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FACTORS INFLUENCING COMPLIANCE WITH ETHICAL STANDARDS AMONG RADIOGRAPHERS IN SELECTED HEALTH FACILITIES IN GREATER ACCRA REGION

BY

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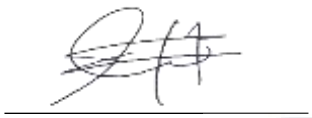
NOVEMBER, 2024

DECLARATION

I, Adelaide Gyamfuah Osei-Bonsu declare that this thesis is mine and has not been submitted anywhere else for another degree. This is my original work except for duly referenced authors.



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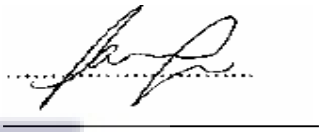

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DEDICATION

This thesis is dedicated to GOD, my amazing family, my supportive friends as well as my colleagues and all those whose motivation made this work a reality.

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I am eternally grateful to God for seeing me through this phase of my life.

My heartfelt gratitude goes especially to my parents, Mr. and Mrs. Osei-Bonsu, as well as my siblings, Juliana and David, for their continuous support, prayers and love.

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LIST OF ABBREVIATION

ALARA	-	As Low As Reasonably Achievable
ANOVA	-	Analysis of Variance
COPS	-	Commitment to Practice Score
CPD	-	Continuing Professional Development
CT	-	Computerised Tomography
DCL	-	Diagnostic Centre Limited
ESPM	-	Ethical Standards for Patient's Management
KBTH	-	Korle-Bu Teaching Hospital
GSR	-	Ghana Society of Radiographers
37 MH	-	37 Military Hospital
MRI	-	Magnetic Resonance Imaging
PDC	-	Paradise Diagnostic Centre
QDC	-	Quest Diagnostic
RH	-	Ridge Hospital
SAS	-	Safety Score
SOPS1	-	Scope of Practice Score

ABSTRACT

Introduction: Radiographers play a critical role in helping diagnose and treat medical conditions, and their responsibilities require a high degree of technical expertise, attention to detail, and a commitment to patient care. However, non-compliance with ethical standards can significantly impact the quality of patient care, particularly concerning imaging standards. Current literature on radiographers' adherence to ethical standards is limited, highlighting a need for further exploration in this area.

Methods: The study utilised a cross-sectional analytic design, conducted in selected health facilities in the Greater Accra Region, involving 80 diagnostic radiographers. Data collected were analysed using STATA Version 16. Breaches in ethical standards were reported as means and standard deviations (SD). The association between socio-demographic factors and compliance with ethical standards was assessed using Fisher's exact test. Additionally, factors influencing compliance to ethical standards were assessed using simple and multiple logistic with statistical significance determined at a p-value of less than 0.05.

Results: The majority of participants (76%) demonstrated good knowledge of existing ethical standards, while a similarly high percentage (79%) of radiographers exhibited high level of compliance with ethical standards. No breaches in ethical standards were reported concerning the scope of practice (mean=1.44, SD=0.80), commitment to practice (mean=1.41, SD=0.85), commitment to profession (mean=1.37, SD=0.86), and safety (mean=1.47, SD=0.85). After adjusting for confounding variables, a significant association was found between knowledge of existing ethical standards and compliance with these standards among radiographers [AOR=6.29, CI= (1.51-26.13), p=0.011].

Conclusion: The majority of radiographers demonstrated a strong understanding of existing ethical standards and exhibited high levels of compliance with these standards. A significant association was found between knowledge of ethical standards and compliance, indicating that radiographers with good knowledge were more likely to adhere to ethical standards. To sustain this high level of ethical compliance, it is essential to continually remind radiographers of ethical standards through in-service trainings and orientation of new radiographers.

CHAPTER ONE

INTRODUCTION

1.1 Background

One of the key criteria that distinguishes a profession apart from other occupations or trades is professional ethics. According to Beauchamp, professional ethics encompasses the ethical guidelines and standards that govern the conduct and decision-making of individuals in various professions. These guidelines are intended to promote integrity, honesty, and accountability, ensuring that professionals prioritize the interests of their clients, customers, or stakeholders while providing their services (Beauchamp et al, 2019).

Radiographers, also known as radiologic technologists, are trained professionals who operate diagnostic equipment such as X-rays, CT scanner and MRI scanner, to analyse and evaluate a patient's illness (Botwe et al, 2016). Their primary responsibility is to produce high-quality images that physicians use to diagnose and treat medical conditions (Kambala et al, 2022). Specific responsibilities of radiographers include: preparing patients for imaging procedures by positioning them properly and explaining the procedure to them; operating and maintaining imaging equipment, such as X-ray machines, CT scanners, and MRI scanners; collaborating with physicians and other healthcare professionals to determine the appropriate type and method of imaging; ensuring patient safety during imaging procedures by adhering to radiation safety protocols; (Kambala et al, 2022).

Radiographers are also responsible for evaluating the quality of images to ensure they are clear and accurate for diagnostic purposes. They are required to adhere to ethical standards, including laws governing patient privacy and confidentiality (Peer, 2013). Overall, radiographers play a critical

role in diagnosing and treating medical conditions, which requires a high level of technical expertise, attention to detail, and patient care (Botwe et al, 2016).

In addition to their diagnostic responsibilities, radiographers engage in the therapeutic aspect of radiography, collaborating with oncologists and physicians to utilise radiation in cancer treatment. Prior to radiotherapy, radiographers usually assess the patient's condition to determine the most suitable radiographic technique for intervention (Wahed & Mabrook, 2017). Their role also involves interacting with patients to provide psychological support and reassurance, clarifying each aspect of the radiographic procedure, and addressing any questions patients may have. To meet legal requirements, they ensure accurate radiation levels per established standards and obtain patient consent before proceeding with diagnostic imaging (Wahed & Mabrook, 2017).

The quality of care in the health sector is defined as the extent to which healthcare services provided to individuals and groups increase the likelihood of a positive treatment outcomes (Kambala et al, 2022). The ethical conduct of radiographers in patient management and healthcare dispensation is a crucial aspect that must not be overlooked (Peer, 2013). Ethical frameworks serve as the foundation through which all services carefully executed and administered to patients during radiologic examinations. Ethics and professionalism form the bedrock in the provision of excellent radiologic practice. Any unethical behaviour that deviates from accepted ethical standard may result in significant medico-legal issues (Botwe et al, 2016).

Ochonma et al., (2015) stated that health practitioners are expected to manage patient-related issues in an acceptable manner and within specified criteria as part of their professional responsibilities. Health practitioners are expected to conduct themselves in a way that maintains the public's trust and confidence, which requires them to protect the physical and mental well-being of their patients

while providing effective care. Human values are taken into account in every professional decision made in radiologic sciences and other health care practices.

There are many fundamental ethical theories and principles and nearly all professional codes of ethics in radiology are based on the principle of beneficence or 'the act of doing of good'. The merit of an activity is assessed by weighting potential benefits against any potential risks. This approach is based on the ethical theory of consequentialism, where decisions are made based on the outcome or consequences of a specific action (Beauchamp et al 2019).

The "four principles" approach proposed by Tom Beauchamp and James Childress in their textbook *Principles of biomedical ethics* is a common framework for analysing medical ethics (Beauchamp and Childress). This approach recognizes four fundamental moral principles that must be evaluated and balanced against one another, with particular attention to the scope of their application. The four tenets are as follows:

1. Respect for Autonomy: This principle emphasizes the patient's right to refuse or choose their own treatment. Patients have the autonomy to decline or accept participation in any medical procedure during radiological diagnostic procedures.
2. Beneficence: This principle dictates that healthcare professional should act in the best interest of the patient (Salus suprema aegroti lex.)
3. Non-maleficence: This principle is often summarised as "primum non nocere," or "first, do no harm and is critical in the field of radiography. Radiographers must ensures that they administer radiation levels that are ALARA (As Low As Reasonably Achievable) to protect patients from unnecessary radiation exposure (Botwe et al, 2016).

Justice: The principle pertains to the fair distribution of scarce health resources and the equitable

provision of care. Every patient has equal right to radiographic procedures, regardless of their ethnicity, race or gender with no form of discrimination. Furthermore, Haile et al., (2017) indicated that these operating rules are designed to ensure that patients are treated with respect and compassion, regardless of their gender, ethnicity, religion, culture, socioeconomic standing, physical appearance, or health conditions.

In addition to these four principles that guide ethical decision making, patient confidentiality is a vital aspect of patient management during radiologic procedures, Request forms from clients and reports must be handled discreetly to avoid breeching confidentiality rules. (Haile et al., 2017). Most healthcare communications focus on patient care as a means of reinforcing techniques that ensure that care is beneficial to patients (Wahed & Mabrook, 2017). The nature of communication between patients and healthcare personnel significantly impacts the quality-of care patients receive (Peer, 2003). Interactions between patients and radiographers are essential for fostering positive relationships that facilitate information sharing and supports treatment related decisions.

Botwe et al., (2016) have suggested that codes of conduct and ethical procedures are established for health practitioners to ensure that essential ethical concerns for patients are addressed. These codes are particularly important for upholding the moral standards that guide health professionals' behaviours and practice (Asadi-Lari et al., 2004).

Fundamental ethical norms are essential for all practitioners to follow. To enhance the quality of care, radiographers are expected to possess a general understanding of the ethical standards and psychological considerations involved, which would provide a foundation for more compassionate and professional medical procedures. As the study of the ethical conduct of medical personnel

continues to grow, this current study aims to assess radiographers' compliance with ethical standards in patient management across selected health facilities.

1.2 Problem Statement

Effective communication between patients and providers has become imperative in radiological diagnosis. Radiographers, therefore, must be sensitive to the physical and emotional needs of patients through good communication, patient-care skills and professional or ethical conduct (Ochonma et al., 2015). Concurrently, health professionals are expected to conduct themselves in a manner that will always maintain the trust and confidence of the public (Botwe et al, 2016). This requires that health professionals should ensure their patients are physically and emotionally supported while effective care is being given (Peer, 2003).

To achieve these goals, there are established codes of conduct and ethical measures for health professionals to follow to ensure that the needed ethical considerations for patients are met (Wahed & Mabrook, 2017). These codes are particularly vital for reinforcing the moral principles that guide the behaviour and practice of health professionals.

The literature suggests that more than 20% of radiographers fail to adequately explain the imaging process and communicate well with their clients when taking x-rays, which breaches the ethical principles and code of conduct of radiography (Peer, 2003). A study by Rawle (2018) found that up to 30% of medical imaging officers inappropriately and unjustifiably adhere to the code of conduct, leading to patient dissatisfaction during imaging procedures (Rawle, 2018). Factors such as lack of respect, breach of trust and privacy and confidentiality by healthcare professionals contribute immensely to patients' dissatisfaction when accessing radiological examinations (Ofili & Ofovwe, 2005).

In Ghana, Ghana Health Services (GHS) has established a code of ethics that mandates all health professionals, including radiographers to respect the rights of patients, and safeguard their confidentiality. Despite these guidelines, dissatisfaction among patients persists, as more than 5% of healthcare professionals reportedly discriminate against patients based on political affiliation, occupation, disability, culture, and ethnicity, and nature of illness (GHS, 2014). This discrimination undermines the ethical principles outlined in the GHS code and negatively impacts the quality of care provided to patients.

There is limited literature regarding radiographers' compliance with the code of ethical conduct in medical imaging and diagnosis as well as patient management. The aim of this study is to assess radiographers' compliance with ethical standards in patient management across selected health facilities.

1.3 General Objective

To assess the factors influencing compliance with ethical standards among radiographers in selected health facilities in the Greater Accra Region.

1.3.1 Specific Objectives

1. To assess the knowledge of radiographers on existing ethical standards.
2. To assess the level of compliance with ethical standards in patient management by radiographers.
3. To examine the factors that influence compliance to ethical standards amongst radiographers.

1.4 Research Questions

The study addressed the following specific objectives:

1. What is the knowledge of radiographers of the existing ethical standards?

2. What is the level of compliance with ethical standards in patient management by radiographers?

3. What factors influence compliance with ethical standards amongst radiographers?

1.5 Justification for the study

Compliance with ethical standards is essential in diagnostic radiography; however, yet there is a dearth of literature on factors that influence compliance with ethical standards in diagnostic radiography. The study aimed to assess the factors that influence compliance with ethical standards by radiographers, thus helping to inform policy to improve quality of healthcare delivery in general.

Furthermore, the findings of this study will be of great benefit to regulatory agencies such as the Ghana Health Service. Thus, it will help them to implement a set of policies, practices and systems that will enforce ethical standards in radiography in order to create a regulatory compliance, environmentally sensitive, resource-efficient and socially responsible workplace. Ultimately, this study will serve as a valuable reference for students, teachers and researchers to facilitate further studies on this important topic.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a detailed review of literature on the compliance of ethical standards in radiography by radiographers. Other important areas that will give meaning to this study, such as theoretical framework and conceptual framework will also be discussed in this session. The session will finally present a conceptual framework.

2.2 An Overview of Clinical Radiography

Clinical radiography collectively combines scientific knowledge as well as technical competence with effective patient interaction to obtain the best diagnostic result (Campeau, 1999). Radiographers are seen as the key piece in the jigsaw structure for the modern state of radiology system. Their essence may often be overlooked but they form a key pivotal function in patient care by performing basic radiologic procedures in a healthcare facility daily as they interact with patients (Botwe et al., 2016). Radiography is an important aspect of healthcare that utilizes radiation to produce images of the internal structures of the body for diagnostic and therapeutic purposes. As such, radiographers play a critical role in ensuring that patients receive accurate diagnoses and appropriate treatments (Ochonma et al., 2015).

