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WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS IN MEDICAL COLLEGES OF THE NORTHERN PHILIPPINES BASED ON THE COMMISSION ON HIGHER EDUCATION MEMORANDUM ORDER

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ABSTRACT

An internship is a professional learning opportunity that provides students with relevant, hands-on experience in their chosen field of work. Students can explore and improve their careers as well as acquire new skills related to their area of specialization. It opens the door to creating a pipeline for future employees. The main objective of this study is to determine the work performance of the Radiologic Technology Interns in Medical Colleges of Northern Philippines. A descriptive- inferential approach using the clinical evaluation tool was employed to elicit data on the 39 chosen respondents through simple random sampling. Work Performance data were collected from the clinical preceptors from the affiliated hospitals of Medical Colleges of Northern Philippines. Results showed that most respondents were female (79.5%). Majority of the respondents were affiliated in private hospitals, highlighting their predominant presence within the healthcare landscape in Medical Colleges of Northern Philippines. The overall work performance of the Radiologic interns in terms of technical? Scientific knowledge, proper work attitude, ethical practice, radiation safety and protection, and patient care management that was based on the Ched Memorandum Order were strongly agree. Test of difference revealed that there was a significant difference in assessing work performance across different hospitals affiliation ($p>0.05$) but there was no significant differences in the type of hospitals were the interns are assigned ($p<0.05$). The findings can help to provide comprehensive training program and improve the work performance of the Radiologic Interns.

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Key words: *Work Performance;Technical Skills; Ethical Values, Work attitude; patient care; radiation safety and procedure*

INTRODUCTION

Internships are an effective way of gaining experience, exposure to the actual world of work, and pertinent knowledge, skills, and making valuable connections in a particular profession. Through internships, students may improve their communication skills, become more perceptive, and build their self-confidence. The internship is based on the requirements reflected in the program curriculum designed in such a way that students will acquire basic concepts, attitudes, and skills and will have exposure to the profession necessary for successful entrance and placement in the industry upon graduation. To ensure that students will have program-related and career-related work experience, students are placed in training areas that are aligned with their courses. The required number of hours to render depends on the specific course of the student The clinical education in Radiologic Technology provides clinical learning experience that allows the students to apply the theoretical principles essential to the practice of the profession (Giordano, 2008). Winesman, Malik, Morison, & Balkoski (2009).It develops students' confidence in their abilities and cultivates critical thinking and problem solving skills as well as inculcating the value of professional growth and development. It is a set planned program designed to help students acquire leaning to develop student's full potential (Canberra Secondary School, 2015). Student clinical performance is evaluated based on the accurate reflection of each student's clinical skills. Clinical education should be objective based evaluation to recognize students both superior and failing performance, free from bias. Performance feedback should deliver in constructive manner (AJR, 2012). An educational plan identifies what will student do, how the student be assessed and the criteria for acceptable performance. Miller's pyramid is an example of this assessment method. The evaluation component of the plan is design to determine whether students are mastering the goals of the clinical experience designed to prepare competent professionals. The purpose of this study is to contribute and give more idea in the work performance of Radiologic Technology interns in Hospital setting.

METHODOLOGY

The methodology being used in this study was presented in this chapter. It included the research design, respondents, data gathering tool, data gathering procedure, and data analysis or statistical treatment for the data being collected.

Research Design

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Descriptive-inferential approach: In this study, the researchers used a descriptive approach to describe the data or outcomes using the scales that were constructed and adapted in the questionnaires. The researchers also integrated an inferential approach to represent the Radiologic technology interns of MCNP with the results that was produced in the study. This is appropriate in the study as it describes the work performance of Radiologic Technology Interns based on CHED Memorandum Order.

Respondents of the study

The study's respondents were thirty nine (39) BSRT interns from the Medical Colleges of Northern Philippines. By impartially and randomly choosing the volunteers from their target community, the researchers used a simple sampling technique, this method chooses participants without any systemic bias, which may improve the generalizability of the study's finding.

