COMPARISON OF MEDICAL IMAGING TECHNIQUES PROGRAM STUDENTS' KNOWLEDGE OF INFECTIOUS DISEASE PROTECTION BASED ON CLASS PARAMETERS

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Abstract: *The aim of this study is to measure the knowledge of the students who do practice/internship/skill training in diagnostic radiology units of hospitals in Çanakkale Onsekiz Mart University Vocational School of Health Services, which provides radiology education in Çanakkale province, about protection from infectious infections and to compare the knowledge levels of 1st and 2nd year students about protection from infectious infections. A total of 130 individuals, 65 first-grade and 65 second-grade students, were included in the study. Demographic information form and infectious diseases risk awareness and prevention scale were used as data collection tools. In the study, no statistically significant differences were found in the total and sub-dimension scores of the scale according to the class parameter of the participants (p>0.05). As a result, it was determined that infectious disease awareness and prevention behaviors did not show statistical differences according to the class parameter. In this context, it would be useful to include these subjects in vocational education courses in schools in order to ensure that radiography students have an adequate understanding of infection prevention and control practices.*

Keywords: **Infectious Disease, Hygiene, Medical Imaging Technician.**

1. INTRODUCTION

Nosocomial infections or healthcare-associated infections are infections you can get while in a healthcare facility. These infections can occur during the provision of healthcare for other diseases and even after patients have been discharged. In addition, they include occupational infections among medical staff. As these infections occur during hospitalization, they cause prolonged hospitalization, disability and economic burden [1]. Radiology workers are constantly exposed to various infectious diseases while performing their duties. This poses a challenge in managing this exposure due to the diversity of X-ray, computed tomography, magnetic resonance imaging, etc. [2].

Radiology departments play an important role in the diagnosis and treatment of diseases, but the complexity of their practice protocols and the large number of patients make them vulnerable to healthcare-associated infections. To prevent healthcare-associated infections (HCAI) from a variety of sources, it is vital to follow standard infection control measures (SICP), such as hand hygiene, use of personal protective equipment and safe disposal of waste [3].

SICPs, including routine cleaning of departments and personal hygiene practices, form the basis of infection control measures implemented in radiology

departments. [4]. Prevention of HAIs in radiology is an important responsibility of radiographers working in these departments. In addition, they may be required to travel between departments of the hospital for portable radiography. Therefore, radiographers need to have adequate knowledge, awareness and skills related to infection control to minimize the transmission of infectious diseases [5].

Radiographers and radiography students are reported to have different levels of knowledge about infection prevention. As a result of a study conducted among radiation technicians, it was reported that they had moderate level of knowledge and practice on infection control [6].

The aim of this study was to evaluate the knowledge and practices regarding infection control measures during radiologic procedures among radiography associate degree students in Çanakkale.

2. MATERIAL AND METHOD

Study Design and Participants

The population of the study consisted of Çanakkale Onsekiz Mart University Vocational School of Health Services students (n=130) who went to diagnostic radiology units of hospitals in Çanakkale province for internship/practice/skill training.

Infectious Diseases Risk Awareness and Protection Scale

The Infectious Diseases Risk Awareness and Protection Scale developed by Ener and Çetinkaya [7] to measure the risk awareness and protection status of infectious diseases; is a five-point Likert scale consisting of 36 items and six sub-dimensions: 'Common Life Risk Awareness' consisting of nine items, 'Personal Protection Awareness' consisting of eight items, 'Prevention Behaviors' consisting of eight items, 'Hand Washing Behaviors' consisting of three items, 'Social Protection Awareness' consisting of four items, and 'Personal Contact Awareness' consisting of four items, respectively. The total variance explained was 45.2% and the standardized coefficients were significant at 99% confidence level. The indexes testing the model fit fulfill the fit criteria. The total Cronbach α value of the scale is 0.91 and the dimensions are between 0.60-0.78. The Spearman-Brown coefficient is 0.86 and the test-retest correlation value is 0.95. Awareness items

are scored as 'Strongly Disagree (1 point)', 'Disagree (2 points)', 'Undecided (3 points)', 'Agree (4 points)', 'Strongly Agree (5 points)'. Behavior items are scored as 'Never (1 point)', 'Very Rarely (2 points)', 'Occasionally (3 points)', 'Usually (4 points)', 'Always (5 points)'. There are no reverse coded items. An increase in total score indicates an increase in the level of risk awareness and protection against infectious diseases. Scores obtained from the scale range from 36 to 180 and there is no cut-off point. The increase in the total score obtained from the scale can be interpreted as an increase in the general risk awareness and protection levels of individuals towards infectious diseases.

Data Collection and Analysis

The questionnaires used in the study were completed face-to-face/online, and the total time required for all questionnaires ranged between 20 and 30 minutes. SPSS 25.0 package program will be used for data analysis. The mean and standard deviation, were shown with the descriptive statistical analysis of the items. The Chi-square, Mann–Whitney U test and the Kruskal–Wallis test were used for the data analysis. For statistical significance, a p-value of <0.05 at a 95% confidence level was considered significant.

Limitations of the Study

Participants were recruited through voluntarily and were required to meet certain inclusion criteria, such as being between the ages of 18 and 45 and having no history of mental health conditions.