Health professionals are expected to conduct themselves in a manner that will always maintain the trust and confidence of the public (Botwe et al., 2016). This requires that health professionals are to ensure patients are physically and emotionally supported while effective care is being given.

It is crucial that the Radiographer adheres to the basic codes of ethics that include treating patients with respect and dignity and always ensuring patient confidentiality when dispensing their duties. Radiographers must therefore be sensitive to the physical and emotional needs of patients through good communication, patient-care skills, and professional/ethical conduct (Ochonma et al., 2015).

Consequently, there are codes of conduct and ethical measures for health professionals to follow to ensure that the needed ethical considerations for patients are fulfilled. Codes of conduct and ethics are particularly essential to enforce the moral principles that guide the behaviour and practice of health professionals.

In Ghana, the Ghana Health Services (GHS, 2014) has a code of ethics that charges all health professionals to be responsible for respecting the rights of patients, and safeguarding patient confidence. Additionally, they are required to provide the best service for patients, while minimizing risk and avoiding discrimination against patients based on political affiliation, occupation, disability, culture, ethnicity, and nature of illness.

2.3 Ethical Standards for Health Professionals

Ethics in healthcare is the standards or principles of moral judgement or actions which provide a methodical system in differentiating right from wrong based on certain beliefs (Antipuesto, 2010). Conventionally, the two major schools of ethical reasoning are the consequentialist and the deontological. These systems of reasoning can be regarded as procedures for making and justifying value judgments when applied to medical ethical problems. In health profession, there are four principles of ethics. The Hippocrates principle "to help and do no harm"; Beneficence and Non- maleficence and the later Autonomy and Justice which gain exposition through Beauchamp and Childress (2009).

The four principles of ethics as described by Beauchamp and Childress in 1979 are as follows:

- ***Autonomy,*** or more accurately, respect for autonomy, defined in contextual highlight as the obligation of health professionals to respect the right of individuals to make decisions on their own behalf. While most societies have long recognised a basic moral obligation to respect each person's autonomy, it is only relatively recently that this ethical principle has evolved to be of such central importance in the physician–patient or medical practitioner-patient relationship. Therefore, in health practice, Respect for autonomy is a component of respect for human dignity, a principle embedded in international covenants.

- ***Beneficence*** is defined as the duty to do the best for the individual patient or to act in the best interests of the patient. Although this is a relatively straightforward obligation, its application is often challenged by such questions as who is to decide what is best, an issue of autonomy, and the availability of the required resources, an issue of justice.

- ***Non-maleficence*** is defined as the duty to do no harm. This also appears to be a relatively straightforward moral obligation and probably is the best understood and most widely adhered to ethical principle in clinical practice. However, as medical inventiveness yields new techniques and new diagnostic tests, subtle potential breaches of this obligation are not readily identified by enthusiastic innovators, as may be seen with the premature promotion of new tests for 'earlier' diagnosis or for population screening.

- ***Justice*** is more difficult to define but incorporates notions of equity and fair distribution. In time past, healthcare professional particularly physicians temptingly shun this obligation leaving it to managers, administrators and government, this is neither realistic nor desirable

Increasingly, various health disciples' especially medical practitioners are being made aware of the resource consequences of their decisions and prompted to reflect on how those decisions can effect equitable access to health care. This ethical principle emphasises that the all-health professionals have a responsibility to the community at large as well as to individual patients

As structures and regulations are reformed, quality and threats in execution or conduct are established and ensured in line with principles and order. Researchers continue to dive into innovative means of shaping practices particularly in health profession and the following qualities or virtues are measured to ensure compliance and conducts in the practices. Popularly highlighted are capacity for self-reflection, veracity (truthfulness), privacy and confidentiality, fidelity, trustworthiness, and integrity, justice, and other desirable qualities like compassion, discernment, commitment, teaching/consent, etc. which forms the fundamentals of health codes and conducts in reference to ethics (Kambala et al., 2022)

Health professionals are expected to conduct themselves in a manner that will always maintain the trust and confidence of the public (Botwe et al., 2016). This requires that health professionals are to ensure patients are physically and emotionally supported while effective care is being given.
It is crucial that the Radiographer adheres to the basic codes of ethics that include treating patients with respect and dignity and always ensuring patient confidentiality when dispensing their duties. Radiographers must therefore be sensitive to the physical and emotional needs of patients through

good communication, patient-care skills, and professional/ethical conduct (Ochonma et al., 2015). Consequently, there are codes of conduct and ethical measures for health professionals to follow to ensure that the needed ethical considerations for patients are fulfilled. Codes of conduct and ethics are particularly essential to enforce the moral principles that guide the behaviour and practice of health professionals.

In Ghana, the Ghana Health Services (GHS, 2014) has a code of ethics that charges all health professionals to be responsible for respecting the rights of patients, and safeguarding patient confidence. Additionally, they are required to provide the best service for patients, while minimizing risk and avoiding discrimination against patients based on political affiliation, occupation, disability, culture, ethnicity, and nature of illness.

2.4 Professional Ethics

Recently, there have been beneficial developments in facilities and services provided as a result of the improved position of health care globally. Despite this, the professional participants in the medical industry have their own set of obligations that come with these changes. These responsibility levels are a product of the expectations that arise when professionalism is introduced in any sector. In their definition of professionalism for radiography, Kambala et al. (2022) said that professionalism is refers to a system, organized to govern itself and to effectively set standards of professional behaviour, education, and qualification to practice and to enforce those standards within its ranks.

Many issues arise during the course of radiographers discharging their professional duties, which can sometimes lead to confrontations between staff or management and patients (Campeau, 1999). Ochonma et al. (2015) have suggested that such confrontations could be physical or verbal in

hospitals, or through a lawsuit in a court of law, with the latter becoming more common in Ghana as patients begin to demand good services from providers in exchange for fees charged at such facilities. To avoid such legal squabbles, radiographers must be assured that medical imaging procedures are performed only after appropriate requests have been received and only where appropriate patient consent, whether written, verbal, or implied, has been obtained.

Some authors have suggested that some professionals may engage in unethical practices against patients in order to save money and time. This may result in compromises on the part of the radiographer, which may impact patient satisfaction and comfort, as well as varying medico-legal implications. For example, Peer (2013) has posited that it is a basic requirement that patients be informed not only of the specific procedure they will be undergoing and what it entails, but also of what needs to be done, if anything, as a follow-up to their examination.

Radiographers are required to respect patients' rights and work cooperatively with them and their families as needed (Wahed & Mabrook, 2017). Furthermore, Haile et al. (2017) intimated that the relationship between radiographers and their patients should, in the opinion of society, be founded on open communication and mutual trust, without violating the confidentiality about the patient's identity, way of life, or course of treatment. This then necessitates that the patient's consent be obtained in all circumstances, whether it be verbal or written. It also depends on the radiographer to safeguard the safety of such patients and any potential patient's family members.

It is therefore advised that the radiographer adequately informs the patient about what the patient might experience as part of the entire exercise prior to the radiography process in order to avoid such scenarios (Kambala et al., 2022). Ochonma et al. (2015) also noted that patients are more likely to overcome their radiation phobia and be willing to accept a minor risk of potential biologic

damage when they have the proper understanding of the potential medical benefit from the imaging treatment. Patients can be made to feel like active partners in their own healthcare through effective communication.

The patient has the right to quality basic healthcare, regardless of where they are physically located, as stated in the Ghana Health Service Patient's Charter (GHS, 2014; Part 9 Public Health Act, 851) which serves as a guide for healthcare practitioners to defend patient rights. The patient has a right to full disclosure of his or her illness, treatment plan, and any potential hazards, with the exception of emergencies in where the patient is incapable of making a decision and immediate medical attention is required. The patient's safety is solely the radiographer's responsibility while they are under their care.

Hence, radiographers are legally accountable for any harm produced by their professional conduct, whether it results from an intentional act, negligence, omission, or other mistake (Wahed & Mabrook, 2017). Additionally, a minimal standard of acceptable performance is appropriate and should be followed by all radiologists (diagnostic), assuming that professional practice is the same in all hospitals is unrealistic and very incorrect.

2.5 Ethical Standards for radiographers

Ethical standards refer to a set of principles and guidelines that govern the behaviour of healthcare professionals and ensure that patients receive safe and high-quality care (Jackson, 2006). Ugwu, Shem and Erondu (2009) noted that in the radiography profession, ethical standards play a critical role in ensuring that radiographers uphold the highest standards of professionalism and ethical conduct when working with patients, handling sensitive information, and making critical decisions. Ethical standards help to promote patient safety, protect patient privacy and confidentiality, and

maintain the trust and confidence of patients and their families in the healthcare system. Compliance with ethical standards is essential for radiographers to provide high-quality care, maintain professional integrity, and build a strong reputation for the profession (Botwe et al., 2016). Radiography is an important aspect of healthcare that utilizes radiation to produce images of the internal structures of the body for diagnostic and therapeutic purposes. As such, radiographers play a critical role in ensuring that patients receive accurate diagnoses and appropriate treatments. However, this role comes with ethical responsibilities that radiographers must adhere to. Ethical standards in radiography encompass a range of principles, including patient confidentiality, informed consent, and the avoidance of harm, among others (Ugwu et al., 2009). In Ghana, the importance of ethical standards in radiography cannot be overstated, as radiographers work in a complex and dynamic healthcare system that requires them to navigate a variety of ethical challenges.

In the radiography profession, ethical standards are guided by various codes of ethics and professional standards that outline the responsibilities and obligations of radiographers towards their patients, colleagues, and the wider healthcare community (Jackson, 2006). These codes of ethics typically cover a wide range of issues, including patient autonomy, informed consent, confidentiality, professional boundaries, and conflicts of interest (Kambala et al., 2022). Radiographers must adhere to these ethical standards to ensure that they provide safe, effective, and compassionate care to their patients and maintain their professional integrity. Ethical compliance is also important in protecting the rights and dignity of patients, fostering trust and respect in the healthcare system, and ensuring that radiographers are held accountable for their actions. Jackson (2006) posited that failure to comply with ethical standards can lead to serious consequences, including legal and professional sanctions, loss of licensure, and damage to one's

reputation and career (Jackson 2006). To guarantee that the necessary ethical considerations for patients are met, there are codes of conduct and ethical guidelines that health practitioners must abide by. Codes of conduct and ethics are especially important for upholding the moral standards that direct the conduct and practice of healthcare professionals (GHS, 2014). In essence, the purpose of these operating rules is to guarantee that all patients, regardless of their gender, ethnicity, religion, culture, socioeconomic standing, outward appearance, or health issues, are treated with respect and compassion (Wahed & Mabrook, 2017).

There are fundamental ethical standards to which everyone must conform. Health practitioners have a responsibility to patients to respect their autonomy and prevent harm to them. Furthermore, Asadi-Lari et al. (2004) asserted that health practitioners have a responsibility to patients to respect their autonomy and prevent harm to them. Other obligations include acting in the patients' best interests, protecting their privacy and confidentiality, and treating them fairly. All healthcare personnel are accountable for upholding patient confidentiality and respecting their rights under the Ghana Health Service Code of Ethics (GHS, 2014).

In addition, it is required that radiographers should endeavour to avoid risk minimization and discrimination against patients based on their political affiliation, occupation, disability, culture, or ethnicity, as well as deliver the best possible care for their patients (Botwe et al., 2016). The ethical standard for radiographers further requires that radiographers should preserve the confidentiality and privacy of their patients and refrain from disclosing information about them to outside parties unless legally obligated to do so. The Ghanaian health system also demands that all medical personnel educate individuals on medical matters so they can make decisions about their care, management, protection of interests, and dignity (GHS, 2014). According to Botwe et al. (2016) ethical standards in radiography are designed to ensure that radiographers provide high-

quality care to their patients while maintaining their trust and respect. Some of the key ethical principles that radiographers must adhere to, according to the Ghana Health Services (GHS, 2014) include:

i. Patient Confidentiality: Radiographers must protect the privacy of their patients and maintain confidentiality of their health information at all times.
ii. Informed Consent: Radiographers must ensure that patients have a clear understanding of the nature of the imaging procedure, its risks and benefits, and their right to refuse or withdraw consent.
iii. Avoidance of Harm: Radiographers must take all necessary steps to minimize harm to patients, including minimizing radiation exposure and taking appropriate safety measures.
iv. Professional Competence: Radiographers must maintain high standards of professional competence and ensure that their knowledge and skills are up to date.
v. Professional Conduct: Radiographers must behave ethically and professionally at all times, including treating patients with respect and maintaining appropriate boundaries.

Despite the importance of ethical standards in radiography, there are several factors that can influence compliance with these standards among radiographers in Ghana. Botwe et al. (2016) identified some of these factors as follows:

i. Lack of Training: Radiographers in Ghana may not receive adequate training on ethical standards and their practical application in clinical settings. This can result in confusion and uncertainty about how to navigate ethical challenges.
ii. Workplace Culture: Workplace culture can have a significant impact on ethical

compliance among radiographers in Ghana. In some cases, workplace cultures may prioritize productivity and efficiency over ethical considerations, which can create pressure on radiographers to cut corners or compromise ethical standards.

iii. Patient Autonomy: In some cases, patients in Ghana may have limited autonomy in healthcare decision-making, which can create ethical dilemmas for radiographers. For example, a patient may refuse a recommended imaging procedure due to cultural or religious beliefs, which can make it difficult for radiographers to balance the patient's autonomy with their obligation to provide high-quality care.