Data Gathering Tool

For the purpose of this research, a self-made questionnaire was used as the data gathering tool for this study. The tools were divided into two (2) which the first part will assess the respondent's profile according to their sex, hospital affiliation, type of hospital, and area of rotation. The second part is a four (4) Point Likert scale to determine the work performance of Radiologic Interns according to the CMO. Data collection was important for research as it provides information about the target of the study, including their opinions, skills, and experiences. This study used a survey tool to establish ways of gathered data by a series of questionnaire aimed at gathering opinion, skills, and experience of the respondents in their different hospital affiliation.

Data Gathering Procedure

The researchers created the survey questionnaire and approved it by the Dean of the College of Radiologic Technology. Afterwards, the researchers made a request letter for approval to the Dean of the College of Radiologic Technology asking for the consent of the hospital for us to get information and data from the respondents. Upon completion, the researchers collected the questionnaires then the data was gathered, tallied, and tabulated for interpretation of analysis.

Data Analysis

The researchers used frequency, weighted mean, ANNOVA and Pearson -R in the interpretation of the data that is obtained from the survey. Frequency count and distribution by percentage. This was used to analyze the intern's sex, hospital affiliation, type of hospital, and area of rotation. Weighted Average. This was used to conduct a statistical analysis of the respondent's as they evaluate the work

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performance of the Radiologic Interns based on CMO in terms of technical skills/ scientific knowledge, proper work attitude, ethical practices, radiation safety and procedures and patient care. We also used a 4-point Likert scale, with 3.25-4.00 representing STRONGLY AGREE, 2.50- 3.25 representing AGREE, 1.75-2.29 representing DISAGREE, and 1.00- 1.74 representing STRONGLY DISAGREE. ANNOVA (ne-way ANOVA). This was used to determine statistical differences between intern's work performance based on the Commission on Higher Education Memorandum Order.

RESULTS AND DISCUSSIONS

This chapter comprises the analysis, presentation and interpretation of the findings resulting from this study. The analysis and interpretation of data is carried out based on the results of the questionnaire that deals with a quantitative analysis of data.

SEX	**FREQUENCY**	**PERCENTAGE**
MALE	8	20.5
FEMALE	31	79.5
TOTAL	**39**	**100.00**
HOSPITAL AFFLIATION	**FREQUENCY**	**PERCENTAGE**
DOCTOR RONALD P. GUZMAN HOSPITAL	8	20.5
ST. PAUL HOSPITAL OF TUGUEGARAO INC.	8	20.5
ISABELA UNITED DOCTORS MEDICAL CENTER	13	33.3
QUIRINO MEMORIL MEDICAL CENTER	6	15.4
PHILIPPINE ORTHOPEDIC CENTER	4	10.3
TOTAL	**39**	**100.00**
TYPE OF HOSPITAL	**FREQUENCY**	**PERCENTAGE**
Public	29	74.4
Private	10	25.6
TOTAL	**39**	**100.00**
AREA OF ROTATION	**FREQUENCY**	**RANK**
X-RAY	24	1
CT	9	2

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MRI	3	4
ULTRASOUND	5	3

In table 1.1 shows the profile of the respondents in terms of sex indicates that the majority of the respondents are female, constituting 79.5% of the sample, while male respondents make up the remaining 20.5%. This indicates that a significant proportion of the students enrolled in the Bachelor of Science in Radiologic Technology level 4 during their internship were female, highlighting a gender disparity in this field of study.

Table 1.2 shows the profile of the respondensts in terms of hospital affliation
Indicates that the majority of the respondents were affiliated with Isabela United Doctors Medical Center, which had the highest frequency and percentage at 33.3%. The Philippine Orthopedic Center had the lowest representation with 10.3%. This suggests that Isabela United Doctors Medical Center accepted a significant number of interns during their clinical rotation compared to other hospitals.

