clear research strategy. Further research should evaluate the implementation and outcomes of such strategies.

## **Statements and Declarations**

### **Competing Interests**

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