



## Workplace culture assessed by radiographers in Finland

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### ABSTRACT

**Introduction:** The purpose of this study was to describe workplace culture from the radiographers' point of view.

**Methods:** Data collection was carried out in 2017 using a structured electronic survey in Finland. The target population were radiographers of working age (N = 1808) - response rate 38% (n = 689). The questionnaire included background questions and The Nursing Context Index -instrument developed by Slater and McCormack. Workplace culture is described in the domains of work-related stress (36 items), job satisfaction (18 items), and practice environment (24 items). The respondents rated their level of agreement to statements on a seven-degree Likert-scale. Data analysis was performed using SPSS 24 -software.

**Results:** The results show that radiographers saw their workplace culture as slightly positive. They experienced some degree of stress caused mostly by workload, and least stress in relation to their career development. Radiographers were fairly satisfied in their work, with personal satisfaction featuring as the highest rated area of satisfaction, and pay and prospects as the lowest. The practice environment was perceived slightly positively. Radiographers wanted to stay in their current jobs, but felt that they had only a small degree of control over their work.

**Conclusions:** According to this study, workplace culture is experienced by radiographers on a moderate and slightly positive level. Because workplace culture is connected to quality of care and staff's work and organizational results, it is important to improve the culture that radiographers encounter, so as to create a healthy work community that offers productive and high-quality healthcare to patients.

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### Introduction

Technology has developed, and thus impacts on a radiographer's work content and changes its nature. As such, this requires more differentiated duties and expertise. Connecting a demanding level of technicality with caring brings challenges both to the radiographers' profession and the culture surrounding it, raising the question of whether we want to emphasize the technical or the caring processes involved in the role.<sup>1</sup> Workplace culture reflects the most immediate culture that healthcare staff and service users experience, and is directly associated with the quality of patient care delivered. It is also affected by aspects of organizational and corporate culture, as well as the operational and collaboration culture among staff.<sup>2</sup>

Workplace culture gives the work community its identity and originates from shared experiences. It includes working methods and unwritten rules that are shaped within time. Workplace culture can be described to form from manners that have been learned together, and helps staff to adjust to challenges and keep the work community united.<sup>3,4</sup>

Workplace culture has been found to be associated with quality of care, nurses' working habits, and organizations results,<sup>5</sup> and is also connected to organizational commitment and work satisfaction.<sup>6</sup> The more positive the workplace culture is seen to be, the more positive the attitude towards high-quality caring.<sup>7</sup> Different work units often form their own workplace cultures, which are based on having the same education, shared work, or shared experiences of the organization.<sup>3</sup>

Workplace culture can't truly be understood unless the core functions of the organization, operational environment, and employees' occupations are taken into consideration. The strength and stability of the culture is group based, although individuals hold on to specific basic assumptions to strengthen their own part in the

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group. To be able to understand workplace culture, one must understand the basis of that culture.<sup>3</sup> However, despite there being few descriptions of the radiographers' workplace culture, this topic can be studied for example through domains such as work related stress, job satisfaction, and the practice environment.<sup>8</sup>

Radiographers seem to experience less work-related stress than nurses.<sup>9</sup> However, radiography departments face a growing number of demands that are placed upon them.<sup>10</sup> The most common sources of pressure among radiographers are staff shortage and on-call demands,<sup>10,11</sup> a heavy workload, the volume of patients, and inadequate work facilities<sup>10</sup> and structural conditions.<sup>9</sup> Work-related stress among radiographers may lead to sickness absence, depression and decreased job satisfaction, and the quality of working life, and may impact on the radiographers' behavior during service delivery.<sup>12</sup>

It is possible to predict work related stress through studying workplace culture. In order to prevent fatigue, the workplace culture must be molded towards fostering mutual support and collaboration. When looking at employees' intentions to stay in their current job, ones' view of ones' own workplace culture has been seen to be more significant than ones' view of the overall organizational culture.<sup>13</sup>

Job satisfaction among radiographers is multifaceted, and seems to be dependent on the individual, the working environment, and the context of work.<sup>14</sup> Only a limited amount of international literature is to be found regarding the job satisfaction of radiographers.<sup>11</sup> Some of the factors effecting a radiographer's job satisfaction are the degree of control they have over their work environment,<sup>15</sup> job characteristics,<sup>16</sup> and the leadership style they experience.<sup>15</sup> Radiographers are satisfied with the work itself, the use of technology, relationships they have between professions, relationships with patients, and their degree of autonomy.<sup>11</sup> Based on a literature review, Thom<sup>17</sup> concluded that advanced practice in radiography creates benefits for job satisfaction, as well as having a positive effect on costs and workload.

