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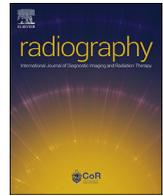
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## Oncology patients' experience of a routine surveillance CT examination: Relationships and communication

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### ABSTRACT

**Introduction:** The question of radiographers' capacity to establish short time relationships as well as decoding patients' needs and expectations simultaneously with performing high technological examination frequently arises in the clinical practice. Additionally, the constant focus on technology and the fact that radiographers work in high productive departments accentuates the issue. Patients' experiences with radiology seem to be a neglected area of research and may help to identify areas for improvement in this highly technological and productive field. The purpose of the study was to explore oncology patients' experiences of a routine surveillance CT examination and their need for relationships and communication with the radiographer as part of the CT examination.

**Methods:** The study included patients diagnosed with cancer and in need of a CT examination as part of their course of treatment, and 21 semi-structured interviews were conducted. The interviews were analysed using qualitative content analysis. Themes were constructed and narratively reported. To increase validity, the themes were identified, discussed and formulated by the author group.

**Results:** Four themes were constructed based on the analysis: 1: The professional radiographer, 2: Disease and treatment, 3: The examination environment and 4: While waiting.

**Conclusion:** The lack of focus on radiographers' capacity to establish relations, to consider each patient as an individual human being and being able to show sincere interest and empathy were highlighted. Findings illuminated the patient's need for relationship and communication with the radiographer as part of a CT examination.

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### Introduction

In Denmark, the radiographers are expected to be technology experts as well as being able to establish relationships with the patient within a short time frame.<sup>1</sup> The education of radiographers in Denmark and Northern Europe is partly focused on the importance of developing communicative skills and partly on the technology.<sup>2,3</sup> The technology is essential for radiographers; they need to understand the technology to use it correctly and for

some modalities such as computer tomography (CT) the technology has developed rapidly during the last decade.<sup>4,5</sup> Moreover, it seems as if in general radiographers' competences are most of all assessed by the level of technical skills. Taking care of patients' needs, such as assisting the patient as needed by holding hands, establishment of relationship or assistance with personal hygiene, seems to be less prioritized.<sup>6–9</sup> Time to establish contact to the patient is relatively short during a radiological procedure and furthermore the demand for high efficiency is constantly increasing, which may induce the radiographer to concentrate on the technical and safety aspects of the examination.<sup>10</sup> Because of this constantly increasing efficiency, the organisation has a responsibility to provide time and space for interactions between the patient and the radiographer. Due to the focus on technology and the fact that radiographers work in highly productive

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departments, the question of the radiographers' capacity to establish short time relationships as well as decoding patients' diverse needs and expectations simultaneously with performing high technological examination, frequently arises in the clinical practice.

Herlev and Gentofte Hospital is a public tertiary hospital and a part of the Danish national oncology treatment program. Therefore, the Department of Radiology has a large number of oncology patients receiving CT examinations before, during and after treatment for cancer.<sup>11,12</sup> The purpose of this study was to explore oncology patients' experiences of a routine surveillance CT examination and their need for relationships and communication with the radiographer as part of the CT examination.