Following, in table 1.3 shows that the majority of respondents in terms of the type of hospital shows that 74.4%, were affiliated with private hospitals, while 25.6% were affiliated with public hospitals. This indicates a higher number of Radiologic Technology interns conducted their internships in private hospitals compared to public ones.

Lastly, In table 1.4 shows the profile of the respondents in terms of the area of rotation, it indicates that majority of our respondents during the profile distribution in terms of “area of rotation”. It shows that majority of the interns are rotated in X-ray area in their affiliating hospitals having a frequency of 24. On the other hand, the respondents that got the lowest area of rotation is the MRI having a frequency of 3. It is possible to draw the conclusion from this information that interns in the Isabela United Doctors Medical Center have the highest number of areas of rotation in X-ray. As well as the conclusion that they got the highest population in their clinical training.

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TABLE 2.1. **ASSESSMENT IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS BASED ON THE CHED MEMORANDUM ORDER IN TERMS OF TECHNICAL SKILS/SCIENTIFIC KNOWLEDGE**

TECHNICAL SKILLS/ SCIENTIFIC KNOWLEDGE	MEAN	DESCRIPTION
Perform procedures according to protocol.	3.63	STRONGLY AGREE
2. Positions the patient correctly during the procedure.	3.56	STRONGLY AGREE
3. Produces high quality radiographic images.	3.63	STRONGLY AGREE
4. Able to select proper technical factor.	3.59	STRONGLY AGREE
5. Position the patient without the assistant of other.	3.56	STRONGLY AGREE
6. Performs machine manipulation appropriately.	3.61	STRONGLY AGREE
7. Able to identify good criteria of a radiographic image.	3.49	STRONGLY AGREE
CATEGORICAL MEAN	**3.58**	**STRONGLY AGREE**

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The categorical mean for assessment in the work performance of the Radiologic Technologyminterns based on the CHED memorandum in terms of technical skills is 3.58 with a relative description of strongly agree. The statement that got the highest mean score is "Perform procedures according to protocol" and "Produce high quality of radiograph images" with the mean score of 3.63 with a relative description of strongly agree. On the other hand, the statement "Able to identify good criteria of a radiographic image" got the lowest mean score which is 3.49 with a relative descriptive of strongly agree. This implies the commendable level of technical skills and scientific knowledge among interns, reflecting positively on the effectiveness of radiologic technology education and training programs in Medical Colleges of Northern Philippines aligned with CHED guidelines.

According to Yu, Mohajer, and Eng (2022), a systematic reviewaimed to assess the generalizability of published deep learning (DL)algorithms for radiologic diagnosis. The studyfound that most externalvalidation studies of DL algorithms demonstrated diminished algorithmperformance on external datasets, with some reporting a substantialperformance decrease. This emphasizes the importance of including anexternal dataset to evaluate the generalizability of DL algorithms, which would enhance the quality of future DL studies. This research isrelated to our study on the work performance of radiologic technology interns in Medical Colleges of the Northern Philippines.

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TABLE 2.2. **ASSESSMENT IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS BASED ON THE CHED MEMORANDUM ORDER IN TERMS OF PROPER WORK ATTITUDE**

PROPER WORK ATTITUDE	MEAN	DESCRIPTION
1. Have a good working relationship with co-interns and radiologic technologists.	3.59	STRONGLY AGREE
2. Does not complaint on the given examination.	3.34	STRONGLY AGREE
3. Arriving early at work.	3.59	STRONGLY AGREE
4. Makes effort to put order in work.	3.59	STRONGLY AGREE
5. Ability to handle unexpected situation.	3.56	STRONGLY AGREE
6. Act with integrity and professionalism	3.56	STRONGLY AGREE
7. Respecting the idea of co-interns.	3.66	STRONGLY AGREE
8. Willing to acknowledge mistake.	3.63	STRONGLY AGREE
CATEGORICAL MEAN	**3.56**	**STRONGLY AGREE**