Ethical standards are an essential component of radiography practice in Ghana. Adhering to these standards is critical for ensuring that patients receive high-quality care that is respectful of their autonomy and privacy (Malone & Zölzer, 2016). However, compliance with ethical standards can be challenging, particularly in the face of limited resources and workplace cultures that may prioritize efficiency over ethical considerations. Addressing these challenges will require a concerted effort on the part of policymakers, healthcare administrators, and radiographers themselves (Jackson, 2006). By working together, we can ensure that radiography practice in Ghana is grounded in ethical principles and that patients receive the care they need and deserve.

2.6 Potential Ethical Breaches in Radiography

Radiography is a constantly evolving profession due to the rapid technological advancements (Arruzza, 2023). This has led to radiography moving from the "dark room" practice where images are manually processed to the digital radiography practice. The advent of digital imaging systems makes patient information readily available to radiographers, thus the possibility of abusing this information. Other ethical breaches are radiographers 'refusal to obtain appropriate informed consent from patients, a very common practice among

radiographers and inappropriate patient handling (Etheredge, 2011). These breaches may occur due to radiographers facing various challenges in applying ethical standards in patients' management.

In the context of findings from literatures, ethical breaches in radiography are highlighted through the ethical issues researchers unearthed and addressed. To dive deeper, the researcher seeks to explore 'ethics' or 'ethical' and 'breaches' or 'issues' or 'dilemma' that leads to breaches in diagnostic radiography. Beauchamp, (2016) defined Ethics as a broad term that covers the study of the nature of morals and the specific moral choices to be made. However, a set of moral principles: a theory or system of moral values as defined (Merriam-Webster, n.d). *Ethics, as defined by the researcher encapsulate, set of principles governing a body, institution, and society to achieve set objectives for all parties irrespective of human, institutional, and operational challenges*. The study acknowledges the various definitions of ethics and for the purpose of the study, preference is given to systematic and philosophical definition of ethics as the study borders on structures.

Breaches, as noted, are the disintegration of standards and practices and their opposition to positivity of these practices. According to the Oxford Dictionary, (2023), breach, is an act of breaking or failing to observe a law, agreement, or code of conduct, whereas breach as defined by Merriam- Webster, (n.d) as infraction or violation of a law, obligation, tie, or standard. All the definition ties down to violation of standards of practices which aligns well with the study on ethical breaches.

Medical ethics is defined as a system of moral principles that bring values and judgement to the practice of medicine (Kalantar Motamedi, 2014). Ethical breaches are the violations or failure in one's discipline to protect the interests of customers human rights, principles, and dignity in their practices. In healthcare (radiography), is the failure of radiologist and radiographer to protect patients' human rights and dignity, institutional and practical standards in patient-physician relationship. The study explores the following ethical breaches in radiography.

Kambala et al., (2022) acknowledged a brief category on clinical ethics underscoring patient autonomy, informed consent, confidentiality, professional boundaries, and conflicts of interest as highlights on the codes of ethics where ethical issues are mostly drawn. All ethical issues or breach borders on patients' rights and global standards on medical ethics. As modern medicine and healthcare evolves in rapid pace, emphasis and reliance on high technology is undeniable, in such context, radiologists are propelled to think as physicians while reflecting on their responsibilities in a patient-physician relationship in caring for their patients which forms part of ethical standards (Armstrong, 1999). Therefore, when such relationship is not handled in the professional way, issues and dilemmas unfolds.

In the practices of diagnostical radiography, the below factors and codes are considered and can constitute to breaches or ethical dilemmas. Below are the epitomes of breaches:

- ***Confidentiality and Privacy breaches***: Herring, (2018) asserted that patient confidentiality is key to the delivery of healthcare and all medical personnel are to uphold as in every practice unless where permitted. He emphasized the need to protect patient privacy and confidential in relation to the US Health Insurance Portability and Accountability Act (HIPAA), or the General Data Protection Regulation (GDPR), or Act 843 of Ghana, and to extent the Ghana Health Service codes of practices or Allied Health Professional Council

codes, to maintain the privacy of patient records and medical images. A breach can be construed when unauthorized personnel access patient data or their information shared without proper consent or improper handling of radiographic images violate ethical and legal obligations. To extent, discussing patient conditions or sharing medical images without consent even with colleagues, can constitute a breach upon its legal interpretation to standards.

- ***Informed Consent***: it is incumbent on a radiographer to ensure patients provide clear authority or informed consent either self or legal representative before any procedure (s) is performed on them. This as highlighted by Cohn (2017), encompasses detail explanation on risks, benefits, and alternatives where all options are clear and preferentially ranked. Ethical breaches may occur when radiographers fail to abreast patients and where full consent is not established or their consent not respected. This affirms that patients should understand and append to associated risks accompanied with certain procedures to prevent breach (Kambala et al., 2022).

- ***Radiation Safety and Overexposure***: Hall and Giaccia (2016), recommended that patients receive the minimum radiation dose necessary for diagnostics purposes in adherence to the ALARA principle (As Low As Reasonably Achievable) and anything beyond is considered overexposure which is a breach and violate on the principles of radiation protection. Either through mistakes or negligence [repeated scans due to operator error without informing the patient of increased radiation risk], is an issue to ethical standards and constitute a breach (Beauchamp and Childress, 2019).

The concepts of justification, underpins radiation protection in optimization and dose limits (Hansson, 2007; ICRP, 2007a, ICRP, 2007b). Most countries have strict radiation dose limits for the general population (1 milliSievert (mSv) per year) and for professionally exposed workers (20 mSv per year). However, dose limits are not applied to patient medical exposures (IAEA, 2011b; ICRP, 2007a). Thus, paradoxically, a citizen upon becoming a patient loses the protection of a dose limit, and entrusts their care to physicians who seldom know the dose or risk to which they are exposed. The patient can and often does receive significant exposures, larger than the annual dose limit for the public or workers, without receiving any information and, in the case of inappropriate examinations, without commensurate benefit (Fazel et al 2009; Hansson, 2007; IAEA, 2009; Malone, 2011a; Malone et al., 2011; Picano, 2004a, Picano, 2004b). This, in a nutshell, identifies a central practical ethical issue in radiology.

One of the major ethical problems in radiology is justification of medical exposures in practice. When an investigation involves ionizing radiation, the risk–benefit assessment should include the possible long-term risk of malignancy. From the precautionary principle, it is reasonable to take the view that patients have the right to know of possible risk, and that physicians/radiologists have a duty to inform them (IRPA, 2012; Malone, 2014; Malone et al., 2011; Shah, Sachs, & Wilson, 2012). In practice, achieving this will require the development of new operational approaches. These breaches border on clinical ethics highlighted by Kamala et al, 2022 and stem from various challenges, including insufficient adherence to radiation safety protocols and issues surrounding patient consent and confidentiality. Lack of proper training and regulation as highlighted by researchers, such include forensic radiography, which raises concerns about patient privacy and the potential for exploitation.

Due to these issues, the premise of patients' dissatisfactions is often raised from this perceived unethical conduct by radiographers, such as inadequate communication and professionalism during procedures (Makanjee et al, 2018).

- ***Professional Competence***: As recognized in healthcare, radiographers being unexceptional, must maintain competency, professionalism, impartiality, and fairness in performing their duties. Issues of ethical breaches may arise when prior knowledge skill, or training in such procedures can result in substandard care, putting patients at risk including using obsolete or incorrect techniques in imaging certain cases which does not demand such may lead to misdiagnosis or harm (Towsley-Cook and Young, 2007).

- ***Bias and Discrimination:*** In any profession, professionals are to desist from demonstrating unfairness, or bias treatment or judgement of individuals in certain social groups, often based on race, gender, age, disability, religion, sexual orientation, and other factors (Cheung et al., 2016). As indicated in Towsley-Cook and Young, (2007) submissions, radiographers must provide equal care to all patients, free of bias or prejudice. Where prioritization of certain patients over others based on non-medical factors or neglecting patients from minority groups, and personal relationships with patients that compromise professional judgement are all considered ethical violations.

- ***Misreporting or Misuse of Diagnostic Information:*** Inaccurate reports or deliberate falsifying information can harm patients by leading to incorrect diagnosis or treatments which flout on ethical standards and codes of conduct. To a large extent, altering radiographs or reports to cover up errors in image acquisition or interpretation for certain

interests other than that of patients and legal guidance, are a breach to ethical practice (Marx, 2015).

- ***Unprofessional Behavior and Boundary Violations:*** Kambala et al., (2022) indicate that radiographers are expected to maintain professional boundaries with patients and any other thing other than that requested or consent by the patient is a violation constituting to a breach. Such acts include, inappropriate behavior, such as exploiting a position of trust or engaging in personal relationships with patients and engaging in unprofessional conduct, such as making inappropriate comments during an examination or failing to respect patient dignity.

- ***Research Misconduct:*** Ethical breaches can occur in radiography practice when radiographers conducting studies involving patients do not follow ethical guidelines, such as failing to obtain consent or misrepresenting research findings and misleading participants about the nature of the study or manipulating data to achieve desired results are part of ethical breach factors (Kambala et al., 2022; Marx, 2015).

- ***Technological Advancements and Ethical Dilemmas:*** The world evolves rapidly in the pace of technological advancements such as AI-driven diagnostics and 3D imaging in radiography which have introduced new ethical considerations where radiographers must dwell with care. Radiographers must navigate ethical challenges regarding the use of AI in patient care as requires all ethical protocols, balancing efficiency with the need for human oversight (Topol, 2019).

- ***Handling Equipment and Resource Management:*** Patient safety can be compromised when radiographic equipment are misused or improperly maintained. Breaches can set in when radiographers knowingly use faulty or improperly calibrated equipment or continue use of outdated equipment despite being aware that it produces suboptimal images or increases radiation exposures are all issues to standard breach. Radiographers are to heavily advise and recommend suitable and appropriate equipment to their heads of facilities or units and must ensure such is presented to protect them from such breaches as these situations are often controlled by the healthcare facility owners and directors and their lack of cooperation, can influence radiographers in ethical breaches including prioritizing institutional goals, pressures such as minimizing costs or following institutional protocols over patient care (Kambala et al., 2022; Topol, 2019; and Marx, 2015).

- ***False Claims of Certification or Licensure:*** In healthcare practices all professionals contributing to health treatments must be licensed or trained with qualification which aids them to delivery sustainable services. A radiographer who performs tasks or works which they are not licensed, such as administering contrast without certification or misrepresenting one's qualifications or working without an appropriate qualification or licensure is unethical and can have legal consequences thereby compromising patient trust and safety (Kambala et al., 2022; Makanjee et al, 2018).

Breaches in ethics of radiography undermines patients trust, violate legal obligations, and jeopardize patient safety. In adherence to ethical guidelines and standards, radiographers must be vigilant and remain resolute to institutional pressures and interests to prioritized patient care and with a study into ethical compliance, behaviors, and adhering to best practices, the study will aid radiographers to navigate the complex ethical landscape.

2.7 Compliance to ethical standards among radiographers

It was reported in a study conducted among radiographers by Abonyi et al. (2013) that the degree of compliance to protocols was rated as excellent by majority of participants. The researchers of the said study concluded that radiographers' adherence to ethics of profession and practices was above average and proceeded to highlight areas of underperformance by radiographers that needed improvement which included low adherence to professional development. In study conducted by Botwe et al. (2016) to assess the ethical commitment of radiographers from patients' perspective, it was concluded that radiographers were ethically committed to their patients and complied with ethical responsibilities towards patients to a large extent. The said study reported that patients saw radiographers as honest, competent, courteous, co-operative, etc. The study further reported that relatives of radiographers were also handled respectfully. Another study by Okpaleke, Moi, and Njiti (2015) also reported high compliance level to professional ethics among radiographers with majority always seeking patient consent before conducting examination, but also indicated need for improvement in continuous professional development programs. A study by Ochonma et al. (2015) reported that radiographers showed overall excellent conduct of ethical standards, but indicated deficiencies in area such as; lack of informed consent, and inability to create and maintain a sustained professional relationship with patients.

2.8 Factors Influencing Compliance with Ethical Standards among Radiographers

Ethical compliance is critical in any healthcare setting, and radiography is no exception. Radiographers are responsible for ensuring that patients receive safe and effective care while upholding the highest standards of professionalism and ethical conduct (Camargo et al., 2019). Failure to comply with ethical standards can result in serious consequences, including harm to patients, legal and professional sanctions, and damage to the reputation of the profession.

Several studies have investigated the ethical compliance of radiographers and identified various factors that can influence their behaviour. For example, a study by Malone and Zölzer (2016) found that radiographers' knowledge and attitudes towards ethical issues were important predictors of their compliance with ethical standards. Similarly, a study by Geis et al. (2019) found that radiographers who received regular training on ethics were more likely to comply with ethical standards than those who did not receive such training. Okpaleke, Moi, and Njiti (2015) also reported that a majority of radiographers, who knew ethical code of practice, apply it on regular basis.

Other studies have highlighted the importance of workplace culture and organizational policies in promoting ethical compliance among radiographers. For example, a study by Jackson (2006) found that radiographers who worked in a supportive and positive workplace culture were more likely to comply with ethical standards than those who worked in a negative or hostile environment. Similarly, a study by Ugwu et al. (2009) found that radiographers who had clear and consistent organizational policies and procedures for ethical conduct were more likely to comply with ethical standards than those who did not.

Radiographers play a crucial role in the management of patients by ensuring that they provide safe and high-quality care while adhering to ethical standards (Ochonma et al., 2015). Radiographers are expected to adhere to various ethical standards in their practice. The Ghana Health Service (GHS) and the International Society of Radiographers and Radiologic Technologists (ISRRT, 2012) have developed codes of ethics that guide radiographers' professional conduct. These codes of ethics outline the radiographers' responsibilities towards patients, colleagues, society, and the profession. Radiographers must ensure that they protect patients' privacy, autonomy, and dignity while providing safe and high-quality care.

