UNIVERSITI TEKNOLOGI MARA

KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) OF RADIATION SAFETY AMONG RADIOGRAPHERS IN THE GOVERNMENT HOSPITAL IN TAI'AN CITY

LIU SITONG

Thesis submitted in fulfillment
of the requirements for the degree of
Master of Health Sciences
(Medical Imaging)

Faculty of Health Sciences

January 2024

ABSTRACT

Radiographers, professionals operating equipment emitting radiation such as X-rays and Computer Tomography (CT), play a pivotal role in ensuring the safety of medical personnel and patients while minimizing radiation exposure during imaging procedures. Their Knowledge, Attitude, and Practice (KAP) toward radiation protection (RP) constitute a crucial area of study. The dangers of ionizing radiation and the imperative for stringent RP and safety measures underscore the urgency of this research. Despite the critical nature of the subject, there is currently a lack of studies investigating the KAP among radiographers in Tai'an City, China.

This study aims to investigate the KAP of RP among Radiographers in the Government Hospital in Tai'an City, exploring correlations with demographic and professional factors. Employing a cross-sectional design, a questionnaire assessing the KAP of 230 respondents regarding RP was administered. Data collected were analyzed using frequency analysis, chi-square tests, and logistic regression.

Results revealed that 35.22% of respondents possessed comprehensive RP knowledge, 33.48% exhibited a positive attitude, and 53.91% adhered to RP-related safety practice. Notably, respondents with over 10 years of service, higher education levels, and radiation safety training scored significantly higher in knowledge and attitude. This underscores the importance of experience, education, and training in establishing a robust foundation for RP knowledge and fostering positive attitude towards radiation safety.

The study concludes that various factors influence the KAP of RP among radiographers in the government hospital in Tai'an City. Recommendations include implementing and strengthening training programs, raising awareness about RP, formulating explicit guidelines and protocols, and promoting professional development in radiation safety. Addressing these aspects can foster a culture of radiation safety, ultimately minimizing the risks posed by radiation to medical personnel and patients.

ACKNOWLEDGEMENT

Firstly, I am deeply grateful for the guidance, support, and expertise provided by my thesis supervisor, Dr.Taufek. Your insightful feedback, patient mentoring, and unwavering encouragement have been instrumental in shaping the direction of this research. Your dedication to academic excellence and your willingness to invest time and effort in my work have been truly inspiring. I am thankful for the valuable lessons I've learned under your guidance.

Secondly, I also want to extend my heartfelt appreciation to my co-supervisor, Dr. Ehsan. Your expertise and keen insights have significantly enriched my understanding of the subject matter. Your constructive criticism and thoughtful suggestions have played a crucial role in refining the quality of this thesis. Your commitment to fostering a collaborative and stimulating academic environment has been deeply motivating.

I am indebted to both Dr. Taufek and Dr. Ehsan for their consistent support, which went beyond the academic realm. Your mentorship has not only shaped my research but has also contributed to my personal and professional growth. I feel fortunate to have had the privilege of working under your guidance.

I am grateful to my family and friends for their unwavering encouragement and understanding throughout this academic journey. Your belief in my capabilities has been a driving force behind my accomplishments.

Lastly, I wish to acknowledge the wider academic community and the countless individuals who have paved the way for knowledge in this field. It is through the collective efforts of researchers, scholars, and educators that we can continue to expand the boundaries of human understanding.

TABLE OF CONTENTS

CHAPTER ONE
INSTRUCTION

1.1 Research Background

Medical imaging technology, an integration of information technology and medicine, has emerged as one of the most fascinating study areas in medical diagnostics (Gou et.al, 2002). By combining cutting-edge technology with medical expertise, this interdisciplinary field enables medical professionals to accurately diagnose and monitor a wide range of diseases and conditions. As a result of various factors and China's rapid economic and social development, technical activities in the field of diagnostic and therapeutic radiology have become increasingly active, and the use of radiological equipment in clinical applications has grown. This increasing reliance on radiological technology highlights the importance of ensuring the safety and efficacy of these tools, as well as the need for ongoing research and development to optimize their use in patient care.

One of the most important parts of medical imaging technology is X-rays, which aid in disease prevention, diagnosis, and treatment (Zhang et al., 2013). This versatile and widely used technology provides healthcare professionals with invaluable insights into the internal structures and functions of the human body, allowing for more accurate diagnoses and targeted treatments. Due to the different densities of each organ in the human body, X-ray absorption varies, resulting in shadows of varying density on the screen or film. By analysing these shadows in conjunction with clinical manifestations, laboratory results, and pathological diagnoses, abnormalities in tissues, organs, or lesion sites can be observed. X-rays are also used for treating certain diseases, particularly malignant tumours, based on their biological effects (Deng et.al, 2018). The application of X-rays in both diagnostic and therapeutic settings underscores their essential role in modern medicine.

Nevertheless, with X-rays being harmful to human health, medical radiation is a double-edged sword. Patients undergoing X-rays inevitably expose themselves to direct X-rays, while medical radiographers operating inspection machines are susceptible to scattered and leaking rays (Žauhar & Dresto-AlaB, 2021). These exposures can result in cumulative radiation doses that, over time, may increase the