## Literature review

Cancer patients meet the healthcare system with different expectations and needs. They have individual levels of knowledge, resources and values that need to be considered.<sup>13,14</sup> Internationally, the number of cancer patients is growing, due to several factors, including population growth, aging as well as the changing prevalence of certain causes of cancers linked to social and economic development, such as an increase in cancer-causing behaviours (smoking, obesity, and risky drinking).<sup>15</sup> In addition, due to improved treatment options, increased survival rates lead to further needs for follow up programs often including CT examinations.<sup>16–18</sup> Based on a report from the Capital Region of Denmark, patient involvement strengthened patients' ability to self-care, increased patient safety and had an effect on patients' sense of safety and quality.<sup>19</sup> In 2006, the Danish cancer society published a report, pointing at a healthcare system ignoring and downgrading a number of cancer patients' needs.<sup>20,21</sup> In the following years, Danish patient organizations and politicians focused on identification and inclusion of patients' experiences of and involvement in treatment and care.<sup>22</sup> Since 2009, an annual Danish nationwide survey including 250,000 patients' experiences is done in order to stimulate systematic feedback to Danish hospitals.<sup>23</sup> Despite the obvious advantages, these surveys did unfortunately not cover the radiological departments which could have provided important knowledge. Furthermore, patient experiences are rarely demanded in radiology, and seem to be a neglected area of research.<sup>24</sup> Therefore, exploring patient experiences in radiology may help to identify areas for improvement in a highly technological and productive field, which might lead to improvement of cancer patients' experiences.

## Methods

### Design

The approach of the study is rooted in a qualitative tradition. We conducted a study with semi-structured individual interviews inspired by a phenomenological tradition.<sup>25</sup> The study included participants diagnosed with cancer and in a need of a CT examination as part of the course of treatment. The study was reported according to The Consolidated Criteria for Reporting Qualitative Research.<sup>26</sup>

### Participants

Participants were recruited consecutively during a planned routine surveillance follow up CT examination at the hospital.

### Inclusion criteria

We included outpatients with cancer, a history of at least three follow-up CT examinations in different CT rooms by the time of our approach, cognitive well-functioning (patients, who by themselves were able to understand and answer questions) and able to communicate in Danish.

### Setting

The CT examinations of oncological patients were performed in alternating CT scanners and rooms. Some of the CT examination rooms were traditional with open shelves with supplies, sterile and practical interior and some in a more modern and patient friendly design. The modern CT examination rooms were decorated with artificial skies in the ceiling, calm music, and patient identification visible on the CT scanner. The examination rooms were designed to stimulate patients not to feel alienated by the hospital environment. There were no designated waiting rooms in the department, and patients were waiting for the CT examinations along corridors. Furthermore, corridors often appeared like busy traffic junctions crowded with health professionals, patients and hospital beds passing. All the participants had an oncological follow up CT examination with an approximate duration in the examination room of 20–30 min.

### Approach

The participants were contacted in the radiology department by two members of the research group (HR, LK), who informed about the study and asked for voluntary participation. Eligible patients accepting the invitation were included and represented the group of participants. *Patients were all approached after their scan as we believe that an approach before the scan could influence patient's experiences and assessments.*

Following the approach in the department, the participants were contacted within a week by telephone (MPK) to ensure that the participants had understood their contribution to the project. Furthermore, date and place for the interview was settled, and the participants were informed about full anonymity.

### The research group

The research group consisted of five members (MPK, HR, KFG, KF, LK) with diverse experiences as interviewers. To ensure a uniform approach, the pre-understandings of the individual interviewer were explored to clarify the prejudices of the interviewers. Furthermore, the research group discussed the theory about pre-understanding, in order to meet the participant with an open mind, and to let the participants story guide the interview.<sup>27</sup> In addition, the research group trained methods of interviewing, and after each interview the research group reflected on the completed interview sessions.

### Semi-structured interviews

The semi-structured interviews were conducted by the research group and interviews were set up either in a quiet room at the hospital or at the participant's home, by choice of the participant. The interviewer did not have any prior knowledge of the participant.

The interview began with an open question: "Please tell me about a CT examination you have participated in". The follow up questions related to the participants' experience and were guided by the interview guide (appendix 1) designed to determine the relationship between the patient and the radiographer doing a CT examination.

Using a funnel based approach and an open interview style the interviews focused on the patient experience.<sup>27</sup> All interviews were recorded and transcribed verbatim.