Radiographers must apply ethical standards in patients' management to ensure that they provide safe and high-quality care while protecting patients' rights (Haile et al., 2017). One of the key ethical standards in patient management is informed consent (ISRRT, 2012). Radiographers must ensure that patients are adequately informed about their condition, the benefits and risks of the procedures, and the alternatives available (Jackson, 2006). Patients must be given an opportunity to ask questions and clarify their doubts before providing their consent. Radiographers must also ensure that patients' privacy and confidentiality are protected at all times. Patients' personal information and medical records must be kept confidential, and only authorized personnel should have access to them (Wahed & Mabrook, 2017).

Radiographers must also ensure that they provide safe and effective care to patients. They must adhere to radiation safety guidelines and ensure that patients are not exposed to unnecessary radiation (Camargo et al., 2019). Radiographers must also ensure that they provide accurate and reliable diagnostic images that can guide clinicians in making appropriate decisions about patients' care. They must also ensure that they use appropriate techniques and equipment to minimize patients' discomfort and pain.

2.9 Challenges in Applying Ethical Standards

Radiographers face various challenges in applying ethical standards in patients' management. One of the key challenges is inadequate training in ethics (Persson & Shrader-Frechette, 2001). Some radiographers may not have received adequate training in ethics, which may make it difficult for them to identify ethical dilemmas and make appropriate decisions (Botwe et al., 2016). Another challenge is the lack of clarity in ethical guidelines. Some ethical guidelines may be vague or conflicting, making it difficult for radiographers to apply them consistently (Malone & Zölzer, 2016). Radiographers may also face challenges in dealing with patients who have different cultural or religious beliefs, which may conflict with the ethical standards of their profession.

2.10 Strategies for Addressing Ethical Dilemmas

Radiographers employ various strategies to address ethical dilemmas in patients' management. One of the strategies is consultation with colleagues or supervisors (Jackson, 2006). Radiographers may seek advice from their colleagues or supervisors when faced with ethical dilemmas. This may help them to identify the ethical issues involved, explore alternative courses of action, and make informed decisions. Radiographers may also seek advice from professional organizations, Ghana health Service and ISRRT, or consult ethical guidelines

provided by these organizations. Another strategy is patient-centred care. Radiographers may employ a patient-centred approach that places patients' interests at the centre of decision-making. This approach involves recognizing and respecting patients' autonomy, values, and beliefs (Ugwu et al., 2009). Radiographers may also engage patients in shared decision-making, where patients are involved in decisions about their care. This may help to ensure that patients' rights are respected, and ethical standards are upheld.

Radiographers play a critical role in ensuring that patients receive safe and high-quality care while adhering to ethical standards. They must apply ethical standards in patients' management to protect patients' rights and ensure that they receive the best possible care.

Individual Factors: Radiographers' individual characteristics, including their knowledge, attitudes, and beliefs, can influence their compliance with ethical standards (Persson & Shrader Frechette, 2001). Radiographers who have a better understanding of ethical issues are more likely to comply with ethical standards than those who do not. Furthermore, radiographers who have positive attitudes towards ethical conduct and believe that it is an important aspect of their profession are more likely to comply with ethical standards than those who do not.

Environmental Factors: Camargo et al. (2019) posited that the workplace environment can also have a significant impact on radiographers' compliance with ethical standards. Workplace culture, including the attitudes and behaviours of colleagues and management, can influence radiographers' behaviour (Geis et al., 2019).

A positive and supportive workplace culture can promote ethical conduct, while a negative or hostile workplace culture can undermine ethical compliance. Organizational policies and procedures can also have an impact on radiographers' behavior (Camargo et al., 2019). Clear and consistent policies and procedures can help to ensure that radiographers understand their ethical obligations and are more likely to comply with ethical standards.

Patient-Related Factors: Patient-related factors can also influence radiographers' compliance with ethical standards (Jackson, 2006). For example, patient autonomy and informed consent are essential components of ethical practice in radiography. Radiographers must respect the autonomy of their patients and obtain their informed consent before performing any procedures or tests.

Failure to do so can result in harm to the patient and damage to the reputation of the profession.

Confidentiality is another critical aspect of ethical practice in radiography (Kambala et al., 2022). Radiographers must ensure that patient information is kept confidential and only shared with authorized individuals. Failure to maintain patient confidentiality can result in legal and professional sanctions, as well as damage to the reputation of the profession.

The Role of Workplace Culture and Leadership: Workplace culture and leadership play a vital role in promoting ethical compliance among radiographers (Camargo et al., 2019). A positive and supportive workplace culture can promote ethical conduct, while a negative or hostile workplace culture can undermine ethical compliance. Leaders within the organization must set an example of ethical conduct and ensure that their subordinates understand their ethical obligations.

Furthermore, leaders must ensure that there are clear policies and procedures in place to guide ethical conduct and that radiographers receive regular training on ethical issues.

2.11 Conceptual Framework

The conceptual framework for this study was developed based on literature reviewed. From the literature reviewed, sociodemographic characteristics such as; sex, age, education and years of service influence knowledge of existing ethical standards. Knowledge of existing ethical standards also influence compliance with ethical standards as well as, ethical breaches which is categorized into areas such as; scope of practice, commitment to practice, commitment to profession and safety. Factors such as continuous training and awareness of existing ethical standards also influence knowledge of existing ethical standards and compliance with ethical standards.

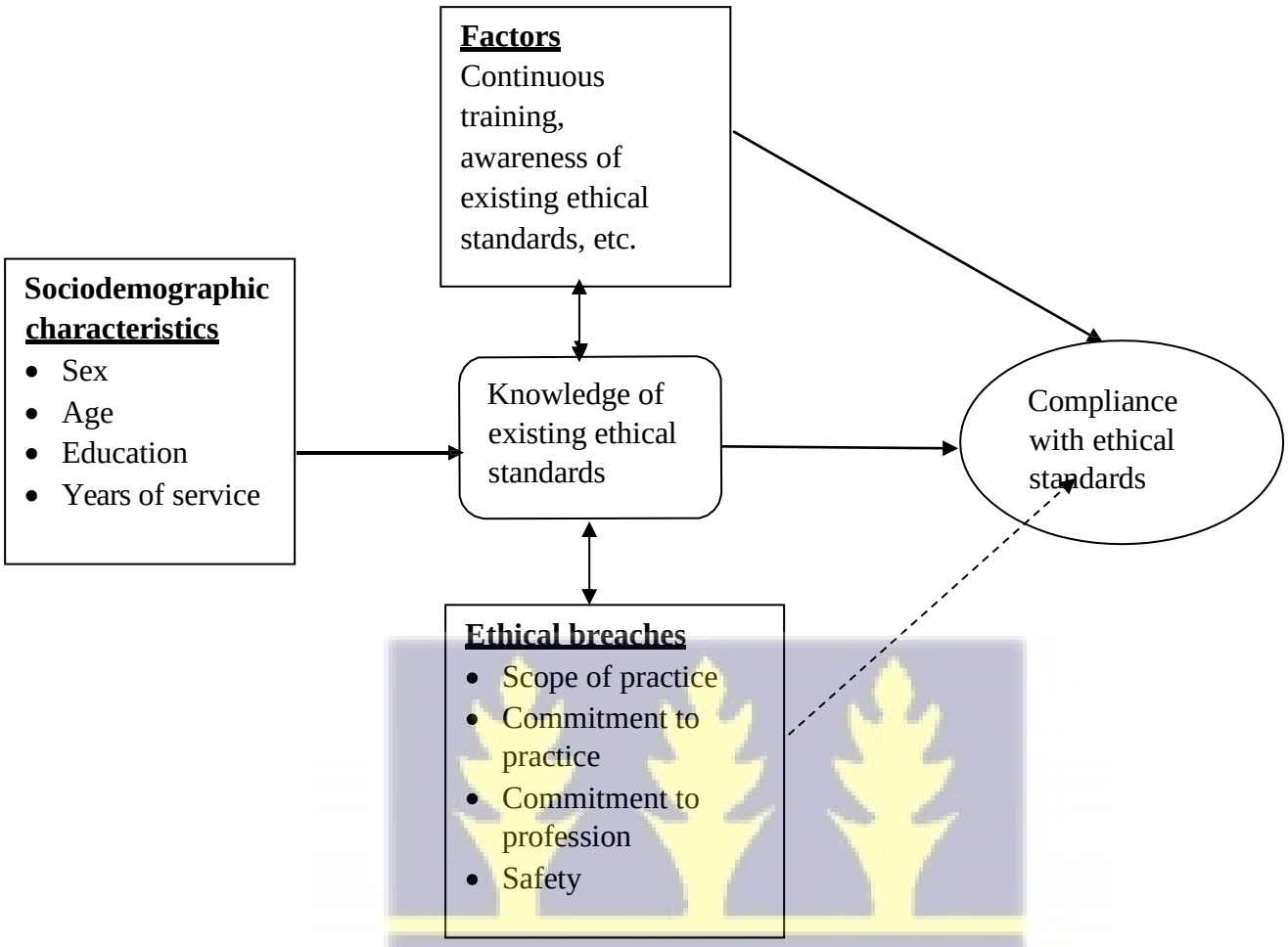

Figure 1: Conceptual Framework of compliance with ethical standards by radiographers

2.12 Summary of Gaps in the Literature

Despite the importance of ethical compliance in radiography, there are still gaps in the literature regarding the factors that influence ethical compliance among radiographers. One significant gap in the literature is the lack of studies on the impact of ethical compliance on patient outcomes. While there is some evidence to suggest that ethical compliance can lead to improved patient outcomes, further research is needed to determine the extent of this relationship. Another gap in

the literature is the lack of enough studies in Ghana on the association between external factors (such as socioeconomic status and cultural factors) and ethical compliance among radiographers. These factors can have a significant impact on radiographers' behaviour and may influence their compliance with ethical standards. Therefore, further research is needed to investigate the association between these external factors and ethical compliance among radiographers. This research was therefore intended to fill in this gap of lack of enough of such studies in Ghana by focusing on investigating the factors that influence compliance to existing ethical standards among radiographers in selected facilities in Ghana.

CHAPTER THREE

METHODS

3.1 Introduction

This section presents the methods. The section covers the research design, population, sample size and sampling procedure, inclusion and exclusion criteria, instrument, data collection procedure and data analysis procedure. The chapter throws more light on the tools for data collection, quality control strategies, ethical consideration as well as dissemination of results.

3.2 Research Design

This study employed a descriptive survey research design using both qualitative and quantitative methods. Descriptive studies result in extensive data that is collected in large amounts (DeFranzo, 2011) and the surveys and interviews can be used to study the beliefs, attitudes, behaviours and habits of members of a target audience, company or other organization (Yin, 2003). Descriptive survey design was suitable for this study since it allowed the researcher to adopt a mixed method of both qualitative and quantitative approach to collect the data for the study (Creswell, 2014).

3.3 Research Setting

The study was conducted within the radiography departments of the selected health facilities in the Accra Metropolitan Assembly.

Metropolitan, Municipal and District Assemblies (MMDAs) encapsulated within Ghana are 261 with Accra Metropolitan Assembly (AMA) as one and part of the 29 MMDAs in Greater Accra Region. While AMA as an Assembly sits on an area of 20.4 square kilometres, with population of 284,124

people live in the District, the Greater Accra Region occupies a land total of 3,245 square kilometres and as the smallest area of the 16 regions of Ghana. It is the most populated with 5,455,692 population in (GSS, 2021) and forms 1.4% of Ghana's total land. Further, accounts for 17.7% of Ghana's total population of 30,832,019 in 2021 as presented by (GSS, 2021). Ghana, a country which share a triangulated ties of boundaries with Burkina Faso, north side, eastside, Togo, and west side Ivory Coast with a total territorial area of 238,539 square kilometres for land and inland water covering.

See below the Geographical map for AMA

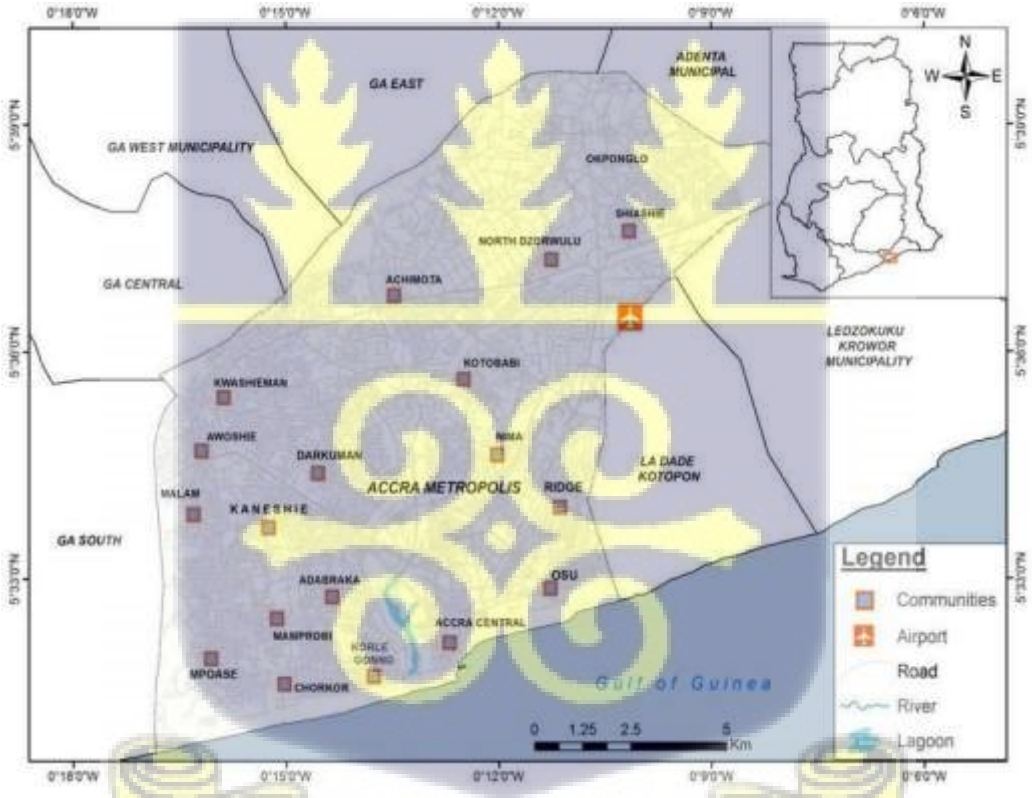

Figure 2: Map of AMA

Source: Accra Metropolitan Assembly

The Assembly has three sub-Metros namely Ablekuma South, Ashiedu Keteke, and Okaikoi South. Highlighted are their maps.