The categorical mean for assessment in the work performance of the Radiologic Technology interns based on the CHED memorandum in terms of Proper work attitude is 3.56 with a relative description of strongly agree. The statement that got the highest means score is "Respecting the idea of co-interns" with a mean score of 3.66 with a relative description of strongly agree. The statement that got the lowest meaning score is "Does not complain on the given examination" with a
mean of 3.34 with a relative description of strongly agree. This implies the interns possess both the technical skills required for the job and the interpersonal and ethical attributes necessary for fostering a collaborative and patient-centered work environment. the high level of agreement with statements related to proper work attitude, highlights the effectiveness of education and training programs in cultivating well-rounded professionals capable of
upholding standards of excellence in radiologic technology practice.

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According to Cruz, Campomanes, Belleno, and Alipio (2024), academic stress significantly impacts Radiologic Technology students' well-being and academic success in Iligan City, Philippines. The study aims to measure and address this stress by developing tailored stress management activities. The research utilizes an exploratory sequential
mixd-methods design, combining qualitative interviews with quantitative questionnaires to identify stressors and evaluate the effectiveness of stress management interventions.

TABLE 2.3. **ASSESSMENT IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS BASED ON THE CHED MEMORANDUM ORDER IN TERMS OF ETHICAL PRACTICE**

ETHICAL PRACTICE	MEAN	DESCRIPTION
1. Observe patient confidentiality and other provision of the patient's bill of rights.	3.61	STRONGLY AGREE
2. Practice code of ethics.	3.71	STRONGLY AGREE
3. Protect health and safety of patients.	3.73	STRONGLY AGREE
4. Asking permission when touching the patient.	3.78	STRONGLY AGREE
5. Maintain clear communication with the patient.	3.76	STRONGLY AGREE
6. Giving equal treatment to all the patient.	3.68	STRONGLY AGREE
7. Provide care base on need and without discrimination for all patient.	3.68	STRONGLY AGREE
8. Refrain from giving false hope or information.	3.73	STRONGLY AGREE
9. Accurate information about the radiologic procedures.	3.66	STRONGLY AGREE
CATEGORICAL MEAN	**3.70**	**STRONGLY AGREE**

The categorical mean for assessment in the work performance of the Radiologic Technology interns based on the CHED memorandum order in terms of Ethical Practice attitude is 3.70 with a relative description of strongly agree. The statement that got the highest means score is "Asking permission when touching the patient" with a mean score of 3.78 with a with a relative description of strongly agree. On the other hand the statement " observation confidentiality and other division of patient bill of right" got the lowest mean score which is 3.61 with a relative description of strongly agree. These implies the underscore the interns' commitment to upholding ethical standards in their professional practice, contributing to patientcentered care and trust in the healthcare system. The strong agreement with statements related to ethical practice reflects the interns' understanding of the importance of maintaining patient confidentiality, respecting patient rights, and providing care with integrity and

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compassion. Their commitment to practicing the code of ethics and protecting the health and safety of patients demonstrates a strong sense of professionalism and responsibility in their roles.

According to Chen et al. (2020), the COVID-19 pandemic has necessitated strict measures, including safe distancing, in hospital settings to prevent intrahospital transmission and ensure the continuity of vital services. These measures include dividing radiology teams into smaller subunits, adjusting shift schedules to reduce contact, altering communication methods to minimize physical interactions, and modifying mealtime practices to prevent disease transmission among staff.