Radiographers have expressed dissatisfaction with their low wages and compensation, and poor career prospects.<sup>11</sup> Radiographers who had spent 28 years or more in the profession have been seen to have the highest satisfaction scores relating to overall job satisfaction, while the least satisfied were those who had worked 7–13 years as a radiographer. In particular, radiographers were strongly dissatisfied with their career prospects, salary, and the recognition they felt they were granted by physicians.<sup>11</sup>

It has been seen that a variation in job satisfaction exists between different work groups,<sup>5</sup> and radiographers seem to be more satisfied with their job than nurses.<sup>9</sup> A big part of a radiographer's intent to stay in their current job was seeing their workplace culture as positive.<sup>11</sup> Job satisfaction, well-being at work and organizational commitment are tightly connected,<sup>18</sup> and role enhancement leading to increased work satisfaction has been reported to occur in matters of the delivery of care, receiving support in work, as well as in relation to working conditions and lifestyle.<sup>19</sup>

A healthcare workplace that supports and empowers its professionals encourages employees to stay in their jobs. Feelings of autonomy, a chance to influence, and the possibility to do ones' work well have also been seen to strengthen intentions to stay in the current job.<sup>20,21</sup> The working environment also has a clear connection to recruiting and retaining care staff, and two of the most important things that impact evaluations of a quality work environment in healthcare are staff-oriented management and promoting staff autonomy.<sup>20</sup>

The research question guiding this study was: How do radiographers describe their workplace culture?

## Methods

### Study design

This study comprises of a cross-sectional survey and the data were obtained via an electronic questionnaire. The target population was all of the radiographers of working age who were members of one Finnish union, whose membership accounts for approximately 75% of Finnish radiographers. In Finland, the education required to be a radiographer takes 3.5 years full-time and takes place in Universities of Applied Sciences. After graduation, most radiographers find employment in a radiology department (including imaging, ultrasound, mammography, trans illumination, CT, MRI and angiography), or in a radiation therapy or isotope department. Most radiographers in Finland are employed by the public sector. After graduating as a radiographer, it is also possible to continue studying towards a Master of Health Sciences degree at university level.

### Questionnaire

The questionnaire consisted of two parts: questions concerning the background demographics of respondents (Table 1), and the largely reliable and widely validated Nursing Context Index (NCI) instrument produced by Slater and McCormack<sup>22</sup> which measures workplace culture from the viewpoint of health care staff. It consists of 78 items responded to by means of a seven-point Likert scale (Table 2). The items can be used to evaluate three workplace culture constructs of job stress (36 items), job satisfaction (18 items), and practice environment (24 items). The instrument has been widely used to investigate the perceptions of registered nurses' workplace culture in Finland (e.g.<sup>5,23,24</sup>). However, for this study the instrument was modified to assess the workplace culture of radiographers, meaning the title of 'nurse' was changed to 'radiographer'.

### Data analysis

Data were analyzed statistically using SPSS Statistics 24 software. A total of 22 sums of variables were formed from the workplace culture items in line with the NCI instrument instructions. Cronbach alpha values of the sums varied between 0.58 and 0.93. The values of the sums varied between 1 and 7, where a larger number meant a stronger identification with the statement.

Data analysis was performed using parametric and non-parametric tests: T -test, One Way Anova, Kruskal-Wallis H -test, and Mann-Whitney U -test. The sums of variables were used as explanatory variables, and background variables formed the explainable variables. The statistically significant limit was set at  $p \leq 0.05$  and the statistically highly significant limit was set at  $p \leq 0.001$ .

## Results

### Participants

The mean age of the respondents was 56 years ( $Q_1 = 49$ ,  $Q_3 = 60$ ). The mean of the years working as a radiographer was 29 years ( $Q_1 = 20$ ,  $Q_3 = 36$ ). Almost half of the respondents worked on day shifts during their working week (46%), and less than one third worked two (27%) or three (26%) different shifts. Most radiographers worked in a radiology department (87%) and in the public sector (83%). Respondents who worked in the public sector were mostly employed by university hospitals (41%). Most respondents in the private sector worked in private clinics (79%) (Table 1).