### Analysis

Qualitative content analysis was applied based on an inductive approach in accordance with analysis aimed at identifying meaning.<sup>27,28</sup> Three interviews were analyzed in unison by the author group (HR, MPK, LK, AKD), in order to gain a joint understanding of the method of analysis. After this step, the text was read and re-read by three of the authors (HR, MPK, LK) and the text was coded after identification of meaning units and condensation of meaning. Following this, themes were actively constructed by joint identification, discussion and formulation by all authors to increase validity of the findings. Finally, themes were narratively described using quotations where appropriate.

### Ethics

The study followed the guidelines described in The Declaration of Helsinki, including written and oral information to the participant, information about the possibility to withdraw from the study without any consequences, and written and oral consent to participating in the study.<sup>29</sup> All data were anonymized. According to Danish law, the study was exempt from approval by the Science Ethics Committee. Furthermore, the study was approved by The Danish Data Protection Agency (Journal 2014-54-0639).

### Results

During the study period from May to June 2014, we approached 26 patients who consented to inclusion. Five patients withdrew their participation on the day of the interview or during the consenting phone calls due to advanced disease or decline in the general condition at the time. Finally, we interviewed 21 patients (14 men and 7 women) (Table 1).

Four main themes were constructed as part of the analysis.

1. The professional radiographer
2. Disease and treatment
3. The examination environment
4. While waiting

1. The professional radiographer

The radiographers' ability to establish relations with the participants was important. The use of humour, small talk, eye contact

and showing a sincere interest in and empathy for the participant were described as necessary competencies. It was also important for the participants not to perceive themselves as being an inconvenience to the radiographer, especially if the radiographer appeared busy or the time was close to change of shift.

*"It's not that you [the radiographer, ed] have to know a lot about my disease – I do not need that. But empathy - yes, general kindness. You should not look like you do not care about the patients. There have been times, when they made me feel like that - it may of course have been a stressful day [for the radiographer, ed], but that is no excuse."* (Interview 7)

The radiographers should prepare for each patient in advance and consider each patient as an individual human being with different medical histories. It was important to the participants, that the radiographer had read the referral notes in order to be well informed and prepared. The radiographer should also consider patients' previous experiences regarding CT, as the information given in the CT examination room tended to be repetitious.

*"They [the radiographers', ed] always ask the same questions, as if I have not been there before. Are they not able to see it in my papers?"* (Interview 17)

The participants preferred being asked about previous CT experiences, such as administration of contrast and whether their veins are difficult when inserting the peripheral venous catheter (PVC) to avoid mistakes.

*"I simply do not feel they [the radiographers, ed] know, who they have in the scanner".* (Interview 20)

Having difficulties with inserting the PVC were accepted by the participants, as long as the radiographers were attentive and acted on prior knowledge about the patient.

The procedure of inserting of a PVC was in general connected to experiences of difficulties, and participants preferred to wait for the right radiographer, and stressed the advantages of belonging to a specific team of radiographers.

*"Well, that's fine, I can wait all day for the right one [the radiographer, ed]. I know there is one who is really good at inserting the needle [PVC, ed]".* (Interview 2)

One participant would like to be able to book a specific radiographer, as this radiographer was perceived to be an expert of insertion of PVC.

A few of the participants would like to have influence on booking future CT examinations. An online CT booking system would make it easier for the participant to do their professional job.

*"Imagine if there was a booking system where I could book my appointment and also add special needs".* (Interview 3)

The participants did not mention anything about the radiographers' ability to handle the technological part of the CT examination. But in general, being able to ask for help from a colleague was tied to an understanding of professionalism.

2. Disease and treatment

The course of the participants' disease and treatment was often described by the participants as extended and complicated.

**Table 1**  
The Participants Demography and Cancer diagnosis.

Demography and Cancer diagnosis	
Participants	n = 21
Female	7 [14]
Age [median, range]	68 [43–73]
Primary Cancer diagnosis	
Uterus	1
Prostate	1
Bladder	1
Pancreas	1
Mamma	4
Lung	5
Colorectal	3
Sarcoma	2
Gall bladder	1
Liver	2

The participants described how, their disease had occurred suddenly with no warning signs and was for some seemingly detected by chance. Others reported complications, misdiagnoses or symptoms that were simply overlooked.