Ablekuma South

Ashiedu Keteke

Okaikoi South

Figure 3:

Source: Accra Metropolitan Assembly

One may argue that a population of these magnitude must have numerous and series of Health Facilities as per UN global health facility to population.

In examining compliance and standards, it is suitable to fall on highly recognized and profiled institutions or establishment to make best assessment and analysis. On the premise of this and the study hypothesis/question, a snowball to selection of the below institutions within the study setting was adopted.

Korle Bu Teaching Hospital (KBTH) is one of Ghana's largest premier hospitals, and is also the third largest hospital in Africa. Korle Bu serves over 500,000 patients each year, mainly from Ghana, but also from other neighbouring countries such as Togo, Burkina Faso, Ivory Coast, Nigeria, Liberia, and, sometimes, Tanzania. The 2,000-bed hospital has established itself as the centre of quality healthcare and has set the stage for introducing specialized medical services in sub-Saharan Africa. For this reason, Korle Bu strives to offer the best medical care to its clients in

Ghana and other parts of West Africa. The 37 Military Hospital is a public, tertiary referral centre located in Accra, Ghana. Surrounded by other health institutions such as Ridge Hospital, Police Hospital, La General Hospital, and Mamobi Polyclinic, the 37 Military Hospital serves over 250,000 patients each year. Radiology at the 37 Military Hospital is more deficient in skillset and technical training than in medical imaging equipment.

The Hospital is a 500-bed facility located in Accra, the capital city of Ghana. The primary objective of the facility is to provide quality healthcare to service personnel and their families, civilian employees of the Ministry of Defense and their families and ex-service personnel as well as the general public. Additionally, the hospital serves as the National Disaster and Emergency Response health facility.

The Hospital covers about a 90,000 square meters area while approximately 5% of this area is dedicated to the radiology department.

The Greater Accra Regional Hospital (GARH) is situated at North Ridge in the Osu-Klottey Sub-Metro of the Accra Metropolitan Area in the Greater Accra Region (GAR) of Ghana. It occupies a total land area of about 15.65 acres. As the Regional Hospital for the GAR, its catchment area is the whole of the region with an estimated population of over 4,671,363 (2016 projection based on 2010 census by the Ghana Statistical Service). The immediate catchment area, however, includes the following suburbs: Ridge, Nima, Maamobi, Kanda, Accra New Town, Kotobabi, Osu, La, Adabraka, Achimota, Airport Residential Area and Central Accra.

Located in the heart of Accra city, the GARH started as a Hospital for the European expatriates around 1928. It became a District Hospital after Ghana's independence in 1957 and was later designated as Ridge Regional Hospital in 1997 and now redeveloped and transformed into an ultra-

modern 420 bed capacity hospital with the full complement of specialist services that reflects the current social aspirations of the rapidly growing capital city of Ghana.

From the statistics, these health institutions were selected due to their high patient turnout and accessibility to people from all walks of life. Hence, these health facilities record a higher number of radiographers for the Greater Accra Sector.

3.4 Study Population

Creswell (2014) defines population as a large collection of individuals or objects that is the main focus of a research query. In simple terms research population describes the people or objects being considered in a given study (Neuman, 2008). The population of this study comprised of all the diagnostic radiographers working in the selected Government Hospitals and Private diagnostic centres in the Accra Metropolitan Assembly. The selected government health facilities were Korle-Bu Teaching Hospital (KBTH), 37 Military Hospital (37 MH) and Ridge Hospital (RH) and also the private health facilities comprised the Diagnostic Centre Limited (DCL), Paradise Diagnostic Centre (PDC) and Quest Diagnostic Centre (QDC).

3.5 Inclusion and Exclusion Criteria

The inclusion criteria in this study were all Diagnostic Radiographers between the ages of 20 and 55 years who had worked in the health facilities for more than 5 years and are recognized as members of the Ghana Society of Radiographers (GSR) in good standing. Moreover, registered with the Allied Health Professional Council (AHPC). The study excluded staff who were not on duty at the time of data collection

3.6 Sample Technique and Sample Size

In all, a total of eighty (80) radiographers were selected for the study. This sample size was chosen based on the total enumeration of all radiographers in the health facilities selected.

3.7 Sample Size Calculation for Quantitative Survey

The researcher reached out to all radiographers from the three Government Hospitals and three private health facilities who met the inclusion criteria and were available during the data collection period. The researcher contacted all radiographers present in the facilities

In total, there were 90 Radiographers in all the facilities but out of that, 80 Radiographers responded. Representing a response rate of 88.9%.

The facilities with their respective number of radiographers that responded were as follows;

Table 1:

HEALTH FACILITIES	NUMBER OF RADIOGRAPHERS
PARADISE DIAGNOSTIC CENTRE (PDC)	7
QUEST DIAGNOSTIC CENTRE (QDC)	10
DIAGNOSTIC CENTRE LIMITED (DCL)	8
RIDGE HOSPITAL (RH)	14
37MILITARY HOSPITAL (MH)	14
KORLE-BU TEACHING HOSPITAL (KBTH)	27

3.8 Sample Selection for Qualitative Interviews

For the qualitative data, ten radiographers who met the inclusion criteria were selected for interviews using purposive sampling.

Purposive sampling involves the deliberate selection of individuals who can provide key insights or perspectives to address the study objectives. It is also useful in situations where the researcher needs to reach a targeted sample quickly.

A document stating the purpose of study and a copy of the ethical clearance was provided to the Directors of the facilities to help foster the data collection process. Upon agreeing to take part in the research, the purpose of the research was well explained to them along with the detail on the information sheet and the consent form. The respondents that were interested who agreed to take part were given the consent forms to sign. The researcher also scheduled the date and venue for the interview.

3.9 Data Collection Tools and Technique

Data were collected from multiple sources to allow for several different perspectives to be taken into consideration in the development of the recommendations. The interview guide and questionnaires were developed by the researcher based on the general and specific objectives of the study, conceptual framework and literature reviewed. Two trained personnel were engaged to facilitate the data collection process amongst the radiographers in the three Government Hospitals and three private facilities chosen for the study.

3.10 Quantitative data collection tools and technique Survey questionnaire

A questionnaire is a self- account data collection instrument that each research participant fills as part of a research study, and which is used to acquire statistical data (Creswell, 2014). A questionnaire might either contain closed-ended or open-ended questions depending on the type of data the researcher intends to gather (Bernard & Bernard, 2012). The questionnaire was one of the most preferred instruments because it has great potentialities when it is properly used and is an economical way of accumulating information of significance from the sample population (Mann, 2015). Mann (2015) added that when the researcher is not available to administer the questionnaire any other person can administer it on his behalf since it is self-explanatory. The reliability and validity of the questionnaire is however low (Creswell, 2014). Sometimes, questionnaires simply become a pooling of ignorance which means it becomes a compilation of the opinions of many persons who may not know the correct answer (Pathak et al., 2013).

The researcher used a close-ended questionnaires as the main research instrument for the quantitative survey. The questionnaire contained socio-demographic characteristics of the respondents outlining the age, sex, marital status, educational level and other relevant bio-data required in this study. It further covered the specific objectives that was crafted for this study. Questions asked were in accordance with the specific objectives where five sections were demarcated. Section A was to solicit information about the socio-demographic characteristics of the various respondents included in this study. Section B, part of the questionnaire used as the quantitative tool captured the knowledge of radiographers of existing standards. The Section C also detailed questions on common ethical breaches in the practice of diagnostic radiography, while Section D captured the level of compliance to ethical standards in patient management by radiographers. Lastly, Section E of the tool also addresses the factors influencing compliance to

ethical standards amongst radiographers.

3.11 Qualitative data collection tool and technique

Interview guide was used for the qualitative data collection. The guide was divided into various sections that covered the knowledge and awareness of the ethical standards, the responsibilities of the radiographer in patient management as well as the ethical standards applicable to radiography in patient management, the challenges and coping measures in place with regards to ethical compliance.

3.12 Data Collection Process

3.12.1 Qualitative Interviews

The qualitative aspect involved conducting an in-depth interview with 10 radiographers who are in managerial positions as heads of the radiography units of the facilities under consideration. In this case, data were collected from the respondents through in-depth interviews conducted with the selected radiographers. The design of the interview guides was based on the objectives as well as information obtained through the literature review by the researcher. Each respondent was interviewed and the interview sessions was tape recorded with some field notes taken in notebooks using pens and pencils to capture some vital information that were not audio recorded. Additionally, the recordings of all the interviews were also reassessed for clarity and quality audible. It was also thematically sectioned in order to address which participant said what. The recordings were then saved on a password protected laptop to prevent unauthorized access by third parties. English was the main form of communication since it was the official language in Ghana and, with the target personnel that were trained and educated in the English Language.

3.13 Quantitative Survey

The quantitative aspect of the study involved, conducting a consensus survey amongst 80 radiographers. The design of the questionnaire was based on the specific and general objectives of the study as well as information obtained through the literature review by the researcher.

The researcher developed a close-ended questionnaire and structured interview guide for gathering data for this study since the study also involved a quantitative method. Each respondent was given a questionnaire after their agreed and consented to the study which contained questions which were generated from the set objectives.

3.14 Data Analysis

Data analysis of the findings following the questionnaire administration was divided into two sections. Quantitative and Qualitative. The quantitative aspect rested on the use of Statistical Software to analyse all the numerical values transcribed after coding the data into STATA Version 16. Qualitative analysis was also done based on the thematic areas and major points that better relate to the study. However, the researcher did not lose sight of other factors that may have contributed to knowing and obtaining adequate information during the recordings.

Variables

The study's variables included independent and dependent variables. The independent variables were; Age, Sex, Years of service, Education, Knowledge of existing ethical standards. The independent variable was compliance to ethical standards.

Variable	Description
Age	Categorical
Sex	Categorical
Education	Categorical
Years of service	Categorical
Knowledge of existing ethical standards	Categorical
Compliance to ethical standards	Categorical

3.15 Methods for data analysis

3.15.1 Statistical methods for quantitative data analysis Sociodemographic characteristics of participants

Background characteristics such as; sex, age, education and years of experience were analysed using descriptive statistics such as frequencies and percentages and presented in tables.

3.15.2 Assessment of knowledge of radiographers on existing ethical standards

Knowledge of radiographers on existing ethical standards was assessed by scoring the responses of participants to a set of five statements using 5point Likert scale, where 1 was "strongly agree", 2 "agree", 3 "neutral", 4 "disagree", and 5 "strongly disagree". Composite scores were then obtained and categorized. Composite score less than 12.5 meant that participant largely agree to the statements assessing their knowledge on existing ethical standards and hence was considered as "good knowledge". Composite score

greater than or equal to 12.5 meant that participant largely disagree to the statements assessing their knowledge and hence was considered as "poor knowledge".

3.15.3 Ethical breaches in the practice of diagnostic radiography

This was also analysed by calculating a composite score on each of the 5-point Likert item questions under each of the four components considered under ethical standards (namely; scope of practice, commitment to practice, commitment to profession and safety). Means and standard deviations (SD) were obtained. Overall mean of 2.5 to 5 was considered as "breach" in ethical standard, while an overall mean below 2.5 was considered as "no breach" of ethical standard. Individual item(s) under each of the four components which had mean score of 2.5 or higher was considered as the specific ethical standard breached by radiographers.

3.15.4 Level of compliance to ethical standards

This was analysed by calculating a composite score on a set of 5 questions using a 5-point Likert scale, where 1 was "strongly agree", 2 "agree", 3 "neutral", 4 "disagree", and 5 "strongly disagree". Composite scores less than 12.5 meant that participant largely agree to the statements assessing their level of compliance to ethical standards and hence was considered as "high compliance". Composite score greater than or equal to 12.5 meant that participant largely disagree to the statements assessing their level of compliance to ethical standards and hence was considered as "low compliance".

3.15.5 Factors influencing compliance to ethical standards among radiographers

This was analysed using STATA version 16 and results presented in tables. Bivariate analysis using Chi- square or Fisher's exact test was done to assess association between level of compliance to ethical standards and sociodemographic characteristics and knowledge level of radiographers on existing ethical standards. Statistical significance was considered at P-value less than 0.05, with confidence interval (CI) 95%. Simple and multiple logistic regressions were used to determine the factors influencing compliance to ethical standards among radiographers.