**Table 1**  
Radiographers background information (n = 689).

Background variable	n	%
<b>Gender (n = 680)</b>		
female	626	92
male	54	8
<b>Age (n = 669)</b>		
23–34	133	20
35–48	202	30
49–65	334	50
<b>Marital status (n = 662)</b>		
marriage/cohabitation	542	80
single/divorced/widow	120	18
<b>Working experience in healthcare (n = 678)</b>		
≤5 years	92	14
6–15 years	175	26
over 15 years	411	61
<b>Working experience in current job (n = 677)</b>		
≤5 years	206	30
6–15 years	236	35
over 15 years	235	35
<b>Working experience as a radiographer (n = 679)</b>		
≤5 years	106	15
6–15 years	190	28
over 15 years	383	56
<b>Working as a manager (n = 653)</b>		
no	563	86
yes	90	14
<b>Manager working experience (n = 89)</b>		
≤5 years	34	38
6–15 years	36	40
over 15 years	19	21
<b>Education (n = 683)</b>		
college	303	44
University of Applied Sciences	326	48
university	54	8
<b>Contract (n = 675)</b>		
permanent	617	91
temporary	58	9
<b>Employment (n = 677)</b>		
full-time	615	91
part-time	62	9
<b>Work shift (n = 679)</b>		
three-shift work	179	26
two-shift work	186	27
daytime	314	46
<b>Being on call (n = 663)</b>		
no	598	90
yes	65	10
<b>Communal rota planning (n = 654)</b>		
no	512	78
yes	142	22
<b>Employer (n = 680)</b>		
public sector	567	83
private sector	113	17
<b>Workplace (n = 667)</b>		
radiology department	588	87
radiation therapy department	56	8
isotope department	23	3
<b>Workplace sector (n = 639)</b>		
<b>Workplace in public sector (n = 549)</b>		
university hospital	224	41
central hospital	161	29
regional hospital	59	11
health center	105	19
<b>Workplace in private sector (n = 90)</b>		
hospital	6	6
private clinic	84	79

### Workplace culture

Overall, radiographers saw their workplace culture slightly positively. They experienced some degree of stress which was caused mostly by workload, and experienced least stress in relation to their career development. Variation existed from 'little stress' to

'moderate stress' among the different stress variables. Radiographers were fairly satisfied in their work, with personal satisfaction featuring as the highest rated area of satisfaction, and pay and prospects as the lowest. Variation existed from 'rather dissatisfied' to 'satisfied' among the different satisfaction variables. The practice environment was perceived slightly positively, with less variation seen among the variables. Radiographers wanted to stay in their current jobs, but felt that they had only a small degree of control over their work (Table 3).

Working experience as a radiographer and the work shifts undertaken were statistically significantly ( $p \leq 0.05$ ) related to overall job stress. Participants who had worked 6–15 years as a radiographer were the most stressed, as well as radiographers who worked shifts (Table 4).

Age, education, working experience as radiographer, working as manager, and work shift were statistically significantly ( $p \leq 0.05$ ) related to overall job satisfaction. Those most satisfied in their job were the oldest and most experienced radiographers, college (restructured later to be University of Applied Sciences) or university educated radiographers, and managers and radiographers who worked only day shifts (Table 4).

**Table 2**  
Seven-point Likert scale of NCI instrument.

Scale	Overall job stress	Overall job satisfaction	Overall practice environment
1	never	no stress	very dissatisfied
2	hardly ever	little stress	dissatisfied
3	occasionally	some stress	somewhat dissatisfied
4	sometimes	moderate stress	neither
5	often	a lot of stress	somewhat satisfied
6	very frequently	very stressed	satisfied
7	always	extreme stress	very satisfied

**Table 3**  
Radiographers experienced workplace culture with median, lower and upper quartiles and Cronbach alpha coefficient for each factor and their construct.