TABLE 2.4. **ASSESSMENT IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS BASED ON THE CHED MEMORANDUM ORDER IN TERMS OF RADIATION SAFETY AND PROTECTION**

RADIATION SAFETY AND PROTECTION	MEAN	DESCRIPTION
1. Collimate the area of exposure.	3.59	STRONGLY AGREE
2. Prevents unnecessary patient radiation exposure.	3.68	STRONGLY AGREE
3. Restricts persons in the exposure area during the procedure.	3.66	STRONGLY AGREE
4. Closes the examination room during the procedure.	3.76	STRONGLY AGREE
5. Always wear personal dosimeter during work.	3.39	STRONGLY AGREE
6. Practice the principle of ALARA (distance, time, shielding).	3.68	STRONGLY AGREE
7. Ensure that the red light is on during exposures.	3.70	STRONGLY AGREE
CATEGORICAL MEAN	**3.64**	**STRONGLY AGREE**

The categorical mean for assessment in the work performance of radiologic technology in terms based on CHED memorandum order in term of radiation safety and protection is 3.64 with a relative

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description of strongly agree. The statement got the highest mean score is "close the examination room during the procedure" with a mean of 3.76 in a description of strongly agree. On the other hand the statement "always wear personal decimeter during work" got the lowest mean which is 3.39 with a relative description of strongly agree. This implies the interns awareness of the importance of radiation risk for patient themselves and other staff such as practice radiation and protection.

According to Frane and Bitterman (2020), radiation safety and protection are paramount concerns in various medical departments, including radiology, interventional cardiology, and surgery. The authors emphasize the importance of reducing unnecessary radiation exposure to mitigate potential risks for patients and healthcare workers.

TABLE 2.5. **ASSESSMENT IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS BASED ON THE CHED MEMORANDUM ORDER IN TERMS OF PATIENT CARE**

STATEMENTS	MEAN	DESCRIPTION
1. Explains and give clear instructions to patients prior to the examination.	3.73	STRONGLY AGREE
2. Prepare a supply of fresh gowns of patient's use.	3.73	STRONGLY AGREE
3. Provides privacy for patient's change of clothes before and after the procedure.	3.78	STRONGLY AGREE
4. Refrain from unnecessarily hurrying up patients to finish a procedure.	3.71	STRONGLY AGREE
5. Speak clearly, slowly and in non threatening manner	3.78	STRONGLY AGREE
6. Instruct the patient to remove the foreign object to prevent artifact in the image.	3.76	STRONGLY AGREE
7. Using other technique to produce image, when patient cannot tolerate the position	3.76	STRONGLY AGREE
8. Ensure the patients comfort during the procedure.	3.73	STRONGLY AGREE
9. Proper transferring of patient to the radiographic table or couch.	3.71	STRONGLY AGREE
CATEGORICAL MEAN	**3.74**	**STRONGLY AGREE**

The categorical mean for assessment in the work performance of radiologic technology in terms of patient care is 3.74 with a relative description of strongly agree. The statement got the highest mean

score is "Speak clearly, slowly and in non-threatening" with the mean score of 3.78 with a relative description of strongly agree. The statement "Refrain from a necessary hurrying up patients to finish a procedure" and "Transferring of patient to the radiographic table or couch" got the lowest mean score which is 3.71 with a relative description of strongly agree. This implies the dedication to provide compassionate and quality of patient care and enhancing their overall experience during radiographic procedure.

TABLE 3. **DIFFERENCE ON ASSESSMENT OF THE RESPONDENTS IN THE WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS TO THEIR PROFILE VARIABLE**

		WORK PERFORMANCE OF THE RADIOLOGIC TECHNOLOGY INTERNS				
VARIABLES		**TECHNICAL SKILLS/ SCIENTIFIC KNOWLEDGE**	**PROPER WORK ATTITUDE**	**ETHICAL PRACTICE**	**RADIATION SAFETY AND PROTECTION**	**PATIENT CARE**
SEX	**f/t-value**	.224	.019	.824	.345	.058
	p- value	.824	.985	.415	.732	.954
HOSPITAL AFFILIATION	**f/t-value**	4.038	3.847	3.039	6.097	2.914
	p-value	**.009 ***	**.011***	**.030***	**.001***	**.036***
TYPE OF HOSPITAL	**f/t-value**	1.391	1.417	1.011	1.905	.626
	p-value	.172	.165	.318	.065	.535

Assessment of work performance based on profile variables such as sex, hospital affiliation, and type of hospital. No significant differences were found based on sex across all performance measures. Significant differences were observed in technical skills/scientific knowledge (p=0.009), proper work attitude (p=0.011), ethical practice (p=0.030), radiation safety and protection (p=0.001), and patient

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care (p=0.036) based on hospital affiliation. No significant differences were noted based on the type of hospital across all performance measures, suggesting that hospital affiliation impacts performance more than sex or type of hospitals.