3.16 Qualitative Data Analysis

The audios that were generated from the tape-recording interviews were played a number of times to get the general understanding of the information contained in them. Audio recordings were all transcribed verbatim. Codes were developed and thematic analysis manually done after regularly reviewing the codes generated to ensure proper interpretation to the data. In presenting the results, the views of respondents were presented in the form of quotations to support the various emerging themes. These were carefully analysed and discussed in relation to the available literature on the subject.

3.17 Ethical Considerations

The required ethical issues involved in studies using human subjects was followed in the conduct of the study as explained below.

3.17.1 Ethical Clearance

Ethics approval was sought from the Ghana Health Service Ethics Review Committee with the code **GHS-ERC 015/02/23** before the conduct of the study.

3.18 Permission from Study Sites

Permission was sought from the Medical Superintendents and the Central Administration of the three study sites. An introductory letter from the School of Public Health, College of Health Sciences, University of Ghana, Legon, was sent to authorities of the hospitals to guarantee that the research is for academic purposes only.

3.19 Consenting Process

All radiographers at the study sites were briefed about the study. After the briefing and rationale of the study had been discussed, a formal written (typed) consent form was issued to study respondents with sufficient time given for questions or clarifications. Study questionnaires and interviews were only administered and conducted respectively after the full informed consent had been signed by the study respondent (see A for the participant consent form).

3.20 Potential Risk

There was no potential risk to the participant. The researcher does not anticipate any risks to the respondents in the study at the six sites. In addition, the researcher had outlined measures in the confidentiality and privacy section to ensure that data gathered will be stored securely and only accessible to the researcher, no personal information (which is traceable) such as name will be included in the data collected.

3.21 Confidentiality and Privacy

No personally identifying information was collected. Study respondents were given a unique study ID, which was used on the survey and pseudo identities in the in-depth interviews. The study protocol, documentation, data, and all other information generated were held in strict confidence. No information concerning the study or the data was released to any unauthorized third party without prior written approval of the GHS-ERC/IRB.

3.22 Benefits of the Study

There was no immediate direct benefit of this research to the study respondents. However, it is anticipated that their participation could help the researcher to document the common ethical breaches in the conduct of radiography and how to avoid them. Moreover, the knowledge of this document will help on how to appropriately advice management of health facilities to ensure that radiographers attend to their duties in a more ethical nature. It could also help in future research on similar topic.

3.23 Cost of Participation

Study participants did not incur any direct financial cost for taking part in the study. Source of funding: The Principal Investigator is the primary funder for this study. Compensation: Participants was not compensated for participating in this study.

3.24 Conducting research under COVID-19

The researcher observed all the COVID-19 protocols during data collection. These comprised of wearing of nose masks, the frequent use of hand sanitizers and observe social distancing at all study sites.

3.25 Data Security and Storage

The researcher stored the data collected in an electronic format which was password protected.

3.26 Voluntary Consent and Withdrawal

Participation in the study was entirely voluntary and participants were free to refuse or leave at any time. - **"**A participant may withdraw his/her consent from the study at any time without stating the reason for withdrawal and this did not affect the provision of care for him/her".

3.27 Conflict of Interest

The researcher certifies that, there was no financial consideration that may compromise the researcher's ethical judgement in conducting or reporting the findings of the research.

CHAPTER FOUR

RESULTS

4.1 Introduction

This study sought to examine the factors that influence compliance with ethical standards among radiographers in some selected health facilities in the Greater Accra Region. Specifically, the study sought to describe the ethical standards for patient management in radiography, to document common ethical breaches in the practice of diagnostic radiography, to assess the knowledge of radiographers of existing standards, to assess the level of compliance to ethical standards in patient management by radiographers and to assess the factors influencing compliance to ethical standards amongst radiographers. The study adopted both qualitative and quantitative design based on a descriptive and analytic approaches. 80 respondents were selected through the purposive sampling method to answer the questionnaires. This chapter presents results from the study for each of the research objectives.

4.2 Socio-demographic characteristics of study participants

Table 1 shows the sociodemographic characteristics of participants. Most of the participants were males (67.6%). Participants within the age group of 20-29 years constituted the highest proportion of participants (63.4%), while participants within the age group 40-59 years constituted the lowest proportion (2.8%). Participants within the 3-5 years in service were found to constitute the highest among participants (38.0%), followed by those who have spent 1-2 years in the service (35.2%). Participants with BSc qualifications constituted the majority of study participants (91.5%), while participants with Doctor of Philosophy (PhD) constituted the least (2.8%).

Table 1: Sociodemographic characteristics of participants

Parameter	Frequency	Percentage (%)
Sex		
Male	48	67.6
Female	23	32.4
Age group		
20-29	45	63.4
30-39	24	33.8
40-59	2	2.8
Years of service		
1-11 months	4	5.6
1-2 years	25	35.2
3-5 years	27	38.0
6>years	15	21.1
Education		
BSc	65	91.5
MSc	4	5.6
PhD	2	2.8
Total	**71**	**100**

BSc – Bachelor of Science degree, MSc – Master of Science degree, PhD – Doctor of Philosophy

4.3 Knowledge of radiographers on existing ethical standards

The results in figure 2 below, shows that majority of the participants (76%) had good knowledge of existing ethical standards for radiographers.

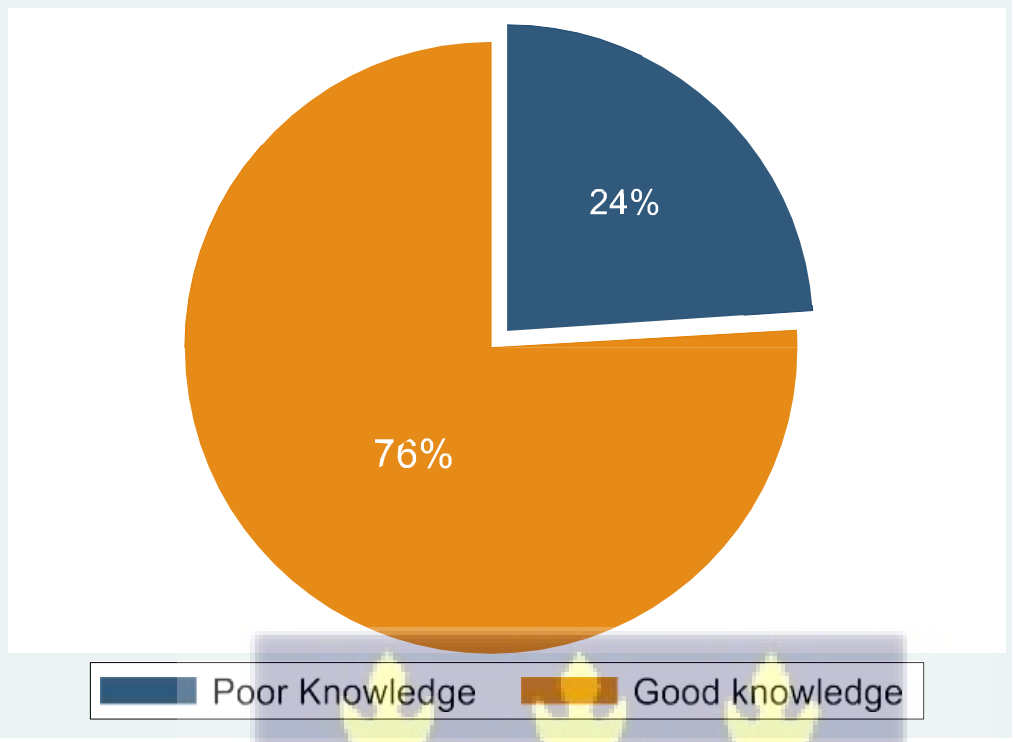

Figure 2: Knowledge of radiographers on ethical standards

From the qualitative data gathered all the participants responded "Yes" to being aware of the ethical standards guiding the radiography profession and emphasized on how crucial it is in their work. The convergence of survey data and interview responses confirms that baseline knowledge on ethical standards exists.

4.4 Ethical breaches in the practice of diagnostic radiography

Ethical breaches in the practice of diagnostic radiography were determined in four areas of ethical standards, namely; scope of practice, commitment to practice, commitment to profession and safety as summarized in Table 2 below. Individual items under each of the four components were measured using 5-point Likert item questions where values from 1 to 5 were assigned to responses, with the value 1 representing "Strongly agree", 2 "Agree", 3 "Neither agree nor disagree", 4 "disagree" and 5 "strongly disagree". Ethical breach was determined by calculating

a composite score on each item and the mean and standard deviation (SD) obtained. Overall mean of 2.5 to 5 was considered as breach in ethical standard, while an overall mean below 2.5 was considered as no breach of ethical standard.

4.4.1 Scope of practice

The overall mean score of participants' regarding their scope of practice of ethical standards was 1.44, with SD of 0.80, which indicates that generally, there was no breach in ethical standards with regards to the scope of practice of radiographers. The results show that most participants "strongly agree" that per their experience, they respect the rights and abilities of disabled persons and the aged and work together to serve or safeguard their interest (mean=1.35, SD of 0.88), they practice using the ALARA principle in their fields (mean=1.37, SD of 0.93), they ensure that their professional responsibilities and standards of practice are not adversely influenced by considerations of religion, gender, race, nationality, party politics, social or economic status or the nature of a patient's condition (mean=1.42, SD of 0.98) and also perform only the procedures for which full training and competence has been acquired (mean=1.44, SD of 0.84).

4.4.2 Commitment to practice

The overall mean score of participants' ethical standards regarding the aspect of their commitment to practice was 1.41, with SD of 0.85, which indicates that generally, there was no breach in ethical standards with regards to radiographers' commitment to practice. The results show that most participants "strongly agree" that in their practice as radiographers, they show concern for the welfare and safety of patients, staff and the public (mean=1.31, SD of 0.85), they act in a professional manner, respond to patient needs and support colleagues and associates in providing quality patient care (mean=1.35, SD of 0.91), and also ensure that the principles

of informed consent are upheld throughout the patient's experience (mean=1.39, SD of 0.92).

4.4.3 Commitment to profession

The overall mean score of participants' ethical standards regarding their commitment to profession was 1.37, with SD of 0.86, which indicates that generally, participants did not breach ethical standards in the aspect of commitment to their profession. The results show that most participants "strongly agree" that in their practice as professionals they respect patient privacy and maintain confidentiality of personal information (mean=1.30, SD=0.85), they do not engage or assist any person to engage in, or otherwise participate in, abusive or fraudulent billing practices (mean=1.31, SD=0.87) and also they are competent, dedicated, honest, client-focused and operate within the ambit of the laws of the land (mean=1.35, SD=0 .91).

4.4.4 Safety

The overall mean score of participants' ethical standards regarding safety was 1.47, with SD of 0.85, which indicates that participants did not breach ethical standards regarding safety. The results show that most participants "strongly agree" that in their practice as radiographers they maintain their working environment in a safe and hygienic condition according to occupational health and safety requirements so as to avoid adverse effects to patients or staff (mean=1.37, SD=0.87), and also take all reasonable care to ensure that their working conditions are such that the safety of patients, staff and the public is adequately catered for (mean=1.38, SD=0.87).

Table 2: Components of Ethical Standards which are breached

Component	Mean	SD	Min	Max
Scope of practice				
Perform only the procedures for which full training and competence has been acquired	1.44	0.84	1	4
Only accept requests for examinations which are properly authorized in accordance with established or recognized criteria/protocol	1.51	0.98	1	5
Be personally accountable for their work and Professional conduct	1.44	0.94	1	5
Practice using the ALARA principle in their fields	1.37	0.93	1	5
Ensure that their professional responsibilities and standards of practice are not adversely influenced by considerations of religion, gender, race, nationality, party politics, social or economic status or the nature of a patient's condition	1.42	0.98	1	5
espect the rights and abilities of disabled persons and the aged and work together to serve or safeguard their interest	1.35	0.88	1	5
Answer patient and family questions within the limits of his/her authority and responsibility	1.55	1.00	1	5
Protect children's rights and report all non-accidental injuries to the appropriate authorities	1.45	0.95	1	5
Overall mean (SD)	**1.44**	**0.80**		
Commitment to Practice				
Concern for the welfare and safety of patients, staff and the public.	1.31	0 .85	1	5
Advocate for the most appropriate care for patients and shall intervene in circumstances of abuse or unsafe, incompetent, or unethical practice.	1.55	0.97	1	5
Ensure that the principles of informed consent are upheld throughout the patient's experience.	1.39	0 .92	1	5
Eschew the act of rudeness and treat patients and their accompanying relatives with respect at all times	1.44	0 .89	1	5

Act in a professional manner, respond to patient needs and support colleagues and associates in providing quality patient care	1.35	0 .91	1	5
Overall mean (SD)	**1.41**	**0 .85**		
Commitment to profession				
Competent, dedicated, honest, client-focused and operate within the ambit of the laws of the land	1.35	0 .91	1	5
Registered and remain registered with the Allied Health Professions	1.38	0.95	1	5
Maintain a cordial relationship with other healthcare practitioners for the purpose of delivering quality healthcare services	1.41	0.87	1	5
Not demand unauthorized fees from patients/clients	1.37	0.91	1	5
Not engage or assist any person to engage in, or otherwise participate in, abusive or fraudulent billing practices.	1.31	0.87	1	5
Ensure that all oral and written statements are truthful, clear and concise	1.39	0.96	1	5
Respect patient privacy and maintain confidentiality of personal information	1.30	0.85	1	5
Observe the requirements of ethical standards and observe principles governing intellectual property	1.45	1.00	1	5
Overall mean (SD)	**1.37**	**0.86**		
Safety				
Take all reasonable care to ensure that their working conditions are such that the safety of patients, staff and the public is adequately catered for	1.38	0.87	1	5
Maintain their working environment in a safe and hygienic condition according to occupational health and safety requirements so as to avoid adverse effects to patients or staff	1.37	0.87	1	5
Protect themselves (eg.TLD & Lead use) from any potential danger during practice	1.68	1.24	1	5
Overall mean (SD)	**1.47**	**0 .85**		

4.5 Level of compliance to ethical standards in patient management

Majority of the participants (79%) had high level of compliance to ethical standards in patient management as shown in figure 3.