Workplace culture	Items	Md	Q <sub>1</sub> , Q <sub>3</sub>	$\alpha$
<b>Overall job stress</b>	<b>36</b>	<b>2.47</b>	<b>2.08, 2.89</b>	<b>0.93</b>
Workload	5	3.40	2.80, 4.20	0.91
Inadequate preparation	3	2.67	2.00, 3.33	0.79
Lack of staff support	3	2.33	2.00, 3.33	0.74
Lack of communication and support	5	2.40	2.00, 3.00	0.77
Work–social life balance	4	2.25	1.50, 3.00	0.77
Working environment	4	2.00	1.50, 2.75	0.80
Uncertainty regarding treatment	4	2.25	1.75, 2.75	0.66
Conflict with other radiographers	4	2.00	1.75, 2.50	0.58
Career development	4	2.00	1.25, 2.50	0.75
<b>Overall job satisfaction</b>	<b>18</b>	<b>4.78</b>	<b>4.22, 5.32</b>	<b>0.89</b>
Personal satisfaction	5	5.40	5.00, 6.00	0.81
Professional satisfaction	5	5.00	4.40, 5.60	0.76
Satisfaction with training	3	5.00	4.00, 6.00	0.92
Satisfaction with pay and prospects	5	3.80	3.20, 4.60	0.83
<b>Overall practice environment</b>	<b>24</b>	<b>4.38</b>	<b>3.83, 4.96</b>	<b>0.90</b>
Intention to leave <sup>a</sup>	3	6.00	4.00, 7.00	0.93
Radiographer–doctor relationship	3	5.00	4.33, 6.00	0.84
Radiographer management	7	4.29	3.71, 4.89	0.73
Adequate staffing and resources	4	4.25	3.25, 5.25	0.85
Organisation commitment	3	4.00	3.33, 4.67	0.73
Empowerment	4	3.75	2.75, 4.50	0.86

Possible value variation between 1–7, 1=never/no stress/highly dissatisfied/far apart –7 = always/extreme stress/very satisfied/highly agree.

<sup>a</sup> The higher the value, the more likely the participant is to stay in their workplace, implying a lower intention to leave.

**Table 4**  
Background variables connection to overall job stress, overall job satisfaction, and overall practice environment.