Summary of finding

Among the respondents, the majority of the respondent were female. Majority of the respondents were affiliated with private hospitals and affiliated in Isabela United Doctors Medical Center. Interms of of Area of Rotation, Based on the data, it indicates a significant focus on conventional radiography (x-ray) among the respondent There are (5) factors on the perceptions of the respondents on the assessment of Work performance of Radiologic Technology interns of Medical Colleges of the Northern Philippines based on CHED memorandum order. In terms of Technical Skills/Scientific Knowledge, the interns demonstrate a high level of proficiency in technical skills and scientific knowledge, as evidenced by their strong agreement with statements related to performing procedures according to protocol, producing high-quality radiographic images, and selecting proper technical factors. In the Proper Work Attitude the interns exhibit commendable work attitudes characterized by good working relationships, punctuality, integrity, and professionalism. The interns demonstrate a strong commitment to ethical practice, including patient confidentiality, respect for patient rights, and care provision without discrimination. In terms of Radiation Safety and Protection, interns prioritize radiation safety and protection, as evidenced by their strict adherence to safety protocols and practices. The interns demonstrate a high level of commitment to patient-centered care, characterized by clear communication, privacy protection, and patient comfort. In term of sex, the analysis reveals no statistically significant differences in work performance across different sexes. This suggests that male and female interns demonstrate similar levels of work performance in terms of technical skills/scientific knowledge, proper work attitude, ethical practice, radiation safety and protection, and patient care. Statistically significant differences are observed in assessing work performance across different hospital affiliations. While there is no statistically significant in term of type of hospital. The Radioogic Technology respondents recommend that the
affiliating hospitals should offer a training program on practical examination enhancing interns technical skills. Reinforcing
collaboration between Radiologic Technology and interns is a must in order to build a strong teamwork and positive work environment. In addition, it is recommended to continue integrating different modalities into the skills training of the radiologic Technology Interns because this contributes significantly to the patient care management and radiation safety management.

CONCLUSION

The findings reveal important patterns and implications that can improve future educational practices and policies in radiologic technology. In conclusion, the study provides a comprehensive assessment

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of the work performance of radiologic technology interns in Medical Colleges of Northern Philippines. The positive findings across various competencies reflect the effectiveness of the current training programs, aligned with the CHED Memorandum Order. However, continuous improvement efforts are necessary to address the identified areas for enhancement and to ensure that all interns receive the highest quality education and training. Implementing the recommended action plan will help to strengthen the internship program, ultimately leading to betterprepared radiologic technologists who can contribute effectively to the healthcare system.

RECOMMENDATION

After conducting and analyzing this research, the researchers recommend the following:
• Despite the results of the study show that there is no different based on the area of rotation. The researcher recommends learning all the modality that is available in their hospital affiliation, to improve their knowledge and skills in different modality.
• the study recommends also to continue integrating different modalities into the skills training of the Radiologic Technology
Interns. Under the patient care and radiation safety and protection show that different modalities significantly contribute to patient care management enhancing the skills of Radiologic Technology Interns in various aspect such as providing patient comfort, minimizing errors, and compassionate treatment of patients throughout the imaging process with minimal radiation exposure.

• Based on the study the researchers recommend that the affiliating hospitals should offer a training program or practical examination in exposing patient to reduce the hesitation in positioning and performing different procedures by this the interns may enhance their technical and scientific skills.

• Future researchers may use this research paper as a point of reference and source of information, or they may pursue this topic in greater depth. Future researchers may investigate the work performance of Radiologic technology in different affiliating hospitals.

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