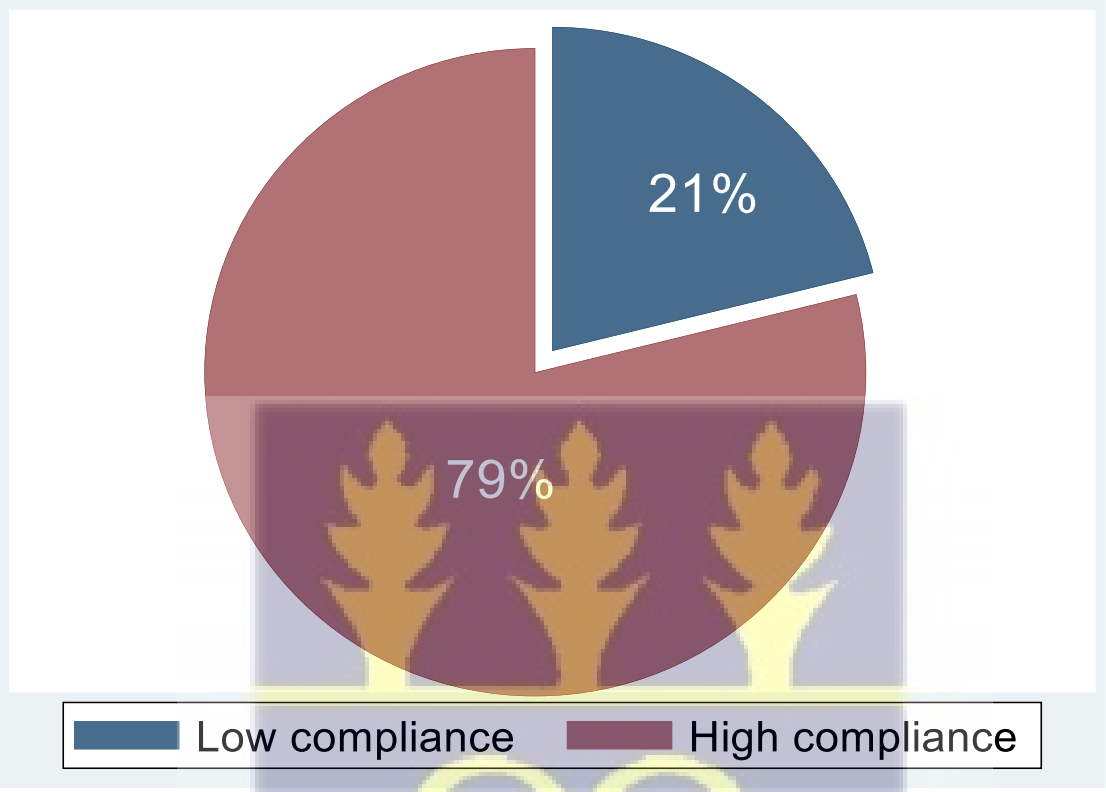

Figure 3: Level of compliance to ethical standards in patient management

Furthermore, with the qualitative data gathered, participants described real-life scenarios where ethical standards were upheld, especially in patient communication and confidentiality. The alignment between statistical compliance rates and lived experiences suggests that ethical conduct is not only understood but actively practiced.

4.6 Association between sociodemographic characteristics and level of compliance to ethical standards among radiographers

As shown in table 3, there was no significant difference between participants who had low level of compliance and those who had high level of compliance based on sex ($\chi 2$= 0.50, p=0.478), age (p=0.852), education (p=0.507) and years of service (p=0.656).

Table 3: Association between sociodemographic characteristics and level of compliance to ethical standards among radiographers

	Level of compliance to ethical standards				
	Low compliance value N(%)	**High compliance N(%)**	**Total N(%)**	**$\chi 2$**	**p-**
Sex				0.50	0.478
Male	9 (60)	39 (70)	48 (68)		
Female	6 (40)	17 (30)	23 (32)		
Age group (in years)					0.852[a]
20-29	9 (60)	36 (64)	45 (63)		
30-39	6 (40)	18 (32)	24 (34)		
40-59	0 (0)	2 (4)	2 (3)		
Education					0.507[a]
BSc	13 (87)	52 (93)	65 (92)		
MSc	1 (7)	3 (5)	4 (6)		
PhD	1 (7)	1 (2)	2 (3)		
Yeas of service					0.656[a]
1-11months	1 (7)	3 (5)	4 (6)		
1-2years	7 (47)	18 (32)	25 (35)		
3-5years	4 (27)	23 (41)	27 (38)		
6years and above	3 (20)	12 (21)	15 (21)		

[a]Fisher's exact test (expected cell count<5)

4.7 Association between knowledge of radiographers on existing ethical standards and Level of compliance to ethical standards

The results in table 4 shows that there was significant difference between participants who had low level of compliance and those who had high level of compliance based on

knowledge on existing ethical standards (p=0.005).

Table 4 Association between knowledge of radiographers on existing ethical standards and Level of compliance to ethical standards

	Level of compliance to ethical standards		
	Low compliance	High compliance	Total
		$\chi 2$	p-value
	N(%)	N(%)	N(%)
Knowledge of existing ethical standards			**0.005*[a]**
Poor Knowledge	8 (53)	9 (16)	17 (24)
Good knowledge	7 (47)	47 (84)	54 (76)

*Statistical significance, p<0.05; [a]Fisher's exact test (expected cell count<5)

4.8 Factors influencing compliance to ethical standards among radiographers

The results in Table 5 shows simple and multiple logistic regression analysis of factors associated with quality of life of participants. The simple logistic regression analysis showed significant association between level of compliance of ethical standards among radiographers and knowledge of existing ethical standards (p=0.005). From the simple logistic regression analysis, participants who had good knowledge of existing ethical standards were 5.97 times likely to be compliant to ethical standards compared to participants who had poor knowledge [OR=5.97, CI= (1.73-20.62)]. After adjusting for confounding variables such as sex, age, education and years of service, participants who had good knowledge of existing ethical standards were still 6.29 times likely to be compliant to existing ethical standards compared to those with poor knowledge [AOR=6.29, CI= (1.51-26.13), p=0.011].

Table 5: Factors influencing compliance to ethical standards among radiographers

Variables	O	95% CI	p-value	AOR	95% CI	p-value
Sex			0.48			
Male		Reference			Reference	
Female	0.	0.20-2.12		0.63	0.16-2.49	0.51
Age (in years)			0.632			
20-29years		Reference			Reference	
30-39years	0.	0.23-2.43		0.47	0.05-4.22	0.503
40-59years		1			1	
Education			0.621			
BSc		Reference			Reference	
MSc	0.	0.07-7.81		1.23	0.05-28.90	0.898
PhD	0.	0.01-4.27		0.32	0.01-12.12	0.536
Years of service			0.713			
1-11months		Reference			Reference	
1-2years	0.	0.08-9.69		0.27	0.02-4.05	0.343
3-5years	1.	0.16-23.35		0.80	0.04-16.29	0.887
6years and above	1.	0.10-17.82		0.86	0.02-36.33	0.938
Knowledge of existing ethical standards			**0.005***			
Poor Knowledge		Reference			Reference	
Good knowledge	5.	1.73-		6.29	1.51-26.13	**0.011***

*Statistical significance, p<0.05, OR=Crude Odds Ratio, AOR=Adjusted Odds Ratio

The qualitative data revealed themes such as institutional support, peer influence, and refresher training as key motivators.

4.9 Qualitative Analysis

Out of the 10 expected respondents, 6 were present for the interview. These 6 were radiographers in managerial positions. The average age, 35 years and they have had about 10 years working experience and have served in a managerial position for at least 3 years. The highest level of education attained by respondents was a Master's Degree and the lowest being Degree. All respondents used English to communicate.

4.10 Knowledge and Awareness of Ethical standards

All 6 of the participants responded "Yes" to being aware of the ethical standards guiding the radiography profession and emphasized on how crucial it is in their work dispensation.

4.11 Ethical Standards for Patient Management.

Most respondents stated "privacy" and "confidentiality" when ethical standards for patient management in radiography was mentioned.

For instance, an adult male supervisor from a private institution said:

> "When I hear ethical standards especially with the calibre of patients I attend to, patient privacy or confidentiality is paramount." (RADMP1)

4.12 Patient consent and privacy

The responses from participants indicated that radiographers comply with ethical standards in patient management. Radiographers ensure that they seek consent of patients before they undertake any form of examination of patients and also ensure privacy when undertaking same. One respondent said:

> "During radiologic examinations, we seek consent of the patients after the procedure has been well explained before the diagnosis of the patient." (RADMP6)

Another respondent also stated that due to patient privacy, he seals the patients' reports and films before handing it over to them.

> "By paying attention to patients' rights and adhering to ethical protocols of privacy and confidentiality, I seal patients' reports and films before handing them over." (RADMP4).

4.13 Continuous training and refresher courses as measures to maintain compliance

Respondents indicated that continuous training and refresher courses on ethical standards

have been planned by their managers to enhance compliance to ethical standards by radiographers. A participant said:

> "The institution heads had plans of partaking and engaging their subordinates in continuous

training and refresher courses to keep them abreast in the changing dynamics and trends, as well as, constant monitoring and evaluation schedules in place to act as guide for effective compliance." (RADMP3)

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the findings of the study in relation to existing literature. The overall aim of this study was to assess the factors influencing compliance with ethical standards among radiographers in selected health facilities in Ghana.

5.2 Knowledge of radiographers on existing ethical standards

The results of this study showed that majority (76%) of radiographers have good knowledge of existing ethical standards. This finding is similar to the finding of previous studies (Alshamrani 2023; Okpaleke, Moi, and Njiti 2015). For instance, Okpaleke, Moi, and Njiti (2015) found in their study conducted in Nigeria that majority (82.4%) of radiographers had knowledge about ethical code of practice while the remaining had no knowledge. Alshamrani (2023) also concluded in their study conducted in Saudi Arabia that radiographers were knowledgeable regarding informed consent (which is key component of ethical standards in radiography). The reason for the finding of this study could be due to the fact that most the radiographers receive orientation in ethical standards before they start working as professionals. It is a positive finding to have majority of radiographers demonstrate good knowledge in existing ethical standards for radiographers. Radiographers are expected to comply with required ethical standards in their practice and for compliance to such standards to be fully observed, adequate knowledge of such standards by the professionals is required. Previous study by Malone and Zölzer (2016) has confirmed that knowledge of ethical standards influence compliance to such standards among radiagraphers. It is important therefore to institute measures to improve the knowledge of the 24% of the participants

in this study who had poor knowledge in existing ethical standards through regular sponsored compulsory Continuing Professional Development programs for all radiographers.

5.3 Ethical breaches in the practice of diagnostic radiography

The study found that radiographers did not breach any of the specific provisions of ethical standards in any of the four aspects (i.e., scope of practice, commitment to practice, commitment to profession and safety) considered in this study in their practice of diagnostic radiography. This is contrary to finding of previous studies which reported various specific breaches of ethical standards though such studies also found overall high level of compliance to ethical standards (Abonyi et al. 2013; Botwe et al. 2016; Ochonma et al. 2015). For instance, Ochonma et al. (2015) reported ethical breaches among radiographers such as; non-observance of informed consent, radiographers' not explaining equipment procedure to patients, inability of radiographers to disclose their limitations where appropriate, and the lack of engagement of patients' in planning and evaluation of diagnostics in service delivery, while Botwe et al. (2016) also reported that radiographers did not informed patients of the side effects of their respective examinations. The reason for this contrary finding between this current study and that of previous studies could be due to the differences in the study population. While this current study look at ethical breaches and compliance from the perspective of radiographers who are the service providers themselves, those previous studies looked at same from the perspective of patients who are the recipients of service from the radiographers. While findings of previous studies which considered patients' perspective (Botwe et al. 2016; Ochonma et al. 2015) and that of this current studies which considered the practitioners' perspective are in congruence that majority of radiographers comply with ethical standards, the same cannot be said from the

two different perspectives regarding the specific breaches of ethical standards. However, in this situation, the patients' opinion may be considered paramount. To clear any possible biases, it is recommended that any such similar future studies looks at compliance and breaches from the perspectives of various stakeholders such as; the professionals (radiographers), patients, and relatives of patients.

5.4 Level of compliance to ethical standards among radiographers

The study found that majority of participants (79%), had high compliance to ethical standards in patient management, with "patient consent and privacy" being routinely adhered to among radiographers in their practice. This result is similar to the findings of previous studies conducted in Ghana and Nigeria which also reported high level of compliance to ethical standards among radiographers (Abonyi et al. 2013; Botwe et al. 2016; Okpaleke, Moi, and Njiti 2015). The finding of this current study is also consistent with the finding of a study by Ochonma et al. (2015) who reported that majority of radiographers (84.7%) were found to exhibit good professional/ ethical conduct in the discharge of their duties. This finding of majority being majority of participants being strongly compliant to ethical standards is not surprising as it is in congruence with the result on the knowledge of radiographers on existing ethical standards of this study. It is natural to expect that since majority of radiographers expressed good knowledge in existing ethical standards, they would also be compliant of such standards they are knowledgeable of. It has been found in previous study that compliance to ethical standards has influence on patient satisfaction (Ochonma et al. 2015). The regulatory body of radiographers and facility managers are therefore encouraged to continue to ensure that radiographers continue to comply fully with ethical standards in order to enhance patient care and satisfaction at all service delivery sites.