Background variable	Overall job stress md (Q <sub>1</sub> , Q <sub>3</sub> )	p	Overall job satisfaction mn (sd)	p	Overall practice environment mn (sd)	p
<b>Gender</b>		0.093		0.742		0.378
female	2.4 (2.1, 2.9)		4.8 (0.8)		4.4 (0.8)	
male	2.3 (1.9, 2.7)		4.8 (1.0)		4.5 (1.0)	
<b>Age</b>		0.719		<b>0.006</b>		<b>&lt;0.001</b>
23–34	2.5 (2.1, 2.9)		4.6 (0.8)		4.2 (0.8)	
35–48	2.4 (2.0, 2.9)		4.7 (0.6)		4.3 (0.9)	
49–65	2.4 (2.1, 2.8)		4.9 (0.8)		4.5 (0.8)	
<b>Marital status</b>		0.378		0.721		0.145
in relationship	2.4 (2.1, 2.8)		4.8 (0.8)		4.4 (0.8)	
no relationship	2.5 (2.2, 3.0)		4.8 (0.8)		4.3 (0.8)	
<b>Education</b>		0.094		<b>0.002</b>		<b>0.002</b>
college	2.4 (2.0, 2.8)		4.9 (0.7)		4.5 (0.8)	
university of applied sciences	2.5 (2.1, 2.8)		4.6 (0.8)		4.3 (0.8)	
university	2.5 (2.2, 3.2)		4.9 (0.9)		4.6 (1.1)	
<b>Working experience in healthcare</b>		0.177		0.088		<b>0.002</b>
≤5 years	2.3 (1.9, 2.8)		4.7 (0.7)		4.3 (0.7)	
6–15 years	2.5 (2.1, 2.9)		4.7 (0.8)		4.3 (0.8)	
over 15 years	2.4 (2.1, 2.9)		4.8 (0.8)		4.5 (0.8)	
<b>Working experience in current job</b>		0.674		0.112		<b>0.002</b>
≤5 years	2.4 (2.0, 2.9)		4.7 (0.8)		4.3 (0.8)	
6–15 years	2.4 (2.0, 2.8)		4.7 (0.8)		4.3 (0.9)	
over 15 years	2.4 (2.1, 2.8)		4.9 (0.7)		4.5 (0.8)	
<b>Working experience as a radiographer</b>		<b>0.016</b>		<b>0.001</b>		<b>&lt;0.001</b>
≤5 years	2.3 (1.9, 2.7)		4.8 (0.7)		4.3 (0.8)	
6–15 years	2.5 (2.1, 3.0)		4.6 (0.8)		4.2 (0.8)	
over 15 years	2.4 (2.1, 2.8)		4.9 (0.8)		4.5 (0.8)	
<b>Working as a manager</b>		0.743		<b>0.014</b>		<b>&lt;0.001</b>
yes	2.3 (2.1, 2.6)		5.1 (0.8)		4.8 (0.9)	
no	2.4 (2.1, 2.9)		4.7 (0.8)		4.3 (0.8)	
<b>Working experience as a manager</b>		0.079		0.599		0.343
≤5 years	2.3 (2.0, 2.6)		5.0 (0.8)		4.6 (0.9)	
6–15 years	2.3 (2.1, 2.5)		5.1 (0.8)		5.1 (0.7)	
over 15 years	2.5 (2.3, 3.1)		5.1 (0.8)		4.7 (1.0)	
<b>Contract (n = 675)</b>		0.541		0.532		<b>0.016</b>
permanent	2.4 (2.1, 2.8)		4.8 (0.8)		4.4 (0.8)	
temporary	2.5 (2.0, 3.0)		4.7 (0.7)		4.2 (0.9)	
<b>Employment (n = 677)</b>		0.421		0.908		0.833
full-time	2.4 (2.1, 2.8)		4.8 (0.8)		4.4 (0.8)	
part-time	2.4 (2.1, 2.8)		4.9 (0.9)		4.4 (0.9)	
<b>Work shift (n = 679)</b>		<b>0.012</b>		<b>0.030</b>		<b>&lt;0.001</b>
three-shift work	2.5 (2.1, 2.8)		4.7 (0.8)		4.2 (0.7)	
two-shift work	2.5 (2.1, 3.1)		4.6 (0.8)		4.2 (0.8)	
daytime	2.4 (1.9, 2.8)		4.9 (0.8)		4.6 (0.8)	
<b>Being on call (n = 663)</b>		0.479		0.279		0.183
yes	2.4 (2.1, 2.8)		4.8 (0.9)		4.6 (0.8)	
no	2.4 (2.1, 2.9)		4.8 (0.8)		4.4 (0.8)	
<b>Communal rota planning</b>		0.204		0.431		0.279
yes	2.3 (2.1, 2.8)		4.8 (0.8)		4.5 (0.8)	
no	2.5 (2.1, 2.9)		4.7 (0.8)		4.4 (0.8)	
<b>Employer</b>		0.508		0.873		0.741
public sector	2.4 (2.1, 2.8)		4.8 (0.8)		4.4 (0.8)	
private sector	2.3 (2.0, 2.9)		4.8 (0.9)		4.4 (0.9)	
<b>Workplace</b>		0.882		0.114		<b>0.010</b>
radiology	2.4 (2.1, 2.9)		4.7 (0.8)		4.4 (0.8)	
other	2.4 (2.1, 2.8)		4.9 (0.7)		4.6 (0.7)	
<b>Workplace in public sector</b>		0.054		0.267		0.062
university/central hospital	2.5 (2.1, 2.9)		4.7 (0.7)		4.3 (0.8)	
other	2.4 (2.0, 2.8)		4.8 (0.9)		4.5 (0.9)	
<b>Workplace in private sector</b>		0.299		0.680		0.827
private clinic	2.3 (1.9, 2.9)		4.8 (0.8)		4.4 (0.8)	
other	2.5 (2.3, 3.0)		4.8 (1.0)		4.4 (1.1)	

md = median, p = p-value, mn = mean, sd = standard deviation, Q<sub>1</sub> = lower quartile, Q<sub>3</sub> = upper quartile; value variation between 1 and 7. Bold value signifies p ≤ 0.05 = statistically significant, p ≤ 0.001 = statistically highly significant.

Age, working experience as a radiographer, working as a manager, and work shifts were statistically highly significantly (p ≤ 0.001) related to the overall practice environment. The oldest, most experienced radiographers, managers and radiographers who worked day shifts assessed their practice environment most positively (Table 4).

## Discussion

The results show that radiographers saw their workplace culture as slightly positive. They experienced some degree of stress which was caused mostly by workload, but experienced least stress in relation to their career development. Radiographers were fairly

satisfied in their work, and their practice environment was perceived slightly positively. Radiographers wanted to stay in their current jobs, but felt that they only had a small degree of control over their work. Earlier studies have shown that workload is a big stressor for radiographers,<sup>10,11</sup> and in this study, experienced stress was connected to the radiographer's work experience and their working in shifts, which is in line with earlier studies.<sup>10,11</sup>

Radiographers who worked in large departments, worked shifts, or had 6–15 years of experience as a radiographer, were widely seen to be more stressed than their colleagues. Previous research has also reported that staff in larger departments had more work-related stress,<sup>23</sup> and that staff with mid-length careers tended to experience greater job dissatisfaction.<sup>11</sup> Radiographers with short careers or those working in dayshifts were the least stressed in this study. It was also noted that radiographers working in radiology departments were less stressed than colleagues working in other departments (e.g. radiation therapy departments), which correlates with earlier findings that experienced stress tends to vary between different health care units.<sup>25</sup>

Within the overall area of job satisfaction, the highest domain was personal satisfaction and the lowest was satisfaction with pay and prospects. This has also been seen in earlier studies.<sup>11</sup> The least satisfied groups with their jobs were radiographers with mid-length careers and those who undertook shift work. Earlier studies have shown that staff with the longest careers tend to be the most satisfied in their job.<sup>11</sup> Radiographers in radiology departments were less personally and professionally satisfied than their colleagues, again corresponding with the findings of previous research.<sup>25</sup>

When looking at the overall practice environment, although radiographers didn't want to leave their current workplace, they didn't feel themselves to be sufficiently empowered in their work. Radiographers in larger departments saw their management, staffing, use of resources, and degree of empowerment less positively than colleagues in smaller departments. This is a particularly important observation, as an earlier study has shown that a radiographer's experience of empowerment and management has an effect on their levels of job satisfaction.<sup>17</sup> The practice environment was perceived most positively by radiographers with over 15 years of experience as a radiographer, by managers, and by radiographers who worked only on day shifts. Overall, in the practice environment, the radiographer-doctor relationship and also the nursing management were areas viewed most negatively in radiology departments.

#### Limitations of the study

It is acknowledged that the NCI instrument was originally developed to be used among registered nurses, and has not been previously used to investigate radiographers' perceptions of their workplace culture. While the instrument consisted of general statements concerning the workplace culture in health care, this was not thought to hinder its use in other clinical contexts. However, to aid its transition, some terms of the original instrument were modified to better reflect the clinical context of radiographers.

One particular limitation of the study is seen in the low response rate (38%), and thus the views of a large proportion of the target group were not reflected in this study. A major sector of the respondents were those who had worked for a long time as radiographers, and so the study results may not adequately represent the perceptions of those who are younger or have worked as radiographers for a shorter period. Thus, whilst these points must be taken into account when generalizing the study results to all Finnish radiographers, the findings are reliable within the pre-conditions mentioned. A further observation is that although the

response rate may have been statistically low, the resultant sample was still quite large (689 respondents), so yielding a significant volume of data.

A particular strength of this study is that it was a national survey, with a large target population and sample size. Additionally, the instrument used has been widely employed in other studies, and been found to be both valid and reliable.<sup>5,22–24</sup> However, future studies would benefit from using other methods (especially those of a qualitative nature) that might further the understanding of workplace culture in this clinical context.

#### Conclusions

The results of this study are only slightly positive, so attention must be paid to improving the radiographers' workplace culture, in order to create an empowering workplace which they are committed to. On a positive note, radiographers who responded to this survey only expressed a small intention to leave their current job, which offers a positive starting point for any workplace development initiatives. Radiographers should therefore be involved in developing their workplace culture as they already seem to be committed to their job.

Radiographers with mid-length work experience, radiographers who undertook shift work, and those who worked in large departments viewed their workplace culture consistently less positively than colleagues in other groups. Thus, when developing radiology departments, it is important to invest in these particular groups. Also, because the radiographers' field of work is constantly developing and expanding, it is important to devote time and effort to developing radiographers' work units, their work methods and practices alongside radiographers, so that the profession develops along with new demands, and radiographers can feel empowered in their work.

#### Conflict of interest

None.

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