The participants reflected on the changes that the disease imposed on their lives. For some, life conditions changed from being employed and having plans for the future to be an oncological patient with no foreseeable prospects for life.

The participants only looked a few months or even weeks ahead and described how the letter of invitation for the scan halted their lives until the result was presented.

*"I have a life that only progresses 3 months at a time". (Interview 20)*

The participants expressed fear while waiting for the CT result. They often waited between 10 days and 3 weeks for the result and most of the participants would have preferred to have the result when leaving the CT examination room.

The period, while waiting on the result was long and loaded with anxiety and a feeling of a life on standby, with no desire to make plans.

*"I do not feel like doing much. I am not down and depressed. But you think about it, which means, you are not able to do much. The rest of the family they want to make plans and travel. I do not feel like it during that period" (Interview 7)*

### 3. The examination environment

The participants noticed the differences between the CT examination rooms, only a few could not tell the difference. The newest room was described as clean, peaceful, and exquisite.

*"I have been to a lot of CT examinations. The new room with the sky, is nice. It is just a blue sky, but I am more relaxed. One day, I had to go to another CT scanner, and the room was so depressing!" (Interview 2)*

Moreover, the participants experienced a feeling of safety, when recognising ones' name on the scanner.

Only few of the participants listened to music during the CT examination, and seemed to enjoy it. In contrast, the temperature in the room was described as cold and one of the participants made inferences between difficulties with insertion of the PVC due to shrinking veins because of the temperature in the room.

Most of the participants had experienced different modalities such as Magnetic Resonance Imaging (MRI), Positron Emission Tomography/Computed Tomography (PET/CT) and CT etc. and many participants had years of experience.

The participants preferred CT as one of the most comfortable of them all due to short time, more space in the scanner and overall an easier examination. In general, the participants were not nervous while lying in the CT scanner, especially not the second or third time. But some expressed a feeling of loneliness, loosing sense of time or being in an unmanageable position when the radiographers had left the examination room. Therefore, participants stressed the importance of having some kind of contact with the radiographer while lying there.

*"It means a lot when somebody is talking to me through the speaker. It means that the solitude is interrupted. It is like I am not alone, even though I am alone in the room. I feel constantly there is someone who takes care of the situation and I can relax". (Interview 6)*

### 4. While waiting

The experiences while waiting were described in different ways and participants divided their experiences in two areas: the surroundings and the interaction in the waiting area.

The participants described the feeling of being part of a production line while waiting, and the passing of critically ill patients affected them emotionally.

*"I am sitting there in the middle of everything. The porter with carriages, and patients in beds passing- and I think" God, is it me lying there in a year? "You are reminded of the possible outcome. Because you are sitting right there. I do not think that is nice" (Interview 12)*

The interaction with health professionals while waiting was important for many of the participants. They observed white uniforms passing by without taking any notice of the waiting patients, and private conversations between health professionals were sometimes perceived as an uncomfortable experience.

*"There are some, health professionals, who say hello and smile. But not many, even though there are a lot of health professionals on the corridors. Why not look at people and smile. It makes me feel welcome. You also do that in the street" (Interview 7)*

Most of the participants did not report waiting time. They seemed to understand the need for acute CT on critically ill patients and waiting time was accepted, as long as the radiographer informed the participants.

## Discussion

The aim of this study was to explore oncology patients' experiences of a CT examination and needs for relationships and communication with the radiographer. The results pointed at four major themes: (1) the professional radiographer, (2) disease and treatment, (3) the examination environment and (4) while waiting.

The results showed that the relationship with the radiographer was important for the overall experience during a CT examination. Furthermore, it was important being acknowledged as an individual person, and being involved in the examination depending on earlier experiences. These results correlate with other studies where the importance of relationship between healthcare professionals and patients are one of the most important factors regarding good communication and experiences.<sup>30–32</sup> Our study suggested, that the radiographer needed to have high competences within formation of relations with patients. The participants' reflections and experiences seemed to focus on the relationship with the radiographer. Whereas the technological aspects of an examination were not directly observed by the participants and therefore not mentioned.

The education of radiographers in Denmark has changed over years, the academic level has increased, and the clinical educational practice decreased. The theoretical part of the education is equally parted between technology and non-technology theory such as communication, ethics, philosophy, psychology and sociology, whereas the technology was dominant previously. At the same time, the period for practical training in a clinical ward in Denmark was reduced from 17 weeks in 2004 to 2 weeks in 2009. Part of the aims of the practical and clinical training in the ward was to improve and practice students' skills within communicative skills and the ability to sense and respond to patients' diverse needs. These skills were presumed to be prerequisites for establishing

relationships between the radiographer and the patient.<sup>30,33</sup> A recent study indicated that factors influencing the development of professionalism among radiographer students were formal (studies) - and hidden curricula (influences and unwritten rules in the organisation among peers) which underlined the necessity of practical training.<sup>34</sup>

Furthermore, the radiographer worked under a fixed time limit, and therefore the capacity to understand patients' emotions and react correspondingly required focus, training and specific competencies. Possibly, there might be a lack of postgraduate training concerning this and a lack of special trained radiographers in this area, but this was not a focus in our study and should be studied further. Nevertheless, focused postgraduate training has been efficient in other departments and could be considered.<sup>35</sup>

Participants in our study described how life was put on a hold in between examinations and results from the examinations. This is in line with other studies suggesting that the risk of cancer recurrence leads to a feeling of anxiety.<sup>36</sup> As such, the radiological examination was only relevant to patients as it led to an assessment of the treatment effect and the CT examination was often just a minor part in the bigger picture. The radiographer needs to know this and respond accordingly, being able to decode the patient and react empathic to both verbal and non-verbal communication.<sup>37</sup> The results showed that the radiographers, in general, may improve their preparation of the patient's medical history, e.g., the issue of inserting a PVC which sometimes cause discomfort for the oncological patient. Many oncological patients have fragile veins due to treatment and many perforations. Therefore it could be difficult to insert the PVC or even find a usable vein.<sup>38–40</sup> It is essential to be seen as an individual human being and not the next patient in line.

Even though the CT examination is a short examination, the patients seemed to notice the differences between different examination rooms and they also stressed out the impact of skies in the ceiling, that make them feel less anxious. Other studies supported this finding, pointing at the positive outcome of patient friendly surroundings including representational images with themes relating to natural landscape.<sup>41,42</sup> Furthermore, the impact of contact on a waiting area should be acknowledged by all professions at hospitals. The waiting area for radiological examinations and the hospital environment in general should be considered in future hospital buildings.

## Limitations

Findings from an interview study cannot be generalized to all oncological patients' need for communication and relationship during a CT examination. Furthermore, when interviewing participants about previous occurrences it is possible that participants were not able to remember all occurrences in detail. However, the issue of relationship formation between radiographer and patient was so prominent that we believe it can be thematically transferred to other and similar clinical contexts.

We perceived it as a strength to be several interviewers, and we did try to minimize the effect of different interviewers, but we must admit that it is not possible to test if the interviewers performed the same.

## Conclusion

Findings of this study illuminated the need for relationship and communication with the radiographer during a CT examination, and need for the radiographer to meet and see the patient as an individual human being.

The professional society of radiographers need to discuss whether radiographers need specialised pre- or postgraduate education in establishing relations, communication, in order to keep focus on and maintain the highly specialised technological radiographers' non-technical skills.

## Conflicts of interest

The Author group and their institutions declare no conflict of interest.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2019.02.009>.

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