Ethical Aspects of the Research

All participants provided written informed consent, adhering to the principles outlined in the Declaration of Helsinki, and the Postgraduate Education Institute Ethics Committee Scientific Research and Publication Ethics Committee of Çanakkale Onsekiz Mart University approved the study (Project No: E-84026528-050.01.04-2300263581).

3. RESULTS

Demographic characteristics of our study in which 130 students participated are given in Table 1.

Table 1. Demographic Characteristics of The Study

	Grade 1	Grade 2	P Value
Age (Mean±Sd)	20.05±4.32	21.09±1.82	0.49
Gender			0.83
Male (n,%)	15 (23.1)	16 (24.6)	
Female (n,%)	50 (76.9)	49 (75.4)	
***sd:standard deviation**			

The mean age of the 1st grade was 20.05±4.32, while the mean age of the 2nd grade was 21.09±1.82 (p=0.49). While 76.9% of the 1st graders were female, 75.4% of the 2nd graders were female. There was no statistical gender difference between the classes (p=0.83) (Table 1.).

Table 2. Comparison of Infectious Diseases Risk Awareness and Prevention Scores by Grade Level

Scale Sub-Dimensions	Academic year	n	$\bar{X}$	ss	P Value
Common Life Risk Awareness	**1 st year**	65	32.48	5.76	0.10
	2 nd year	65	34.22	6.37	
Self-Protection Awareness	**1 st year**	65	33.46	4.51	0.07
	2 nd year	65	34.82	4.02	
Protection Behaviors	**1 st year**	65	32.51	4.43	0.64
	2 nd year	65	32.91	5.23	
Handwashing Behaviors	**1 st year**	65	13.58	1.56	0.18
	2 nd year	65	13.12	2.24	
Social Protection Awareness	**1 st year**	65	15.68	2.26	0.75
	2 nd year	65	15.81	2.60	
Personal Contagion Awareness	**1 st year**	65	18.34	1.84	0.93
	2 nd year	65	18.37	2.22	
Scale Total Score	**1 st year**	65	146.05	15.44	0.26
	2 nd year	65	149,34	18.31	

There was no significant difference between the total score and sub-dimension scores of the infectious diseases risk awareness and prevention scale between the 1st and 2nd grade students among the participants in the study. (p>0.05).

4. DISCUSSION

It is important to determine the basic level of knowledge of medical imaging technician associate degree students who will work in radiology departments of health institutions regarding infection control practices in order to identify gaps in preventive measures. According to the results of this study, there was no statistical difference in the knowledge level of radiography students regarding infection prevention during radiologic procedures among their classes. The findings of this study are consistent with previous studies conducted in Sri Lanka [8] and Ghana [9].

Access to baseline data on associate degree students' understanding of infection prevention practices is important to identify gaps in preventive measures. [10, 11].

Hand washing is a basic behavior in the prevention of infectious diseases. In a study conducted on university students receiving health education, 70.8% of the students stated that they wash their hands frequently and 17.4% of them wash their hands after dirty contact [12]. This shows that individuals receiving health education attach more importance to hand hygiene.

In the hand hygiene guide published by the World Health Organization (2022), it is emphasized that programs for the training and motivation of healthcare workers are important in improving hand hygiene practices. The findings support the importance of improving hygiene practices and awareness-raising programs and are in line with similar studies in the literatüre [13, 14]. This situation shows that students have a similar knowledge structure about protection from infectious infections depending on their grades. This may be due to the fact that students' awareness of protection from infectious infections increased after the Covid-19 pandemic and that they took the infectious diseases and infection prevention course in the first grade.

It is based on the risk of exposure to infection and the transmission dynamics of the virus, taking into account the three modes of transmission of diseases: contact, droplet and aerosol. Therefore, necessary precautions should be taken to reduce the transmission and spread of infection based on procedures such

as personal hygiene, eye protection, use of goggles or face shields and gloves. In addition, the imaging room and equipment should be cleaned and decontaminated regularly as infection prevention measures [1, 2].

The limitations of this study are that only the students of the medical imaging techniques program in Çanakkale region were examined, the data were collected based on the self-reports of the participants, and a cross-sectional design was used. Therefore, there are limitations in terms of generalizability of the findings and establishing causal relationships. Its strengths are that it examines the effects of sub-factors for prevention in infectious diseases, makes reliable analyzes and provides useful suggestions on measures that can be taken.

5. CONCLUSION

In conclusion, it would be beneficial to include radiography students in vocational education courses during their first semester of study in order to provide them with an adequate understanding of infection prevention and control practices. Therefore, the findings of this study may be useful in developing infection control guidelines for students in radiology departments of health units in other universities.

Such activities can help to raise health and hygiene awareness among health workers and help to spread this awareness to the community. In addition, conducting more comprehensive, long-term and new studies by considering different health units will contribute to obtaining more comprehensive data on this subject.

Ethics Committee Approval: All participants provided written informed consent, adhering to the principles outlined in the Declaration of Helsinki, and the Postgraduate Education Institute Ethics Committee Scientific Research and Publication Ethics Committee of Çanakkale Onsekiz Mart University approved the study (Project No: E-84026528-050.01.04-2300263581).

Informed Consent: Informed consent was obtained from all participants.

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the manuscript, AEB, EA, TSA and SÇ revised the manuscript. All authors read and approved the final draft of the manuscript. All authors read and approved the submitted version.

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