5.5 Factors influencing compliance to ethical standards among radiographers

The results of this study showed that knowledge of existing ethical standards was significantly associated with compliance to ethical standards among radiographers, with participants who had good knowledge of existing ethical standards having higher odds of being compliant to ethical standards compared to those with poor knowledge. The finding is consistent with the finding of previous study by Malone and Zölzer (2016) who found significant association between knowledge of ethical standards and compliance. Okpaleke, Moi, and Njiti (2015) also reported findings similar to that of this current study when they reported that majority of clients who were knowledgeable about ethical code practiced same regularly. From the finding of this study, it could be said that the first step to compliance is knowledge. This therefore points to the fact that, to get radiographers to comply with the ethical standards of their profession, regulatory bodies and facility managers must first put in enough effort to educate them on their professional ethical standards to build their knowledge level. It is therefore not surprising that majority of the participants had high level of compliance to ethical standards since majority were also knowledgeable about ethical standards. Reminders of ethical standards are therefore important and could be done during orientation of new radiographers and through refresher courses and continuing professional development programs as indicated by participants of the qualitative aspect of this study as measures to ensure continuous compliance. Such compliance will contribute to patient satisfaction as noted by Ochonma et al. (2015) in their study and enhance patient care.

5.6 Limitation of the Study

The study was limited to assessing radiographers' compliance with ethical standards in patient management in selected health facilities in only the Accra Metropolitan Assembly. For the purpose of this study, the researcher did not conduct the research in all health facilities in the country, rather, the researcher focused on Diagnostic Radiographers practicing in the selected health facilities in the Accra Metropolitan Assembly since it was nearer to the researcher and was considered to have a fair representation of the data that was needed for the study. Additionally, the study looked at compliance from only the radiographers' perspective and did not cover the perspective of patients and patient relatives. It was therefore not possible to crosscheck the responses from the radiographers from other perspectives. In view of these limitations the findings of this study should be interpreted with care when being generalized.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter highlights conclusion and recommendation for specific individuals to take action to help improve ethical compliance among radiographers.

6.2 Conclusion

This study found that having good knowledge of existing ethical standards was significantly associated with high compliance to such standards by radiographers. Majority of radiographers in health facilities in greater Accra have good knowledge of existing ethical standards and are highly compliant with such standards in their practice. This study did not however, identify specific ethical breaches by radiographers in their practice which is inconsistent with previous studies and hence, recommend that future studies look at ethical breaches by radiographers from the perspective of patients, radiographers and patient relatives. There is need to continue to keep reminding radiographers of existing ethical standards through regular training and orientation of new radiographers.

6.3 Recommendation

Based on the finding of this study the following recommendations are made;

1. Professional associations, regulatory bodies and health managers are to ensure that new radiographers are well oriented on existing ethical standards for radiographers enhance their knowledge and compliance

2. Regulatory bodies and facility managers are to continue to enhance the knowledge of radiographers on ethical standards through continuing professional development and in-service trainings so as to continue to uphold high levels of ethical compliance
3. Future research should look at ethical breaches from the perspective of radiographers, patients and patient relatives in order to get a balanced view of specific provision of ethical standards that are breached by radiographers in order to institute measures to address same.

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APPENDIX A: PARTICIPANTS INFORMATION SHEET

RESEARCH TITLE: Factors Influencing Compliance with Ethical Standards Among Radiographers In Three Selected Health Facilities In Greater Accra Region

PRINCIPAL INVESTIGATOR: Adelaide Gyamfuah Osei-Bonsu

ADDRESS: Diagnostic Centre, 3 Maseru Street, East Legon

TELEPHONE NUMBER: 0546275470

EMAIL: adelaide_oseibonsu@yahoo.com

Background Of Research And Nature:

This Research seeks to investigate the knowledge of Radiographers in the code of ethics as required in their profession and their compliance to these ethical standards during patient management and in their duty dispensation.

Your participation is completely voluntary, participants can freely decline participation or withdraw from the study at any time with no penalty. A participant may withdraw his/her consent from the study at any time without stating the reason for withdrawal and this will not affect the provision of care for him/her".

If you agree to take part in this Research, I will ask you to fill a questionnaire and employ an interview guide where necessary.

It should take approximately 10 minutes to complete.

All information you give will be completely anonymous and confidential. The information gathered will be only be used for the purpose for which it was gathered.

The discussions will be recorded with an audio device and all recordings will be destroyed once they have been transcribed. Data will be collected and stored in accordance with Data Protection

Act. There will be no potential risk or no harm will be caused to any participant.

The research will be highly beneficial to the Society of Radiographers and Healthcare in general.

There will be no cost incurred on your part as a result of complying to partake in this research.

For further information or any clarification on the study, kindly contact: Principal Investigator:

Adelaide Gyamfuah Osei-Bonsu (0546275470) Email: adelaide_oseibonsu@yahoo.com

Or

Kindly contact Nana Abena Apatu, (0503539896), ethics.research@ghsmail.org) for participants to make further clarification on ethical issues.

APPENDIX B: CONSENT FORM

STUDY TITLE: Factors Influencing Compliance with Ethical Standards Among Radiographers In Three Selected Health Facilities In Greater Accra Region

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (English). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant……..

Participants' Signature …….. OR Thumb Print……

Date:……

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (English) language to his proper understanding.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……

Signature of Interpreter…….. OR Thumb Print …….....

Date:……

Contact Details:

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood (English)

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:……

Signature…….. OR Thumb Print …….....

Date:……

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name……

Signature ……

Date……

APPENDIX C: QUESTIONNAIRE

GUIDELINES FOR ANSWERING QUESTIONNAIRE

i. Please answer questions by ticking (√) or a crossing (**X**) or circling (O) the letter next to the correct answer and explain where necessary.

ii. If writing space is not enough write behind this paper and write the question number next to the answer

Questionnaire for staff & management on the Issue of **"Factors influencing Compliance with Ethical Standards Amongst Radiographers in Selected Health Facilities in the Greater Accra Region**"

A. PERSONAL INFORMATION

1. Please indicate your gender. (a) Male [ ] (b) Female [ ]
2. Please select your age range

(a) Less than 20 years [ ] (b) 20-24 years [ ] (c) 25-29 years [ ]

(d) 30-34 year (e) 35-39 years[ ] (f) 40-44 years [ ](g) 45-49 years[ ](h) 50-54years

(i) 55-59 years [ ] (j) 60 and above

3. What is your educational qualification?

(a) WASSCE [ ](b) Diploma/HND [ ] (c) Bachelor's degree [ ]

(d) Masters/MBA [ ] (e) PhD/Doctorate [ ]

(h) Others (Please Specify) ……

B. CORPORATE INFORMATION

4. How long have you worked as a radiographer?

(a) 1-11 months [ ](b) 1 – 2 years [ ](c) 3-5 years [ ]

5. Do you have Knowledge in the ethical conduct of radiography? Yes [ ] No [ ]

Section B: Ethical standards for patient's management Instructions:

The following statements are some of the **ethical standards for patient's management in radiography**. In a continuum of strongly Agreed to strongly Disagreed, where Strongly agree =1; Agree=2; Uncertain=3; Disagree =4 and Strongly disagree =5; state your level of agreement with each of the statements**.** Please respond to the following statements by ticking the answer that most accurately represents your opinion concerning your experience using the following scale:

	1	2	3	4	5
Scope of practice. **The radiographer must:**					
Perform only the procedures for which he/she has acquired full training and competence					
Only accept requests for examinations which are properly authorized in accordance with established or recognized criteria/protocol					
Be personally accountable for their work and Professional conduct					
Practice using the ALARA principle in their fields.					
Ensure that their professional responsibilities and standards of practice are not adversely influenced by considerations of religion, gender, race, nationality, party politics, social or economic status or the nature of a patient's condition					
Respect the rights and abilities of disabled persons and the aged and work together to serve or safeguard their interest					
Answer patient and family questions within the limits of his/her authority and responsibility					
Protect children's rights and report all non- accidental injuries to the appropriate authorities					
Commitment to Practice: The radiographer must					

Be concerned for the welfare and safety of patients, staff and the public.					

Advocate for the most appropriate care for patients and shall intervene in circumstances of abuse or unsafe, incompetent, or unethical practice.					
Ensure that the principles of informed consent are upheld throughout the patient's experience.					
Eschew the act of rudeness and treat patients and their accompanying relatives with respect at all times					
Act in a professional manner, respond to patient needs and support colleagues and associates in providing quality patient care					
Commitment to profession					
Be competent, dedicated, honest, client-focused and operate within the ambit of the laws of the land					
Be registered and remain registered with the Allied Health Professions					
Maintain a cordial relationship with other healthcare practitioners for the purpose of delivering quality healthcare services					
Not demand unauthorized fees from patients/clients					
Not engage or assist any person to engage in, or otherwise participate in, abusive or fraudulent billing practices					
Ensure that all oral and written statements are truthful, clear and concise					
Respect patient privacy and maintain confidentiality of personal information					
Observe the requirements of ethical standards and observe principles governing intellectual property					
Safety					

Take all reasonable care to ensure that their working conditions are such that the safety of patients, staff and the public is adequately catered for					
Maintain their working environment in a safe and hygienic condition according to occupational health and safety requirements so as to avoid adverse effects to patients or staff					
Protect themselves (eg.TLD & Lead use) from any potential danger during practice					

Section C: Levels of compliance to ethical standards Instructions:

The following statements on some of the **levels of compliance to ethical standards in patient management by radiographers**. In a continuum of strongly Agreed to strongly Disagreed, where Strongly agree =1; Agree=2; Uncertain=3; Disagree =4 and Strongly disagree =5; state your level of agreement with each of the statements**.** Please respond to the following statements by ticking the answer that most accurately represents your opinion concerning your experience using the following scale:

S/No		1	2	3	4	5
1.	Ethical standards and compliance is central to radiography strategy					
2.	**Ethics and compliance risks are identified, owned, managed, and mitigated.**					
3.	**Radiographers at all levels build and sustain a culture of integrity**					
4.	**The health facility encourages, protects, and values the reporting of concerns or suspected wrongdoing**					
5.	**The health facility takes action and holds itself accountable when wrongdoing occurs**					

Section D: Instructions:

The following statements on some of the **Knowledge of radiographers on existing standards**. In a continuum of strongly Agreed to strongly Disagreed, where Strongly agree =1; Agree=2; Uncertain=3; Disagree =4 and Strongly disagree =5; state your level of agreement with each of the statements**.** Please respond to the following statements by ticking the answer that most accurately represents your opinion concerning your experience using the following scale:

S/No		1	2	3	4	5
1.	I received an orientation concerning the ethical standards in radiography before you started working as a radiographer					
2.	I am well informed about the existing standards in radio radiography?					
3.	I receive annual orientation and refresher courses on the existing standards in radiography					
4.	I always maintain ethical conducts in patient management					
5.	The ethical standards of radiography is very important					

Section E: Impact of financial incentives on employee motivation Instructions:

The following statements on some of the **factors influencing compliance to ethical standards among radiographers**. In a continuum of strongly Agreed to strongly Disagreed, where Strongly agree =1; Agree=2; Uncertain=3; Disagree =4 and Strongly disagree =5; state your level of agreement with each of the statements**.** Please respond to the following statements by ticking the answer that most accurately represents your opinion concerning your experience using the following scale:

S/No		1	2	3	4	5
1.	Personal judgment					
2.	Person goals and morals					
3.	Cultural norms					

4.	Educational background					
5.	Improper organizational ethos					
6.	Legal considerations					
7.	Ethos of professional peers					
8.	Lack of desire to enhance status					
9.	Ages					

APPENDIX D: INTERVIEW GUIDE

Student's Name: Adelaide Gyamfuah Osei-Bonsu

Interview Synopsis with the radiographers on the issue 'Ethical standards in radiography…

PART 1

1. What is your position in this medical facility?
2. How long have you been working in this capacity?
3. What specific role do you play in the radiography unit?

PART 2

1. Are you aware of the ethical standards of radiography?
2. What are the ethical standards for patient management in radiography?
3. What are your responsibilities towards patients with regards to ethical conducts?
4. How do you apply the ethical standards in patients' management?
5. What challenges do they face when managing patients?
6. How do you try to address those challenges?
7. What measures has the medical facility put in place to ensure radiographers comply with the ethical standards?
8. What plans do you have to help you and other radiographers in this unit to improve

your knowledge and compliance of the ethical standards?

9. What has you unit done to assist you comply with the ethical standard to manage patients efficiently?

10. Have you ever had any legal issues concerning incompliance with the ethical standards of radiography

11. What is the future plan to …….?

APPENDIX E: ETHICAL CLEARANCE

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
Tel: +233-302-681109
Email: ethics.research@ghs.gov.gh

My Ref. GHS/RDD/ERC/Admin/App/23/202
Your Ref. No.

25th April, 2023

Adelaide Gyamfuah Osei-Bonsu
C/O Dianostic Centre
East Legon –Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 015/02/23**
Study Title	Factors Influencing Compliance with Ethical Standards among Radiographers in selected Health Facilities in Greater Accra Region
Approval Date	25th April, 2023
Expiry Date	24th April, 2024
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months.
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why.
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
Dr. Naa-Korkor Allotey
(Ag. Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra