ASSESSING ETHICAL KNOWLEDGE AND PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS AT UNIVERSITY OF BENIN

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CERTIFICATION

This is to certify that this research project by **OKAFOR AMARACHI PRECIOUS** with a Matriculation Number of **BMS1906382** has been examined and approved for the award of Bachelor's of Radiography in the department of Radiography; School of Basic Medical Science, University of Benin, Edo State.

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DEDICATION

This project is dedicated to God Almighty, My helper and My Family for the never ending love and support.

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My profound gratitude goes to God Almighty, the sole owner of my life For his Favour, Grace, wisdom, Knowledge, understanding and direction throughout my academic journey.

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ABSTRACT

This paper has examined the subject of ethical knowledge and professional behaviour among student radiographers in University of Benin, Nigeria. The data were collected via standardized self-administered questionnaires and a descriptive cross-sectional survey was performed among the clinical year students (300 to 500 level) of the organizations. Purposive sampling and descriptive statistics were the choice of the study to ensure the analysis of the data by means of SPSS version 29. Findings showed that most students (78.6) displayed positive understanding of the main ethical concepts, where the informed consent (96.0% correct), patient response to refusal (98.8% correct), and autonomy (91.3% correct) were significantly high. The level of professional conduct knowledge was exceptionally good (94.0 percent good knowledge) and 99.6 percent of them have a correct understanding of the procedures in managing complaints and 99.2 percent of them understand the boundaries of their profession. There were however loopholes in the understanding of patient confidentiality nuances, where 17.1% believed that patient information would never be disclosed and in any way. Some of the common ethical questions that were posed were poor supervision (means of 1.94/4.00), poor description of procedures (means of 1.81/4.00) and not obtaining proper consent (means 1.58/4.00). It was found in the study that core ethical knowledge is present among student radiographers but specific treatments that deal with practical application of ethical concepts in clinical settings are required. Suggestions given are more ethics integration in clinical training, better supervision process, establishment of mentorship programs to address ethical choices, and establishment of an ethical culture of accountability and reporting errors.

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CHAPTER ONE

INTRODUCTION

Radiography forms a significant section of the medical sciences and has remained to expand in regard to technology, scope, and treatment of patients. Along with the growing scope of the field, there is also the desire to ensure high ethical consciousness in the practitioners. Sound moral judgment and professional conduct are imperative to radiography due to the close contact between radiographers and patients and the sensitivity in potential use in situations of imaging (Abonyi et al., 2013). Beauchamp and Childress (2019) explain the four fundamental principles of biomedical ethics autonomy, beneficence, non-maleficence, and justice that health professionals use to make ethical choices. Radiographers can use these principles in real life situations when dealing with problems in clinical practice.

Since radiography deals with direct contacts with patients and cooperation with other medical personnel, radiographers are supposed to be responsible in respect to the patient rights, confidentiality, informed consent and effective communication as they would be expected to exercise professionalism. To at least informally direct the profession, professional organizations such as the International Society of Radiographers and Radiological Technologists (ISRRT, 2020) and the European Society of Radiology (ESR, 2013) have designed codes of ethics to aid in directing the discipline.

Nonetheless, literature has indicated that implicit inconsistencies in ethical information and professional ethics are still also present amongst students as well as practicing radiographers, particularly in the poorer nations as a result of these policies. As an example, Abonyi et al. (2013) have discovered discrepancies in ethical behaviors in the radiographers within Lagos, whereas

Luntsi et al. (2015) have discovered that the same is also observed with the radiographers in northern Nigeria, and further ethics education and supervision are necessary.

Training period is an important phase and it is at this point that students start to develop professional values. However, they are prone to challenging circumstances in clinical practice that put what they have learned to test. Ochonma et al. (2016) have mentioned that the reputation of radiographers in the workplace may have a significant impact on the cognition and application of ethical principles by students. Similarly, the responses of the patients towards the treatment of the patients by radiographers also influence the thoughts of the students concerning professionalism (Ochonma et al., 2015).

In various institutions, the level of weight applied to ethics during training in radiography differs. Students in most of the schools in Nigeria are not adequately trained to face real-world ethical issues using the traditional teaching methods (Ochonma et al., 2015; Ochonma et al., 2016). Students of radiography obtain classroom and clinical training at the University of Benin (UNIBEN) yet no one has also determined how perfectly this training prepares them to manage ethical problems in their profession. As indicated by Kyei et al. (2015), such variables as inefficient supervision, role ambiguity, and unethical conduct exposure have the potential to influence the way in which students become professionally developed.

Sexual harassment, breach of confidentiality or communications are also some of the problems that radiography students might experience. Practitioners working in radiology departments stated that sexual harassment existed in some of them (Camargo et al., 2017), which means that tougher measures are necessary to involve and educate on the boundaries of professionalism. In

the same light, Gluyas (2015) pointed out that effective communication and collaboration is critical not only in patient safety, but also in ethical practice.

The other area is on informed consent. Research has revealed a tendency of radiographers and students to have limited knowledge of this process (Alshamrani, 2023), and patient autonomy is not being duly respected in most instances (Hofmann and Lysdahl, 2015). As radiography is associated with radiation presence, practitioners have to make reasonable ethical decisions regarding safety and justification as well, which is underlined by the International Commission on Radiological Protection (Bochud et al., 2020).

It is necessary to comprehend the manner in which the students deal with such ethical concerns, in order to enhance their schooling, as well as their subsequent professional practices. The gap between classroom and clinical practice is the most important factor to create competent and ethically responsible radiographers as Shafuda et al. (2024) and Tashiya et al. (2021) propose. This research will hence evaluate the moral understanding and conduct of the student radiographers at UNIBEN, and this will enable them to enhance their training, and also, the quality of radiographic services as well.

1.2 STATEMENT OF THE PROBLEM

It cannot be overestimated that the knowledge of ethics and professionalism among the students is relevant and important, as they will be the professionals who will have the task to take care of patients and manage them and they must be well equipped in the process. Although student radiographers in the University of Benin (UNIBEN) are provided with an academic and practical training, the effectiveness of the training in promoting a regular ethical practice is not clear. Available literature proposes inconsistencies in ethical knowledge and clinical practice in

broader Nigerian /African setting. More importantly, no assessment can be conducted on whether the UNIBEN program is effective in equipping its students to deal with typical ethical issues common in clinical environments, including poor supervision and consent challenges, in which the students have to deal with on a regular basis. Without this information, one cannot accurately detect the needed set of interventions to improve the curriculum, which poses a serious lack of quality assurance in the future of professionals.

1.3 RESEARCH QUESTIONS

These are the questions:

-How well do student radiographers in UNIBEN know about ethics?

-To what extent are the students knowledgeable about professional conduct?

-Which kinds and how often do ethical issues and professional misconduct occur or arise in clinical training among student radiographers?

1.4 HYPOTHESES

H01 (Null Hypothesis): Student radiographers at UNIBEN do not have a significant level of knowledge on ethics and professional conduct.

H11 (Alternative Hypothesis): Student radiographers at UNIBEN have a significant level of knowledge on ethics and professional conduct.

1.5 AIM AND OBJECTIVES

1.5.1 AIM

To determine the level of knowledge of ethics and professional conduct in students in UNIBEN and obstacles that they tend to face during their training.

1.5.2 SPECIFIC OBJECTIVES

-To examine the level of knowledge within which student radiographers of UNIBEN have towards ethics.

-To measure the level of professional conduct among the student radiographers.

-To describe the number and character of the ethical issues and professional misconduct experienced by student radiographers in the course of the clinical training.

1.6 SIGNIFICANCE OF THE STUDY

The importance of the study is that it can be directly related to patient care, radiography profession development, as well as trust to healthcare among the population. Radiographers form one of the most important parts of the medical team, and therefore, it is important that students under training grasp the concept of ethics and professionalism. In doing so, the patients are treated in a safe and respectful manner.

To the profession, the study will aid in the determination of what is going right and what is lacking in the education of ethics among the students. These are just some of the areas that can

be improved so as to produce skilled, honest, and responsible radiographers and this will reinforce the perception of the profession as one that upholds integrity and high standards.

On a wider level, the behavior and values of healthcare workers affect how much people trust medical services. By promoting ethical practice and patient-focused care, this study supports the development of a healthcare system that is not only effective but also caring and trustworthy.

1.7 SCOPE OF THE STUDY

This study is limited only to radiography students of the University of Benin {University of Benin} in their clinical years {300 – 500}. It is to assess their knowledge and understanding of ethics and professional conduct in relation to the radiography profession. The study does not include radiography students in pre-clinical years or those from others. Also lectures, clinical instructors, hospital staffs are strictly excluded from this study.

1.8 OPERATIONAL DEFINITION OF TERMS

Ethical Knowledge: In this study, ethical knowledge refers to the understanding that guides right and wrong in the hospital setting, moral principles, patient confidentiality, autonomy and informed consent among student radiographers.

Professional Conduct: This refers to the set of ethical, moral and behavioral standards displayed by student radiographers in both clinical and academic settings. This includes their relations with patient, hospital staffs, colleagues and the medical community at large

Student Radiographers: These are students carrying out their undergraduate education in the field of radiography. This study focuses more on students studying in UNIBEN and in their clinical years {300-500}.

Ethical Challenges: These are the moral hurdles or obstacles students face that test their ethical knowledge.

Clinical Training: this is the practical aspect of the radiography training , where students put all the theoretical knowledge they've gained into practice in a hospital setting.

CHAPTER TWO

LITERATURE REVIEW

2.1 CONCEPTUAL REVIEW

2.1.1 ETHICS IN RADIOGRAPHY

Figure 2.1. The principles of biomedical ethics adapted from Beauchamp and Childress (Beauchamp et al., 2019)

Aristotle defined ethics as the study of character, habits and virtues that enable us have a good life. Medically, ethics is defined as the study of moral problems in the practice of medicine, particularly how they relate with clinical care, healthcare policies and the professional conduct of healthcare providers (Beauchamp&Childress, 1979). Ethics plays a role in radiography especially in areas of radiation protection and patient care within the medical field. Radiography is a vital part of healthcare hence its approach to patient safety differs from other aspects of medicine. Unlike the general ethical framework used in healthcare, radiography adheres to the system of radiation protection. This framework includes three key components: professional development, regulation and governance, and a safety culture (Mosathupa, 2023). Radiation protection was originally designed to primarily protect workers and the public and less focus on patient protection The use of ionizing radiation in medicine has seen a significant increase over the last 25 to 30 years and this has enabled a lack of clear ethical reference (Bochud et al., 2020; Mosathupa, 2023). Adding to this, newer healthcare policies are more patient centred (Gluyas, 2015). As a result, the radiation protection framework is being gradually adapted to incorporate ethical considerations.

Beauchamp and Childress in 1979 highlighted four core principles of biomedical ethics. These principles guide the entire medical field in which radiography happens to be a part of. These four core principles play a crucial role in patient care. They include:

Principle of Autonomy: This ensures that patient's rights are respected especially in making informed decisions concerning their healthcare. This is done by laying out all the necessary options and properly explaining them highlighting the information's that patients are to be aware of to enable them make choices aligning with their values and preference. Also patients should not be treated without their consent.

Principle of Beneficence: Healthcare workers have an obligation to act in the best interest of the patient by preventing harm to the patient thereby promoting their health and wellbeing. This principle encourages healthcare providers to contribute positively to the patient's welfare.

Principle of Non-Maleficence: This is backed up by the phrase "Do no harm". It is a counterbalance of the principle of beneficence. It ensures that actions taken by healthcare workers are taken to avoid or minimize harm to patients.

Principle of Justice: It ensures that patients of all age, gender, race or culture are treated fairly and equally. There should be equal distribution of healthcare resource, treatment and attention.

These principles often interact and can sometimes conflict, requiring healthcare professionals to carefully consider and balance them in clinical decision-making. For instance, a treatment that benefits one patient might be resource-intensive, raising questions about justice and the fair allocation of resources. The principle of "As Low As Reasonably Achievable" should also be applied to minimize unnecessary radiation exposure without any discrimination based on socio-economic or educational status.

2.1.2 ETHICS AMONG RADIOGRAPHY STUDENTS

Medical ethics in the context of student radiographers is the study as the study of morality and involves a careful reflection on actions and behaviors. The purpose of educating student radiographers on ethics is to ensure they have high behavioral standards to help them decipher between what is labeled ethical and what is not ethics education is to help students maintain high standards of behavior, helping them determine what is labeled ethical and what is not in order to safeguard the public. Ethics education plays a key role in boosting and preparing student radiographers for a professional career ahead of them thereby ensuring patients safety (Camargo

et al., 2017; Mosathupa, 2023). The ethical responsibilities of student radiographers include assessing the appropriateness of imaging procedures, assisting with informed consent, effective communication with patients, protecting patients from unnecessary radiation exposure, and ensuring high-quality imaging equipment are (Hofmann and Lysdahl, 2015). Radiography students must digest and apply the four key principles of ethics in their professional practice especially in clinical settings when it comes to dose regulation and patient care. Radiography educators such as clinical coordinators and lecturers need to be responsible for impacting the right knowledge based on ethical practice. This will increase their competence, performance and ensure that when they finally become licensed radiographers, they demonstrate their ethical knowledge and ensure patient safety at all cost.

2.1.3 GLOBAL VIEW OF STUDENT RADIOGRAPHERS' KNOWLEDGE OF ETHICAL CONDUCT

The International Society of Radiographers and Radiological defines ethical guidelines in relation to student radiographers, as the knowledge and duties that student radiographers must learn and practice as specified in their code of conduct. The International Society of Radiographers and Radiological Technologists (ISSRT, 2019) Code of Ethics has been developed to checkmate radiographers' ethical behavior and responsible conduct to ensure that they maintain adequate knowledge of the regulations affecting their practice and patients. An example of such guideline is the application of knowledge and clinical experience to unique experiences by the student radiographers. The European Society for Radiographers (ESR) has formulated ethical principles and professional responsibilities to guide student radiographers in their relationships with patients. They promote the four core principles of beneficence, non-maleficience, justice and autonomy (ESR, 2013). Continually refresh their knowledge and skills

to benefit patients and themselves (ESR, 2013). This is made possible through addition of ethics in radiography curriculum.

Despite this, some challenges present itself in term of disparities on ethical knowledge between UK, USA, and other African countries radiography still struggles with regulation (McInerney & Lees, 2018).also lack of profession independence, medical dominance In some countries, the lack of a regulatory body for radiographers has led to inadequacy and accountability issues cause issues with ethical knowledge (McInerney & Lees, 2018).

2.1.4 NIGERIAN VIEW OF STUDENT RADIOGRAPHERS' KNOWLEDGE OF ETHICAL CONDUCT

The radiographers registration board of Nigeria (RRBN) and association of radiographer Nigeria (ARN) highlights the need for ethical adherence amongst radiographers both students and registered radiographers in their code of conduct handbook. Radiography students in Nigeria are thought patient care concepts, basics of ethics, ethical principles, and are professional codes of ethics in their second and third year in the tertiary institution. In the Nigerian context, understanding and practicing ethical responsibilities among student radiographers is crucial for ensuring professional integrity and patient safety. Recent studies have shed light on the current state of ethics education and practice among radiography students in Nigeria. Abonyi et al, 2013 conducted a follow up study that evaluated the relationship between professional ethics compliance and practicing radiographers in Lagos State. The researchers used a questionnaire survey in the form of a structured questionnaire to 200 radiographers and they discovered that despite the general awareness of ethical standards, compliance was diffused dramatically. Aspects that contributed to such variance were absence of continuous professional growth, poor

institutional support and disparity in understanding ethical provisions. Although students were not mentioned specifically in the study, it was noted that further ethics training is required to be provided and ethical rules defined and enforced in radiography departments.

In a study by Mosathupa (2024), the knowledge and practices of student radiographers towards ethical responsibilities in one of the selected universities in the Gauteng Province were investigated. The research study observed that students had been taught the theory about ethics but there was a lot lacking in the application of the theory in practice during the clinical training. Students indicated that ethical conduct was not always demonstrated and supported in clinical practice, which gave rise to confusion and variant execution of ethical guidelines. The paper suggested further incorporation of ethics into the radiography curriculum and making clinical supervisors act as a model of ethical practice. It did not address the whole population of Nigeria, but it offers the understanding of how students view the concept of ethical training.

2.2 THEORETICAL REVIEW

2.2.1. Moral Stages of Moral Development by KOHLberg.

The model C concern is the development of moral mind in various phases. The stages proposed by Kohlberg (pre-conventional, conventional, and post-conventional) can be used to evaluate students in the area of ethical decision-making when working in the clinical environment. This model proves to be especially applicable in describing the process of ethical decision-making development in the students.

Application to Study:

The model will be able to analyze the level of moral growth in which the student radiographers are performing. The model could evaluate the ethical practices concerning a more self-focused, socially-oriented, or principled approach to ethical issues in radiography in the students. Students can encounter ethical dilemma cases (e.g. patient confidentiality, informed consent) during clinical training. Using the stages of Kohlberg, the researcher will be able to examine the fact whether the students are guided by their personal consequences (pre-conventional), societal norms (conventional) or by moral principles (post-conventional).

2.2.2. Medical ethics have the following principles (BEAUCHAMP AND CHILDRESS):

Ethical decision-making in the healthcare field relies on the four principles of bioethics namely autonomy, beneficence, non-maleficence, and justice.

Application to Study:

The principle is capable of evaluating the ability of the students to conceptualize and utilize these principles in their radiographic practice. To take an example, do students respect patient autonomy through informed consent? Do they consider non-maleficence through non-harm in imaging processes? The principle can enquire whether the student radiographers are consistently capable of administering these principles in their clinical approaches, i.e., assuring patient comfort (beneficence), prevention of unwarranted treatment (non-maleficence), or the treatment of all the patients fairly (justice).

2.2.3. THEORY of planned behavior (AJZEN)

This theory asserts that behavior of individuals is determined by three variables, which are attitudes towards the behavior, subjective norms, and perceived behavioral control.

Application to Study:

The theory is able to investigate the effects of attitude of the students towards ethics, perceived expectations of their professors and peers (subjective norms), and confidence with their ability to address ethical dilemmas (perceived control) on their ethical behavior in clinical settings. The theory could investigate the effects of other variables such as trust in judgement, peer pressure, and knowledge of ethical consequences on the attitude of the students to engage in ethical behaviour within clinical settings.

2.3 EMPIRICAL REVIEW

2.3.1 LEVEL OF ETHICAL KNOWLEDGE AMONG STUDENT RADIOGRAPHERS

Mosathupa, 2023 conducted a research on Student Radiographers Knowledge and Practices of Ethical Responsibilities of Radiography Profession in a Selected University Gauteng Province in an attempt to examine the knowledge of student radiographers in regard to ethical duties and recommended students on enhanced practice in their workplace areas. The research was done at one of the universities in Gauteng Province. To learn the perceptions of student radiographers towards their ethical responsibilities, a qualitative, exploratory method was used. Even though there is some research literature on qualified radiographers and ethics, little research has been carried out on students. According to the existing literature, qualitative methods can be used with the purpose of having deeper insights on the subject. Although the presentation of the code of conduct was done in all levels during some of the theoretical lectures, the practical implementation was not well emphasized. The first and second programme levels only covered ethics education in one core module only. The emphasis on patient care in the healthcare services

sector needs more attention in the Radiology departments. Patient-centered healthcare should be of quality.

patient-centered, enabling patients to become active in their health. According to the study, the expanded scope of practice proposed to be reviewed will widen the role of the radiographers with a focus on the ethical concerns, the rights of the patients, and the law. They came up with the conclusion that, teaching of ethics within a clinical environment is different with theoretical teaching. The re-assessment of the role of ethics, as part of clinical education, in its integration, was urgently required. The introduction of the subject of ethics and medical law into the radiography curriculum will equip students with proven professional judgment and provide them with ethical standards in practice.

Alshamrani, 2023 assessed the knowledge and attitudes of radiographers toward obtaining informed consent for radiological procedures in Najran City, Saudi Arabia. A cross-sectional descriptive survey using an adapted 19-question online questionnaire was conducted among radiographers and student interns from five hospitals and one educational institution. A total of 236 participants responded. Experience correlated positively with knowledge of informed consent, particularly among those with supervisory roles and master's degrees. Over 80% were aware of verbal consent practices; however, more than half only occasionally obtained formal consent from patients. Experienced and higher-qualified radiographers demonstrated better knowledge and attitude regarding informed consent. While general awareness was good, consistency in practice needs enhancement.

Luntsi et al., 2015 carried a study on the Assessment of the Compliance of Professional Ethics among Radiographers in North Eastern Nigeria. The study assessed the adherence to professional

ethics among radiographers practicing in North Eastern Nigeria. It was a prospective cross-sectional survey targeted radiographers working in hospitals across the North East. A 23-item self-completion questionnaire was mailed to radiographers, with a high response rate of 88% (51 out of 58 returned). Most respondents (72.5%) were male, and 58.8% held a Bachelor of Science degree in Medical Radiography. Radiographers hailed from several states, including Borno, Gombe, and Bauchi. A majority (82.4%) reported no litigation incidents, and 74.5% obtained patient consent before examinations. The findings revealed a high level of ethical compliance, though areas such as continuing professional development, role advancement, and role development require further attention. This study didn't cover radiography students but it does give an insight.

Abonyi et al., 2013 did a study on Assessment of Adherence to Professional Ethics and Practices among Medical Radiographers in Lagos State, Nigeria. The study investigated the extent of adherence to professional ethics and practices among radiographers in Lagos State. A structured, self-administered questionnaire was randomly distributed to 200 radiographers across public and private facilities. Responses were corroborated with documented proof, and data were analyzed. Eighty-five percent rated their ethical handling of patients as excellent. However, none implemented regular quality assurance for equipment, and only 28.8% attended mandatory professional development programs in the preceding year. Overall adherence to professional and ethical issues was 51.6%. In conclusion although patient handling was rated highly ethical, low participation in quality assurance and professional development highlights areas needing improvement. Reinforced emphasis on ethical practices through continuous education was recommended. This study didn't cover radiography students but it does give an insight.

2.3.2 KNOWLEDGE OF PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS

Onwuka et al., 2021 conducted a study entitled Assessment of Level of Professionalism among Clinical Radiographers Practicing in Anambra State, Nigeria and it was meant to determine professionalism among the clinical radiographers in the state of Anambra. It employed descriptive survey design, 59 radiographers were involved in it by filling the self-administered questionnaires. There was high-quality response because it was immediately collected. The core point that all the respondents (100%) stated was the necessity to choose the suitable exposure factors. Most of them treated the patients in a decent manner and were also organized and professional in their work. Majority of radiographers had positive professional practices, which justifies there should be high standards maintained in the field. This research did not discuss students of radiography but it does provide an impression.

In a research conducted by Anim-Sampong et al., 2023, the authors focused on Perception of Professionalism in Clinical Practice among Clinical Year Radiography Students in a Tertiary Institution in Ghana and in this research, participants of the study were to explore the perceptions held by the clinical radiography students regarding their professionalism in clinical practice. The respondents to the Pennsylvania State College of Medicine Professionalism Questionnaire were 64 students of the University of Ghana in the third year and fourth year. Data analysis was conducted using the SPSS 23.0. Most students had a good rating of sense of professionalism (56 percent of all respondents said that there was professionalism among radiographers). However, 77.9% reported experiencing problems in being a professional in the clinical training. Lastly Students started to recognize the good and bad side of professionalism, the issues had to be addressed and the practice had to be a better way.

Anim-Sampong et al., 2023 conducted a research on Perceptions towards Professionalism in Clinical Practice among Clinical Year Radiography Students in a Tertiary Institution in Ghana and the research investigated the perceptions towards professionalism in their clinical practice by clinical radiography students. The Pennsylvania State College of medicine professionalism Questionnaire was administered to 64 third and fourth year University of Ghana students. The analysis of data was done with SPSS 23.0. Majority of the students were favorably inclined towards professionalism with half of the students reporting professional behavior in the radiographers. Nevertheless, 77.9% have experienced difficulties in being a professional in the process of clinical training. Conclusively Students identified the beneficial and adverse effects of professionalism reiterating the importance of overcoming obstacles to enhance the level of practice standards.

Tashiya et al., 2021 conducted a study to determine the level of professionalism among the Bachelor of Radiography students who are undertaking the course at the University of Namibia. A cross sectional, quantitative design was used in a research that included 55 students who took a self-administered questionnaire and was analysed using SPSS version 24. There was also a high degree of professionalism with accountability (87%), compassion (83.6%), integrity (80%), and excellence (70.9) being highly rated. There was no association between the levels of professionalism, and year of study, perception of clinical practice, workload, and clinical satisfaction. Conclusively, students were generally average to good professionals. Professional values were also suggested to be reinforced constantly during training so that the transition to professional practice would not be difficult.

Sometimes they can be encountered in daily life as well, so when a student radiographer faces an ethical dilemma related to this profession, these are the problems that may be expected.

Kyei, 2015 researched on the Challenges Faced by Radiography Students During Clinical Training to determine the challenges that radiography students experienced during clinical training at the University of Ghana. The quantitative, descriptive survey was carried out using questionnaires and carried out on 42 third and fourth-year students. Analysis was done using SPSS version 16.0. The major problems were the gap between the theory and practice, insufficient exposure to specialized practices, and the lack of time allocation in treatment rooms. It was also recommended to improve the combination of theory and practice, equipment and clinical material accessibility, and better clinical training schedules.

Shafuda et al., 2024 conducted a study Bridging Theory and Practice: Experiences of Diagnostic Radiography Students During Clinical Training in Resource-Constrained Settings to investigate the experience of diagnostics radiography students in clinical training in resource limited Sub-Saharan hospitals. The qualitative phenomenological study consisted of a face-to-face interview with 18 students. Findings were interpreted through using the thematic analysis. Three themes were identified, including issues in clinical settings, resilience and self-directed learning, and patient care effects. Students demonstrated flexibility even with the lack of equipment, understaffing, and negative relationships with professionals. Students still had high commitments to quality care in spite of the large barriers. Interventions which were proposed were making investments in resources, enhancing supervision and encouraging self directed learning.

The investigated literature review by Hale et al., 2021 explored the reasons why professionalism dilemmas arise, the kind of dilemmas students undergo, and how the challenges are relevant to radiography. Twenty-eight articles found four themes: nature of professionalism lapse (mistreatment, verbal abuse, exclusion and intimidation), rationale behind the lapse (burnout,

poor role modeling), reaction of students (acceptance, resistance, reporting) and the long-term effects (moral distress, professional growth, career choice).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Setting

This study was conducted at the University of Benin (UNIBEN), located in Benin City, Edo State, Nigeria. Specifically, it focused on the Department of Radiography, Faculty of Basic Medical Sciences. The department provides academic and clinical training to undergraduate students in medical radiography, making it an appropriate setting for the research.

3.2 Research Design

A descriptive cross-sectional survey design was adopted for this study. This design is suitable as it allows for the collection of data at a single point in time from a representative sample to assess the ethical knowledge and professional conduct of student radiographers.

3.3 Target Population

The target population for this study includes all registered undergraduate student radiographers in their clinical years (300 to 500 levels) at the University of Benin. These students have undergone some degree of ethical and professional training and are thus ideal for assessing the research objectives.

3.4 Sampling Technique and Sample Size

Multi-stage sampling method was used. To begin with, Purposive Sampling was taken to make the selection of all levels of clinical-year (300, 400, and 500 levels) since these students have the

required clinical exposure in evaluating the research goals. Second, the Proportionate Stratified Random Sampling was used. The population was stratified according to the level of academic to represent proportionally the number of people in the classes, thus taking into consideration differences in clinical experience and level of maturity. Final participants were then selected through simple random sampling in each stratum.

Table 3.1: Allocation of students in the different level

Academic Level	Population (N)	Male	Female	Sample Size (n)	Male Sample	Female Sample
300 Level	145	68	77	76	36	40
400 Level	158	71	87	83	37	46
500 Level	132	65	67	70	34	36
TOTAL	**435**	**204**	**231**	**229**	**107**	**122**

3.5 SAMPLE SIZE

A sample is a size of a population that is chosen to be the one that is to be studied. The Department of Radiography (300-500 Level) has a total population of undergraduate radiology students (435 students). Sampling without the use of population size is determined using the Yamane (1967) formula with level of confidence, 95 percent, and level of precision (margin of error), that is 0.05:

Formula: $n = N / (1 + N(e)^2)$

Where:

- n = sample size
- N = population size (435)
- e = level of precision (0.05)

$n = 435 / (1 + 435(0.05)^2)$

n = 435 / (1 + 435(0.0025))

n = 435 / (1 + 1.0875)

n = 435 / 2.0875

n = 208.38

Approximately 208 students constituted the sample size for this study. Addition of 20% attrition now makes it 42 + 208 = 250 students.

3.5 Instrument of Data Collection

The main data collection tool was a self-administered designed questionnaire. The questionnaire will be bifurcated into parts that will cover demographic information, ethical knowledge, professional conduct knowledge, general ethical issues that occur, dealing with patients and their care, knowledge on quality assurance and safety, professional development and accountability.

3.6 Validity of Instrument

The content validity was determined by administering the draft questionnaire to professionals whose specializations are in Biomedical Ethics, my supervisor and a senior practising Radiographer. Their response was considered in order to revise the instrument based on a grounds that all the items are clear, relevant and sufficient to cover the area of ethical knowledge and professional conduct in accordance to the objectives of the study.

3.7 Reliability of Instrument

They used 10 radiography students in another institution than that which was involved in the main study in the piloting phase. Cronbach test of the instrument was done by the use of Cronbachs Alpha coefficient and the result showed alpha value of 0.83. This value is way

beyond the minimum acceptable cost of 0.7, so the instrument was confirmed to carry high internal consistency and reliability in the whole study.

3.8 Method of Data Collection

The data collection was done by distributing online copies of the questionnaire to the eligible students via their WhatsApp platform. Questionnaires were distributed among participants at their premises, and allowed to be filled in by the participants to minimize bias on responses and wastage of questionnaire instruments.

3.9 Method of Data Analysis

The data was gathered and put into Statistical Package of Social Sciences (SPSS) version 29 to analyze it. Data were summarized using descriptive statistics odds like frequency, percentage, mean and standard deviation. The significance level was $p < 0.05$.

3.10 Ethical Considerations

The University of Benin Research and Ethics Committee was consulted to give ethical approval. All the participants were informed about the study, guaranteed confidentiality, anonymity, and voluntary participation. No identifiers were gathered and the information was utilized only on an academic basis.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

In this chapter, the data analysis and interpretation were reported through a sample of data collected on student radiographers in the University of Benin. The data were obtained with the help of standardized and self-administered questionnaires that were offered to students at clinical years (300 to 500 levels). Statistical package using the SPSS version 29 was adopted, and the statistical data analysis involved frequencies, percentages, means, and cross tabulations. The presentation is structured in line with the research findings: the analysis of the level of ethical knowledge of student radiographers, the assessment of their professional conduct knowledge, and the issues and professional misconduct that are common during training.

4.2 RESPONSE RATE

Based on the sample size estimate utilizing Taro Yamane technique, 266 questionnaires were delivered to eligible students. From the distributed surveys, 252 were properly completed and returned, while 14 were either incompletely filled or not returned. This provided a response rate of 94.7%, which is regarded outstanding for survey research and gives appropriate statistical power for the analysis.

Table 4.1: Response Rate

Category	**Frequency**	**Percentage (%)**
Returned and valid	252	94.7
Not returned/Invalid	14	5.3
Total	**266**	**100.0**

4.3 SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The sociodemographic characteristics of the respondents is shown in Table 4.2, showing distribution by academic level, gender, age, marital status, previous healthcare experience, and supplementary ethical training.

TABLE 4.2: SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS (N=252)

CHARACTERISTIC	CATEGORY	FREQUENCY	PERCENTAGE (%)
Academic Level	300 Level	72	28.6
	400 Level	84	33.3
	500 Level	96	38.1
	Total	**252**	**100.0**
Gender	Male	109	43.3
	Female	143	56.7
	Total	**252**	**100.0**
Age	Below 20 years	30	11.9
	20-23 years	181	71.8
	24 years and above	41	16.3
	Total	**252**	**100.0**
Marital Status	Single	243	96.4
	Married	9	3.6
	Total	**252**	**100.0**
Previous Healthcare Experience	No	222	88.1
	Yes	30	11.9
	Total	**252**	**100.0**
Additional Ethics Training	No	218	86.5
	Yes	34	13.5
	Total	**252**	**100.0**

Table 4.2 demonstrates that the majority of respondents were from 500 level (38.1%), female (56.7%), aged 20-23 years (71.8%), single (96.4%), had no previous healthcare experience (88.1%), and had not attended further ethics training outside their radiography program (86.5%).

4.4 RESEARCH OBJECTIVE ONE: LEVEL OF ETHICAL KNOWLEDGE AMONG STUDENT RADIOGRAPHERS

This section offers findings on students' awareness of ethical principles including beneficence, autonomy, informed consent, non-maleficence, patient confidentiality, recognition of ethical breaches, justice, and acceptable ethical responses in clinical practice.

Table 4.3: Level of Ethical Knowledge among Student Radiographers (N=252)

Item	Correct n(%)	Incorrect n(%)
1. The fundamental ethical principle that requires healthcare professionals to "do good" for patients is known as	225(89.3)	27(10.7)
2. Which of the following best describes the principle of patient autonomy in radiography practice?	230(91.3)	22(8.7)
3. Informed consent in radiography means	242(96.0)	10(4.0)
4. The ethical principle that requires radiographers to avoid causing harm to patients is	212(84.1)	40(15.9)
5. Patient confidentiality in radiography practice means	206(81.7)	46(18.3)
6. Which of the following situations represents a breach of professional ethics	236(93.7)	16(6.3)
7. The principle of justice in healthcare ethics primarily concerns	231(91.7)	21(8.3)
8. When a patient refuses a radiographic examination, the most ethical response is to	249(98.8)	3(1.2)

Table 4.3 demonstrates that students displayed strong ethical knowledge across all topics, with the greatest accurate responses for patient refusal (98.8%), informed consent (96.0%), and recognition of ethical violations (93.7%). The lowest right replies were for patient confidentiality (81.7%) and non-maleficence (84.1%), yet they still show acceptable knowledge levels.

4.4.1 OVERALL ETHICAL KNOWLEDGE SCORE

In order to provide an extensive evaluation of the ethical knowledge the answers to all eight questions on ethical knowledge were evaluated. Every answer was scored 1 point by being correct and the maximum total score was 8. Each score was then categorized into three groups which are Poor (0-4 points), Fair (5-6 points) and Good (7-8 points).

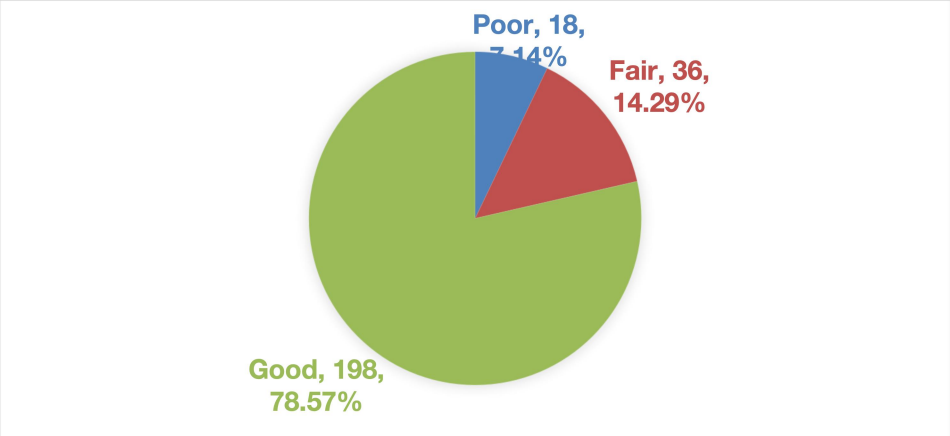


Figure 4.1: Overall Ethical Knowledge Level

The results reveal that the majority of student radiographers (78.6%) demonstrated high ethical awareness. However, the presence of **21.4%** of students in the 'Fair' to 'Poor' categories highlights an educational gap that necessitates targeted curriculum reinforcement to ensure all future professionals meet the required ethical competency standards.

4.4.2 ETHICAL KNOWLEDGE BY ACADEMIC LEVEL

Table 4.5: Ethical Knowledge Score by Academic Level

Level	Poor n(%)	Fair n(%)	Good n(%)	Total n(%)	Chi-Square	p-value
300 Level	9 (12.5)	16 (22.2)	47 (65.3)	72 (100.0)	$\chi^2 = 19.48$	0.001*
400 Level	6 (7.1)	13 (15.5)	65 (77.4)	84 (100.0)		
500 Level	3 (3.1)	7 (7.3)	86 (89.6)	96 (100.0)		
Total	**18 (7.1)**	**36 (14.3)**	**198 (78.6)**	**252 (100.0)**		

*Significant at $p < 0.05$

Academic level and ethical knowledge were statistically related (kh2 = 19.48, p = 0.001). The percentage of ethical knowledge of the senior students in 500 level (assessed as good, 89.6) was significantly higher than the percentage of ethical knowledge of the students in 300 level (established as good, 65.3), which proves that ethical knowledge increases with the progression of the program and more clinical exposures.

4.4.3 ETHICAL KNOWLEDGE BY GENDER

Table 4.6: Ethical Knowledge Score by Gender

Gender	Poor n(%)	Fair n(%)	Good n(%)	Total n(%)	Chi-Square	p-value
Male	9 (8.3)	18 (16.5)	82 (75.2)	109 (100.0)	$\chi^2 = 1.87$	0.393
Female	9 (6.3)	18 (12.6)	116 (81.1)	143 (100.0)		
Total	**18 (7.1)**	**36 (14.3)**	**198 (78.6)**	**252 (100.0)**		

No significant association was found between gender and ethical knowledge ($\chi^2 = 1.87$, $p = 0.393$), indicating that male and female students demonstrated comparable levels of ethical knowledge.

4.5 RESEARCH OBJECTIVE TWO: KNOWLEDGE OF PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS

This section presents findings on students' understanding of professional conduct standards, regulatory frameworks, professional behavior expectations, and responsibilities in radiography practice.

Table 4.7: Level of Knowledge of Professional Conduct among Student Radiographers (N=252)

Item	Correct n(%)	Incorrect n(%)
1. The primary professional body that regulates radiography practice in Nigeria is RRBN	239(94.8)	13(5.2)
2. Professional conduct in radiography primarily involves Maintaining high standards of practice, ethics, and patient care	250(99.2)	2(0.8)
3. Which of the following is NOT considered professional misconduct for a radiographer	240(95.2)	12(4.8)
4. The appropriate dress code for radiographers in clinical practice includes professional uniform, closed shoes, and minimal jewellery	247(98.0)	5(2.0)
5. When interacting with patients, professional conduct requires radiographers to maintain professional boundaries and treat all patients with respect	250(99.2)	2(0.8)
6. Continuing Professional Development(CPD) for radiographers involves regular updating of knowledge and skills throughout one's career	250(99.2)	2(0.8)
7. The proper way to handle a complaint from a patient about radiographic services is to listen, document, and follow established complaint procedures	251(99.6)	1(0.4)
8. Professional boundaries in radiographer-patient relationships mean maintaining appropriate professional distance while being compassionate	250(99.2)	2(0.8)

Table 4.7 reveals extraordinarily high levels of professional conduct knowledge among student radiographers, with all items scoring above 94% accurate replies. The most correct responses were for complaint handling (99.6%), knowing professional conduct definition (99.2%), patient contact (99.2%), CPD comprehension (99.2%), and professional boundaries (99.2%). The lowest, while still outstanding, was knowledge of the regulating body (94.8%).

4.5.1 OVERALL PROFESSIONAL CONDUCT KNOWLEDGE SCORE

General knowledge of professional conduct (out of 8 questions) was established on a scale of 8 questions each, on a scale of 4. 1 point was given to every correct response. The scores were ranked as Poor (0-4), Fair and Good (5-6 and 7-8) respectively.

Table 4.8: Overall Professional Conduct Knowledge Level

Knowledge Level	Score Range	Frequency	Percentage (%)
Poor	0-4	5	2.0
Fair	5-6	10	4.0
Good	7-8	237	94.0
Total		**252**	**100.0**
Mean Score ± SD		**7.8 ± 0.6**	

The results show that the huge proportion of student radiographers (**94.0%**) showed a good level of understanding of professional conduct (Mean Score: 7.8 ± 0.6 out of 8). The minimal percentage (6.0%) falling into the Fair/Poor categories suggests that the fundamental standards of professional conduct are effectively and consistently communicated across the clinical years of the radiography program.

4.5.2 PROFESSIONAL CONDUCT KNOWLEDGE BY ACADEMIC LEVEL

Table 4.9: Professional Conduct Knowledge by Academic Level

Level	Poor n(%)	Fair n(%)	Good n(%)	Total n(%)	Chi-Square	p-value
300 Level	3 (4.2)	5 (6.9)	64 (88.9)	72 (100.0)	$\chi^2 = 8.74$	0.068
400 Level	2 (2.4)	3 (3.6)	79 (94.0)	84 (100.0)		
500 Level	0 (0.0)	2 (2.1)	94 (97.9)	96 (100.0)		
Total	**5 (2.0)**	**10 (4.0)**	**237 (94.0)**	**252 (100.0)**		

While there was a pattern toward greater professional conduct knowledge among senior students, the association was not statistically significant ($\chi^2 = 8.74$, $p = 0.068$). This shows that professional behavior knowledge is rather stable across clinical years, perhaps due to early emphasis in the curriculum.

4.5.3 Professional Conduct Knowledge by Gender

Table 4.10: Professional Conduct Knowledge by Gender

Gender	Poor n(%)	Fair n(%)	Good n(%)	Total n(%)	Chi-Square	p-value
Male	3(2.8)	6(5.5)	100(91.7)	109(100.0)	$\chi^2 = 2.41$	0.299
Female	2(1.4)	4(2.8)	137(95.8)	143(100.0)		
Total	**5(2.0)**	**10(4.0)**	**237(94.0)**	**252(100.0)**		

Table 4.10 shows the knowledge of professional Conduct by Gender. It shows that there was no significant association was found between gender and professional conduct knowledge ($\chi^2 = 2.41$, $p = 0.299$), indicating comparable understanding between male and female students.

4.6 RESEARCH OBJECTIVE THREE: COMMON ETHICAL CHALLENGES AND PROFESSIONAL MISCONDUCT ENCOUNTERED BY STUDENT RADIOGRAPHERS

This section presents findings on the frequency distribution of ethical challenges and professional misconduct that student radiographers encounter during their clinical training.

Table 4.11: Common Ethical Challenges and Professional Misconduct Encountered During Clinical Training (N=252)

Ethical Challenge/Misconduct	Never n(%)	Rarely n(%)	Often n(%)	Very Often n(%)	Mean ± SD
1. Students performing procedures without proper supervision	92(36.5)	104(41.3)	34(13.5)	22(8.7)	1.94 ± 0.93
2. Inadequate explanation of procedures to patients before examination	102(40.5)	109(43.3)	28(11.1)	13(5.2)	1.81 ± 0.84
3. Failure to obtain proper consent before radiographic procedures	139(55.2)	86(34.1)	20(7.9)	7(2.8)	1.58 ± 0.76
4. Discussing patient information inappropriately in public areas	176(69.8)	64(25.4)	9(3.6)	3(1.2)	1.36 ± 0.62
5. Students taking shortcuts in radiation protection measures	156(61.9)	73(29.0)	17(6.7)	6(2.4)	1.50 ± 0.73
6. Discrimination against patients based on social status, appearance, or condition	192(76.2)	52(20.6)	6(2.4)	2(0.8)	1.28 ± 0.54
7. Inappropriate use of mobile phones or social media during patient care	141(56.0)	89(35.3)	15(6.0)	7(2.8)	1.56 ± 0.74
8. Failure to maintain patient dignity and privacy during examinations	178(70.6)	62(24.6)	9(3.6)	3(1.2)	1.35 ± 0.62
9. Students falsifying or inaccurately documenting patient information	189(75.0)	52(20.6)	8(3.2)	3(1.2)	1.31 ± 0.59
10. Inappropriate professional relationships between students and patients	213(84.5)	35(13.9)	3(1.2)	1(0.4)	1.18 ± 0.45
11. Failure to report errors or incidents during radiographic procedures	130(51.6)	87(34.5)	26(10.3)	9(3.6)	1.66 ± 0.81
12. Students practicing beyond their level of competence without seeking help	138(54.8)	82(32.5)	24(9.5)	8(3.2)	1.61 ± 0.79
Overall Mean					**1.51 ± 0.46**

Table 4.11 demonstrates that the most commonly encountered ethical issues were students doing procedures without sufficient supervision (mean: 1.94), with 63.5% of students experiencing this at least rarely. This was followed by poor explanation of processes to patients (mean: 1.81, with 59.5% encountering it at least infrequently), and failure to disclose errors or accidents (mean: 1.66, with 48.4% encountering it at least rarely). The least commonly encountered issues were inappropriate professional relationships between students and patients (mean: 1.18, with only 15.5% encountering this at least rarely), discrimination against patients (mean: 1.28, with 23.8% encountering it at least rarely), and students falsifying documentation (mean: 1.31, with 25.0% encountering it at least rarely). The overall mean score of 1.51 (on a scale of 1-4) suggests that while ethical difficulties and wrongdoing do occur, most are faced rarely rather than frequently.

4.6.1 ETHICAL CHALLENGES BY ACADEMIC LEVEL

Table 4.12: Mean Scores of Ethical Challenges Encountered by Academic Level

Academic Level	Mean ± SD	F-value	p-value
300 Level	1.62 ± 0.52	4.85	0.008*
400 Level	1.51 ± 0.44		
500 Level	1.42 ± 0.42		

*Significant at $p < 0.05$

Table 4.12 shows the mean Scores of Ethical Challenges Encountered by Academic Level. It reflects that there was a statistically significant variation in the frequency of ethical issues experienced across academic levels ($F = 4.85$, $p = 0.008$). Junior undergraduate radiography students (300 level) reported facing ethical issues more frequently (mean: 1.62) compared to senior undergraduate radiography students (500 level: mean 1.42), which may indicate better placement in supervised environments or improved capacity to manage ethical situations as students grow.

4.6.2 ETHICAL CHALLENGES BY GENDER

Table 4.13: Mean Scores of Ethical Challenges Encountered by Gender

Gender	Mean ± SD	t-value	p-value
Male	1.54 ± 0.48	1.02	0.309
Female	1.49 ± 0.44		

Table 4.13 presents the results of the Scores of Establishing Ethical Challenges by Gender. It demonstrates that only no significant difference was found between male and female students in the rate of occurrence of ethical issues ($t = 1.02$, $p = 0.309$), and so both groups were found to have similar exposure to ethical issues during clinical training

4.7 DISCUSSION OF FINDINGS

This section analyzes the important findings from the study in connection to current literature, theoretical frameworks, and the practical implications for radiography education and practice.

4.7.1 RESPONSE RATE AND DEMOGRAPHIC PROFILE

The study generated a good response rate of 94.7%, which is much higher than average survey response rates and comparable to the 88% response rate reported by Luntsi et al. (2015) in their assessment of ethical compliance among radiographers in North Eastern Nigeria. This high response rate boosts the reliability and representativeness of the findings and may be linked to the personal distribution and prompt collection of questionnaires, as well as students' interest in ethics-related themes. The demographic characteristics revealed a predominance of female students (56.7%), consistent with global trends in allied health professions where women comprise the majority of students (Anim-Sampong et al., 2023). The age distribution, with 71.8% of students aged 20-23 years, reflects the normal undergraduate student population in Nigerian higher institutions. Notably, 88.1% of students had no previous healthcare experience, showing that their ethical knowledge and professional conduct understanding are predominantly influenced by their radiography training rather than prior exposure to healthcare environments. This underlines the vital significance of rigorous ethical teaching within the radiography program.

The result that only 13.5% of students had attended ethics training outside their radiography program implies minimal extracurricular engagement with ethics education. This shows that the radiography program bears main responsibility for students' ethical growth, making curriculum design and clinical training quality crucial.

4.7.2 ASSESSING THE LEVEL OF ETHICAL KNOWLEDGE AMONG STUDENT RADIOGRAPHERS

In direct response to Research Objective One, the study found that the overall level of ethical knowledge among student radiographers is overwhelmingly **Good**, with a mean score of 7.2 out

of 8, thereby lending strong support to the alternative hypothesis for the knowledge component. This conclusion accords with Mosathupa's (2023) observation that radiography students receive theoretical education on ethics, though the South African study observed some gaps in practical application. The level of ethical knowledge in this study may contribute to the integration of ethics across multiple years of the curriculum, as mentioned in the literature review where students are taught and trained on patient care concepts, principles of basic ethics , and professional conduct in their second and third years.

However, the 21.4% of students with fair to weak ethical understanding represents an area of concern requiring action. This number is higher than what could be expected given the emphasis on ethics in healthcare institute, and emphasizes the need for more targeted treatments for struggling students. Students displayed high grasp of beneficence (89.3% correct) and autonomy (91.3% correct). These findings are congruent with Beauchamp and Childress's (2019) paradigm, which defines these as essential principles in biomedical ethics. The high correct response rate shows that these ideas are well-taught and rapidly retained by students, presumably because they are frequently met and reinforced in clinical practice contexts.

The remarkable comprehension of informed permission (96.0% right) is particularly noteworthy and contrasts with findings by Alshamrani (2023) who observed deficiencies in radiographers' understanding of informed consent in Saudi Arabia. This difference may reflect improved emphasis on consent education in the University of Benin curriculum or may show that Nigerian students have stronger foundation on theoretical knowledge even if actual application remains a concerning problem . The conclusion that 98.8% of students have a proper understanding about informed consent and patient right to refuse participation showed strong comprehension of respect for autonomy. The high understanding level may also reflect the legal and ethical

priority accorded to informed consent in contemporary healthcare training This is critical in radiography practice as patients may decline tests, to participate owing to fear, anxiety, cultural beliefs, or other reasons. The high accurate response rate implies students understand that compulsion is unacceptable and that patient autonomy must be maintained even when healthcare personnel believe a procedure is required. While still demonstrating strong understanding, the lower accurate response rate for non-maleficence (84.1%) compared to other principles implies this concept may be less well understood or more complicated for students to grasp. **In radiography**, non-maleficence has particular relevance to radiation safety and the ALARA (As Low As Reasonably Achievable) principle. The significantly lower score may imply that students require more specific training tying the ethical principle of non-maleficence to practical radiation protection measures, patient placement to avoid repeats, and thorough justification of imaging procedures.

The fact that 81.7% correctly comprehended patient confidentiality, whereas 17.1% believed information should never be shared under any circumstances, demonstrates an important knowledge gap. This finding is problematic because absolute interpretation of secrecy can potentially be damaging and contradictory to appropriate patient care. Healthcare providers must share patient information with other members of the care team, with referring physicians, in emergency situations, as legally mandated, and for quality assurance purposes. This data implies that while students grasp the necessity of secrecy, they may lack sophisticated comprehension of justified exceptions. This fits with concerns voiced by Hofmann and Lysdahl (2015) about inadequate attention on ethical complexities throughout training.

The good awareness of modern ethical issues in the digital age is evidenced by a high success in identifying ethical violations (93.7% indicated that it was unethical to share the photographs of

the patient on social media). It is especially important given the popularity of the social media and the ease, with which the privacy of patients might be violated in the digital domain. A large percentage of correct responses can demonstrate that more people are aware of the possibility of the privacy and clear instructions in the curriculum on the social media etiquette.

Superior justice (91.7% accurate) means that students realize that there must be fairness and equal treatment towards healthcare. This is essential within the context of the medical care in Nigeria, where financial limitations of the resources, socioeconomic inequality, and cultural diversity might imply obstacles to delivering fair treatment. It has proven the theoretical framework of Kohlberg Stages of Moral Development because the statistically significant correlation between academic level and moral knowledge ($p = 0.001$) indicates that students with higher academic level (500 level) show better knowledge of ethics compared to the students with lower level (300 level) of understanding. This information suggests that ethical knowledge increases gradually as a result of an increased clinical exposure, maturity, and repeated exposure to the ethical information throughout the curriculum. Such a progression can be explained by a number of factors: First during their clinical work, older students have been able to face ethical challenges which cement theoretical experiences and create understanding through lived experience. Second, ethical education can be cumulative, and develop on historical knowledge over the many years. Third, cognitive maturity and development of professional identity increase with the process of training of students, which allows them to make more complex ethical decisions.

This assertion will correlate with the comments made by Mosathupa (2023) that conference of ethics should be progressive and applied across all parts of the radiography program and not confined to specialized sections. It responds to the bridge theory and practice argument as

suggested by Shafuda et al. (2024) as well based on clinical experiences. The lacks of significant gender difference in ethical knowledge ($p = 0.393$) is also interesting, and demonstrates that male and female learners benefit equally through ethical education. This finding contradicts parts of the evidence that females could prove to be more morally reasoned in a particular environment. It is, however, aligned to the modern educational philosophy that advocates equal access to education opportunities irrespective of their gender. The practical implications of this research are that the education activities in ethics can be designed devoid of gender-related changes though the focus should be on the individual learning requirements.

4.7.3 KNOWLEDGE OF PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS

In addressing Research Objective Two, the study confirms an even higher level of competency, with 94.0% of the students exhibiting good knowledge of professional conduct. It demonstrates that the requirements of professional conduct are especially cognized by pupils. The high extent of understanding can be explained by a number of reasons

. It demonstrates that the requirements of professional conduct are especially cognized by pupils. The high extent of understanding can be explained by a number of reasons: professional behavior can be more tangible and observable than the abstract ethical standards, the modeling of professional behavior in clinical contexts may be more consistent, and the expectations of professionals may be more often and explicitly represented in the form of codes of conduct, dress code, and institutional policy documents.

This result is in line with Onwuka et al. (2021) who found that the professional practices of radiographers in Anambra State were good and Tashiya et al. (2021) who found that the levels of

professionalism of Namibian students of radiography were also good. The stability of these studies suggests that education in the field of professional conduct is effective in various circumstances and organizations. The final finding that 94.8 percent of them correctly recognized Radiographers Registration Board of Nigeria (RRBN) as the professional governing body is positive and indicates their excellent knowledge of the system governing the profession. This is imperative since an understanding of the regulator of the profession is essential to accountability and professional identity. The 5.2 percent who wrongly noted the Nigerian Association of Radiographers (NAR) however might have been an instance of the regulatory role (RRBN) and the professional association role (NAR) to be confused, and this is a common misperception that needs to be explained.

The fact that almost all (99.2) students hold the view that professional behavior involves high standards of practice, ethics, and care of patients indicates that students value holistic approach of professionalism. This is not merely technical proficiency to ethical practice and excellent care of patients. The knowledge is in line with the values emphasized by the International Society of Radiographers and Radiological Technologists (ISRRT, 2019) and the European Society of Radiology (ESR, 2013).

It is stated that the rate of correct responses (95.2 percent) in detecting what is not professional misconduct is high, which depicts that students are capable of demarcating professional duties (like further training) with actual misconduct. This is essential in establishment of appropriate professional norms and to avoid confusion on what is ethical breaches. Exceptional understanding (98.0%) of acceptable professional wear exhibits that there is an awareness of the concept of infection control, safety, and professional image. This can be a symptom of definite institutional norms and the regularity of clothing style in the clinical environment.

The fact that 99.2% of respondents said they know that professional behaviour involves maintaining boundaries and consistently treating all patients with respect speaks volumes to the fact that people have mature understanding of the tight line that healthcare professionals have to walk. This conclusion is especially applicable bearing in mind that 15.5% of students have witnessed inappropriate professional relationships which proves that knowingly they know what is right yet in practice it could be evident that they noticed boundary crosses. The high level of CPD (99.2) is encouraging and points to the indication that the students are aware that professional growth is not only limited to formal education but a lifelong endeavor. This is congruent with the focus of CPD in codes of ethics and regulation of professions.

The willingness to be accountable and patient-centered care is demonstrated in the great understanding (99.6%) of proper complaint procedures. This is essential considering that complaints made by patients are a chance to improve the service and sustain trust in medical services. The fact that almost everyone (99.2) understands professional boundaries suggests that they were made aware of imbalance of power between healthcare workers and the patient and that they need to maintain an appropriate professional distance without losing humanity.

Professional conduct knowledge, in contrast to ethical knowledge, did not indicate any substantial correlation with the level of academics ($p = 0.068$) or gender ($p = 0.299$). This indicates that professional conduct standards are clearly understood in early stages of training and remain the same over the course of training. This could be due to the fact that the rules of professional conduct are particular, explicitly explained and punitive at the very beginning of clinical training, which is accomplished by clothing, behavioral expectations and institutional regulations. It can also indicate that because professional behavior can be observed more easily

than abstract ethical thought and corrected quickly and easily, there is quicker and more consistent learning.

4.7.4 COMMON ETHICAL CHALLENGES AND PROFESSIONAL MISCONDUCT ENCOUNTERED

In response to Research Objective Three (To determine the frequency and types of ethical challenges and professional misconduct encountered by student radiographers during clinical training), the findings indicate that, while major ethical breaches are relatively rare, systemic issues rooted in the clinical environment are frequently encountered. The overall mean score of 1.51 (on a scale of 1-4) suggests that while ethical difficulties and wrongdoing do occur, most are faced rarely rather than frequently. However, the finding that poor supervision was the most popular issue (mean: 1.94, 63.5% all time experienced at least once) is so alarming and makes the most significant conclusion to our research. This is to some extent positive, but it must not be overestimated as even such occasional incidents of significant ethical breaches may harm patients and have adverse effects on the professional growth of students. The fact that poor supervision was the most popular issue (mean: 1.94, 63.5% all time experienced at least once) is so alarming and makes the most significant conclusion to our research. This is in line with the poor supervision being identified by Kyei (2015) as a key challenge affecting radiography students and the findings of Shafuda et al. (2024) regarding understaffing and poor-supervision in resource-constrained environments.

The lack of a proper supervision leads to the further development of a chain of ills: it endangers patients to the care of inexperienced specialists, denies students educational experience and the possibility of orientation, causes students anxiety and stress, makes it possible to create

conditions when other ethical violations remain uninspired, and does not set a good example in adopting the right ethical behavior. The prevalence of poor quality of supervision could be related to a number of systemic factors: insufficiency of qualified radiographers in clinical practices, heavy workload among the availed supervisors leaving them little time to supervise, absence of formal supervision education in clinical practices, poor coordination of academic institutions and clinical sites, and perhaps, underestimation of the value of teaching roles in clinical practices. The result of this finding has essential implications on curriculum pattern and clinical site administration. As Mosathupa (2023) noted, the methods of imparting ethics during a clinical activity are very different to the theoretical training and this learning on ethics needs adequate supervisions.

The existence of 59.5% of students who provided a witness of poor explanation of procedures to patients (mean: 1.81), implies that there is a significant theory-practice gap. Although 96.0 percent of students were correct when asked to guess what informed consent entails, most of the students had witnessed instances where the process was not presented adequately. It demonstrates that knowledge on its own cannot be sufficient and that both systemic issues (time constraints, heavy patient volume, language barriers) can continue to interfere with ethical practice. This finding agrees with the observation of Hofmann and Lysdahl (2015) that patient autonomy is usually not taken seriously during routine radiological services. It also resonates with Camargo et al. (2017) when it comes to the problem of disparity between ethical knowledge and ethical practice in radiology departments.

Poor communication with patients has various adverse effects: it is the breach of patient autonomy, increases the levels of patient anxiety and non-cooperation, diminishes patient satisfaction, and denies students an excellent role model of communication skills. The patient

safety aspect is extremely concerning through the fact that 48.4 percent of the students reported that they observed failure to report errors or incidences (mean: 1.66). This shows a massive cultural issue in healthcare facilities. Reporting of errors plays a big role in improving quality, patient safety, systemic learning and corporate responsibility. When mistakes are forgiven, chances of occurrence in future are lost, and a culture of secrecy and not openness is accepted.

This result could indicate either punishment or simply not knowing what the reasons of reporting errors are, not being knowledgeable of the point of reporting errors, having too complicated or poorly defined reporting practices, the view that reporting has no effect, a hierarchical corporate culture that prevents employees or volunteers to speak out, or a focus on individual fault, as opposed to system enhancement. This might encourage ineffective use of practices in joining professional practice since there could be failure to develop a strong error-reporting culture during the entire training period. As Gluyas (2015) emphasized, patient safety requires an excellent communication and teamwork, primarily, upfront reporting of any errors.

The fact that 45.2 percent of students observed their classmates practicing at a higher level in which they were not competent in but not receiving any assistance (mean: 1.61) is worrisome and possibly linked to the lack of supervision. When students feel obliged to perform treatment procedures that they are not prepared to treat such as when they lack the supervision to guide them, they can engage themselves in treatment procedures that are beyond their level of competence resulting in patient safety issues. This can be many things: the lack of supervision and through which it is necessary to take the initiative independently, the necessity to meet the requirements of the work in the crowded clinics, the fear of being viewed as incapacitated by the appeal to help or vague directions on student area of practice, or competitive atmosphere among students.

Although the students had a good theoretical understanding of informed consent, 44.8% of them had experienced inadequate consent acquisition (mean: 1.58). This gap of the theory and practice could be due to the fact that there is not enough time to apply the theory in practice, a preconception that the consent obtained in other cases is not enough, problems with language and communication, and cultural aspects of the consenting process, or the process of making shortcuts a standard practice in busy clinical settings.

This observation confirms the observation that has been made by Alshamrani (2023), who says that general knowledge on informed consent might be good, but it is better to have consistency in practice. The result that 44.0 per cent. had witnessed the inappropriate utilization of mobile phones or social media during patient care (mean: 1.56) brings out a current issue in the health care facilities. Although it is not generally discussed as an ethical issue, it suggests a violation of professional attention, patient dignity, and even confidentiality in case some patient information or photographs are gathered or exchanged. This challenge might be due to intergenerational differences in the use of technologies, the lack of explicit regulations regarding the usage of mobile devices, the presence of constant connectedness in contemporary life, or a lack of monitoring to impose authority.

A relatively low proportion of inappropriate professional interactions (mean: 1.18), patient discrimination (mean: 1.28) and falsification of documents (mean: 1.31) are encouraging and indicate that the major violations of professionalism are not likely to occur. Nevertheless, even the isolated cases of the main infractions require close monitoring and preventive measures. It is also interesting that students of 300 level tended to be challenged by ethical difficulties more often than the ones of 500 level ($p = 0.008$) which can be described by several factors: junior students can be less developed in terms of the coping strategies or ethical navigation, junior

students can be more noticeable or shocked by the ethical violations, junior students can be placed in less ideal clinical placements, or senior students can be better integrated into the clinical team and exposed to more controlled settings.

Instead, this observation may also show biases in the respondents, that is, being desensitized to the ethical dilemma, senior students report it less often, and this would be alarming in terms of professional development.

CHAPTER FIVE

CONCLUSION, RECOMMENDATIONS, LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDIES

5.1 CONCLUSION

This research study was able to gauge the level of ethics and professional behavior of clinical year radiography students in the University of Benin. The conclusion made is first of all the clear knowledge-practice paradox: students have a good theoretical level of knowledge (78.6% of them possess good ethical knowledge and 94.0% of them possess good knowledge of profession conduct), however, on the clinical environment, they constantly face ethical challenges which are systemic. The greatest issue, which was mentioned by 63.5 percent of students, is inadequate or deficient clinical supervision. The result of this finding indicates that the ethical awareness is developing in academic maturity however its usage is hampered due to the deficiency of sound and controlled clinical backing, which needs managing so as to guarantee ethically sound graduates.

5.2 RECOMMENDATIONS

Resting on the result of this study and, especially, the high rate of the identified ethical dilemmas, the given specific and prioritized recommendations can be provided:

1.Make Clinical Supervision a Priority: The Department of Radiography and those teaching hospitals should institute a formalized policy of clinical supervision with formal supervisor to student ratio (i.e. 1:5) and formal or scheduled sessions of mentoring. This is imperative in order to directly counter the most common challenge reported in terms of ethics.

2.Strengthen Curriculum Integration: Ethics curriculum will have to be reorganized using progressive and case-based approaches to learning. The training should be particularly focused

on the application of principles in a situation with specificities, including the reasonable exceptions to the principle of patient confidentiality and the consequences of the principle of non-maleficence (ALARA).

3.Create a Safety Culture: To promote accountability and transparency, institutions need to create non-punitive, easily accessible error and incident reporting systems, as the rate of reported error non-reporting is high. Proper policies should be upheld in regards to professional boundaries and misuse of mobile devices in the provision of patient care.

4.Regulatory Oversight and Standardization: The Radiographers Registration Board of Nigeria needs to improve on controlling the accreditation programs of training programs and proving standards by requiring that all clinical supervisors study ethics, as well as, ensuring an acceptable level of professional ethics knowledge by examining them at a regular basis.

5.3 LIMITATIONS OF THE STUDY

As much as this study offers an important amount of information on ethical knowledge and ethical conduct of the student radiographers in the University of Benin, it must be admitted that there are a few limitations that can be made:

1.Single-Institution Bias: Results can only be generalized to other radiography programs that have dissimilar curricula or clinical cultures as the University of Benin.

2.Cross-Sectional Design: The research will take the data at a singular time and will not allow analyzing how ethical knowledge and practice develop throughout the duration of the training program.

3.Self-Reported Data: The answers can be prone to social desirability bias which can inflate the known level scores and underestimate misconduct finding.

4.Pre-Clinical Student Omission: This research focused on clinical years (300-500 levels) among the students and did not provide some insight on the background knowledge of ethics before clinical exposure.

5.4 SUGGESTIONS FOR FURTHER STUDIES

Based on limitations and findings on this study, the areas which can be recommended as areas of future research are as follows:

1.Multi-Institutional Comparative Study: Should the research be conducted in a comparative study across multiple institutions in Nigeria, so that it becomes more generalizable, and to determine the overall best practice in ethics education.

2.Longitudinal Study: Following one group of students through their clinical practice years to completion will help how ethical knowledge and development of professional identity.

3.Supervisor and Instructor Evaluation: Research the ethical awareness and role-model topics done by clinical supervisors to determine how they may be lacking in providing ethical mentoring.

4.Comparison to Other Healthcare Professionals: Comparison of ethical knowledge, professional practice, and ethical issues among the radiography students and the other healthcare students (e.g., nursing, medical, pharmacy) to determine the needs of each profession and to discover the opportunities of learning ethics as an interprofessional discipline..

5.Patients Perspectives: Find out how patients perceive and respond to ethical behavior and practice in the clinical setting of student radiographers to give a broader perspective of the ethical practice.

6.Impact of Ethics Education: Find out how ethics education influences professional practice over the long-run by comparing the ethical practice and decision making in radiographers who received various forms or degrees of ethics training during their school attendance.

REFERENCES

Abonyi, L. C., Eze, C. U., Njoku, J., Okorie, U., & Oyeniran, O. O. (2013). An Assessment of Adherence to Professional Ethics and Practices among Medical Radiographers in Lagos State, Nigeria. *Journal of Radiography and Radiation Sciences*, 27(2), 45-52.

Alshamrani, K. . (2023). Radiographers' knowledge and attitude toward informed consent. *Acta Bioethica,* 29(1), pp. 49–54.

Beauchamp, T. L., & Childress, J. F. (1979). Principles of biomedical ethics. *Oxford University Press*.

Beauchamp, T., & Childress, J. (2019). Principles of Biomedical Ethics: Marking Its Fortieth Anniversary. *The American journal of bioethics : AJOB*, 19(11), 9–12.

Bochud F, Cantone MC, Applegate K et al. (2020). Ethical aspects in the use of radiation in medicine: update from ICRP Task Group 109. ICRP*, Proceedings of the fifth International Symposium. AnnalsICRP*,2020;49(1_suppl):143-153.

Camargo, A., Lu, L. and Yousem, D. 2017. Sexual Harassment in Radiology. *Journal of the American College of Radiology,* 14(8): 1094-1099.

European Society of Radiology[ESR]. 2013. Code of Ethics. Available https://www.myesr.org/about/about-esr/esr-code-ethics (Accessed 09 July 2020)

Gluyas, H. (2015). Effective communication and teamwork promotes patient safety. **Nursing Standard**,* 29(49), 50–57.

Hale, T., & Wright, C. (2021). Unprofessional practice and student professionalism dilemmas: What can radiography learn from the other health professions?. *Radiography (London, England : 1995),* 27(4), 1211–1218.

Hofmann, B. and Lysdahl, K. B. 2015. Moral Principles and Medical Practice: The Role of Patient Autonomy in the Extensive Use of Radiological Services. *Journal of Medical Ethics.* 34(6):446-449.

International Society of Radiographers and Radiological Technologists. *Code of ethics.* Available: https://www.isrrt.org (Accessed 05 May 2020)

Kyei K. A., Antwi W. K., Bamfo-Quaicoe K., Offei R. O.. Challenges Faced by Radiography Students During Clinical Training. Clinical Medicine Research. *Special Issue: Radiographic Practice Situation in a developing Country.* Vol. 4, No. 3-1, 2015, pp. 36-41.

Luntsi G, Nwobi IC, Opaleke MS, Mohammed A, Nkubli FB, Abubakar GM, AS Moi, MM Njitti. Assessment of the Compliance to Professional Ethics among Radiographers in North Eastern Nigeria. *Nigerian Journal of Imaging and Radiation Therapy 2015.* Vol.4(1): 11-15

McInerney, J. M. and Lees, A. 2018. Values Exchange: Using Online Technology to Raise Awareness of Values and Ethics in Radiography Education. *Journal of Medical Radiation Sciences,* 65 (1): 13–21.

Mosathupa, J. G. (2024). Student Radiographers' Knowledge and Practices of Ethical Responsibilities for the Radiography Profession. *Durban University of Technology*. Onwuka CH, Idigo FU, Ohagwu CC, Ogolodom MP, Eja-Egwu UN, et al. (2021) Assessment of Level of Professionalism among Clinical Radiographers Practicing in Anambra State, *Nigeria. Health Sci J.* 15 No.7:862

Ochonma, Ogbonnia & Eze, Charles & Eze, Bartholomew & Nwankwor, Chikezie. (2016). Patient perceptions of the professional attitudes of radiographers. British Journal of Healthcare Management. 22. 414-422. 10.12968/bjhc.2016.22.8.414.

Ochonma, Ogbonnia & Eze, Charles & Eze, Bartholomew & Obi, Augustine. (2015). Patients' reaction to the ethical conduct of radiographers and staff services as predictors of radiological experience satisfaction: A cross-sectional study. BMC Medical Ethics. 16. 1-9. 10.1186/s12910-015-0062-4.

S. Anim-Sampong, B. Ohene-Botwea, B.S. Sarkodie, W.K. Antwi, D.S. Sule, Perception of professionalism in clinical practice among clinical year radiography students in a tertiary institution in Ghana, *Journal of Medical Imaging and Radiation Sciences,* Volume 54, Issue 2, 2023, Pages 319-327,

Shafuda, S., Daniels, E. R., & Karera, A. (2024). Bridging theory and practice: Experiences of diagnostic radiography students during clinical training in resource-constrained settings. *Journal of Medical Radiation Sciences.*

Tashiya EH, Daniels ER, Karera A. Perceived level of professionalism among radiography students at the University of Namibia. *South Afr Radiogr* 2021;59(1):9e15.

APPENDIX I: QUESTIONNAIRE

My name is AMARACHI PRECIOUS, **OKAFOR**, a final year student of the department of Radiography, University of Benin, and I am carrying out a research on **ASSESSING ETHICAL KNOWLEDGE AND PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS AT UNIVERSITY OF BENIN**. I, therefore seek your earnest contribution, your answers to this Questionnaire are anonymous and will be kept confidential. Thank you.

INSTRUCTIONS

Please read each question carefully and select the most appropriate answer. Your responses will be kept confidential and used solely for research purposes.

SECTION A: SOCIODEMOGRAPHIC CHARACTERISTICS

1. Age: _____ years
2. Gender: Male [ ] Female [ ]
3. Current level of study: 300 Level [ ] 400 Level [ ] 500 Level [ ]
4. Marital status: Single [ ] Married [ ] Divorced [ ] Widowed [ ]
5. Previous healthcare experience before radiography training: Yes [ ] No [ ]
6. If yes to question 5, specify area: _____
7. Have you attended any ethics course/training outside your radiography program? Yes [ ] No [ ]

SECTION B: LEVEL OF ETHICAL KNOWLEDGE AMONG STUDENT RADIOGRAPHERS

Instructions: Choose the best answer from the options provided (a-d).

1. The fundamental ethical principle that requires healthcare professionals to "do good" for patients is known as: a) Autonomy [ ] b) Beneficence [ ] c) Justice [ ] d) Non-maleficence [ ]
2. Which of the following best describes the principle of patient autonomy in radiography practice? a) The radiographer makes all decisions for the patient [ ] b) Patients have the right to make informed decisions about their care [ ] c) Only doctors can make decisions about radiographic procedures [ ] d) Patients must follow all instructions without question [ ]
3. Informed consent in radiography means: a) Getting the patient's signature on any form [ ] b) Explaining the procedure, risks, benefits, and alternatives to the patient [ ] c) Only informing the patient about the benefits of the procedure [ ] d) Asking the patient to agree to the procedure without explanation [ ]

4. The ethical principle that requires radiographers to avoid causing harm to patients is: a) Beneficence [ ] b) Justice [ ] c) Non-maleficence [ ] d) Veracity [ ]
5. Patient confidentiality in radiography practice means: a) Sharing patient information with anyone in the hospital [ ] b) Keeping patient information private except when legally required to disclose [ ] c) Only sharing information with other radiographers [ ] d) Never sharing patient information under any circumstances [ ]
6. Which of the following situations represents a breach of professional ethics? a) Discussing a patient's condition with the referring physician [ ] b) Explaining a procedure to a patient before performing it [ ] c) Sharing patient images on social media without consent [ ] d) Documenting patient reactions to contrast media [ ]
7. The principle of justice in healthcare ethics primarily concerns: a) Punishing patients who don't comply with treatment [ ] b) Fair distribution of healthcare resources and equal treatment of patients [ ] c) Legal consequences for medical errors [ ] d) The right of healthcare providers to refuse treatment [ ]
8. When a patient refuses a radiographic examination, the most ethical response is to: a) Force the patient to have the examination [ ] b) Respect the patient's decision and document the refusal [ ] c) Convince the patient by exaggerating the consequences [ ] d) Proceed with the examination anyway [ ]

SECTION C: LEVEL OF KNOWLEDGE OF PROFESSIONAL CONDUCT

Instructions: Choose the best answer from the options provided (a-d).

1. The primary professional body that regulates radiography practice in Nigeria is: a) Nigerian Medical Association (NMA) [ ] b) Radiographers Registration Board of Nigeria (RRBN) [ ] c) Medical and Dental Council of Nigeria (MDCN) [ ] d) Nigerian Association of Radiographers (NAR) [ ]
2. Professional conduct in radiography primarily involves: a) Only technical competence in imaging procedures [ ] b) Maintaining high standards of practice, ethics, and patient care [ ] c) Following only the instructions of senior radiographers [ ] d) Completing procedures as quickly as possible [ ]
3. Which of the following is NOT considered professional misconduct for a radiographer? a) Practicing while under the influence of alcohol [ ] b) Maintaining continuing professional development [ ] c) Falsifying patient records [ ] d) Engaging in inappropriate relationships with patients [ ]
4. The appropriate dress code for radiographers in clinical practice includes: a) Casual clothing and open-toed shoes [ ] b) Professional uniform, closed shoes, and minimal jewelry [ ] c) Any comfortable clothing [ ] d) Personal preference with no restrictions [ ]
5. When interacting with patients, professional conduct requires radiographers to: a) Maintain professional boundaries and treat all patients with respect [ ] b) Share personal information to build rapport [ ] c) Discuss other patients' conditions [ ] d) Make judgments about patients' lifestyle choices [ ]
6. Continuing Professional Development (CPD) for radiographers involves: a) Only attending conferences [ ] b) Regular updating of knowledge and skills throughout one's career [ ] c) Reading medical journals occasionally [ ] d) Completing initial training only [ ]
7. The proper way to handle a complaint from a patient about radiographic services is to: a) Ignore the complaint if it seems unreasonable [ ] b) Listen, document, and follow established

complaint procedures [ ] c) Argue with the patient about their concerns [ ] d) Refer all complaints to other healthcare professionals [ ]

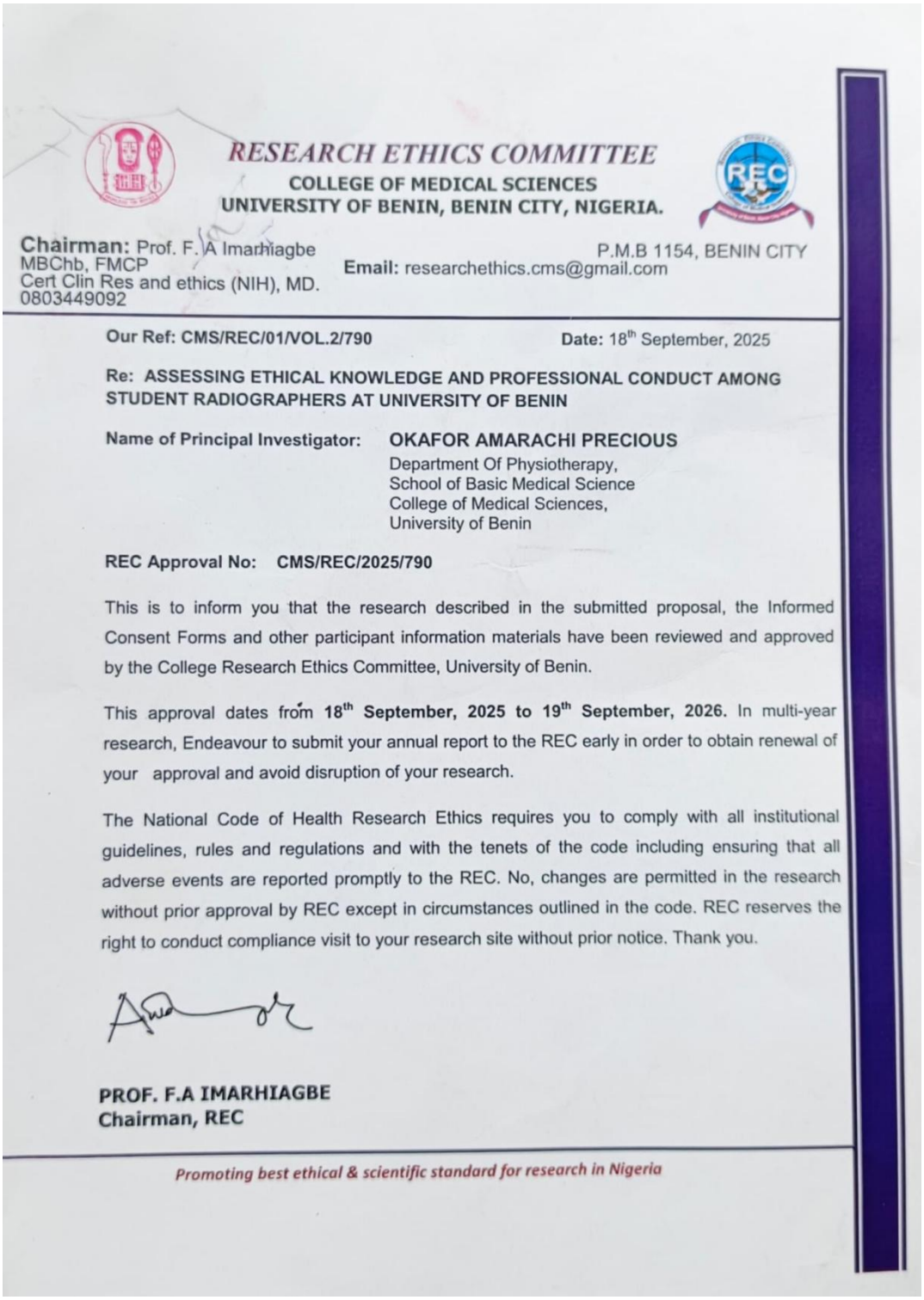
8. Professional boundaries in radiographer-patient relationships mean: a) Being friendly and personal with all patients [ ] b) Maintaining appropriate professional distance while being compassionate [ ] c) Avoiding any communication with patients [ ] d) Treating patients as friends [ ]

SECTION D: COMMON ETHICAL CHALLENGES AND PROFESSIONAL MISCONDUCTS

Instructions: Rate how frequently you have encountered or observed the following situations during your training using the scale below:
Scale: 1 = Never, 2 = Rarely, 3 = Often, 4 = Very Often

Item	**1**	**2**	**3**	**4**
1. Students performing procedures without proper supervision				
2. Inadequate explanation of procedures to patients before examination				
3. Failure to obtain proper consent before radiographic procedures				
4. Discussing patient information inappropriately in public areas				
5. Students taking shortcuts in radiation protection measures				
6. Discrimination against patients based on social status, appearance, or condition				
7. Inappropriate use of mobile phones or social media during patient care				
8. Failure to maintain patient dignity and privacy during examinations				
9. Students falsifying or inaccurately documenting patient information				
10. Inappropriate professional relationships between students and patients				
11. Failure to report errors or incidents during radiographic procedures				
12. Students practicing beyond their level of competence without seeking help				

APPENDIX II: ETHICAL APPROVAL



RESEARCH ETHICS COMMITTEE
COLLEGE OF MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.

Chairman: Prof. F. A Imarhiagbe
MBChb, FMCP
Cert Clin Res and ethics (NIH), MD.
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Our Ref: CMS/REC/01/VOL.2/790 **Date:** 18th September, 2025

Re: ASSESSING ETHICAL KNOWLEDGE AND PROFESSIONAL CONDUCT AMONG STUDENT RADIOGRAPHERS AT UNIVERSITY OF BENIN

Name of Principal Investigator: **OKAFOR AMARACHI PRECIOUS**
Department Of Physiotherapy,
School of Basic Medical Science
College of Medical Sciences,
University of Benin

REC Approval No: CMS/REC/2025/790

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

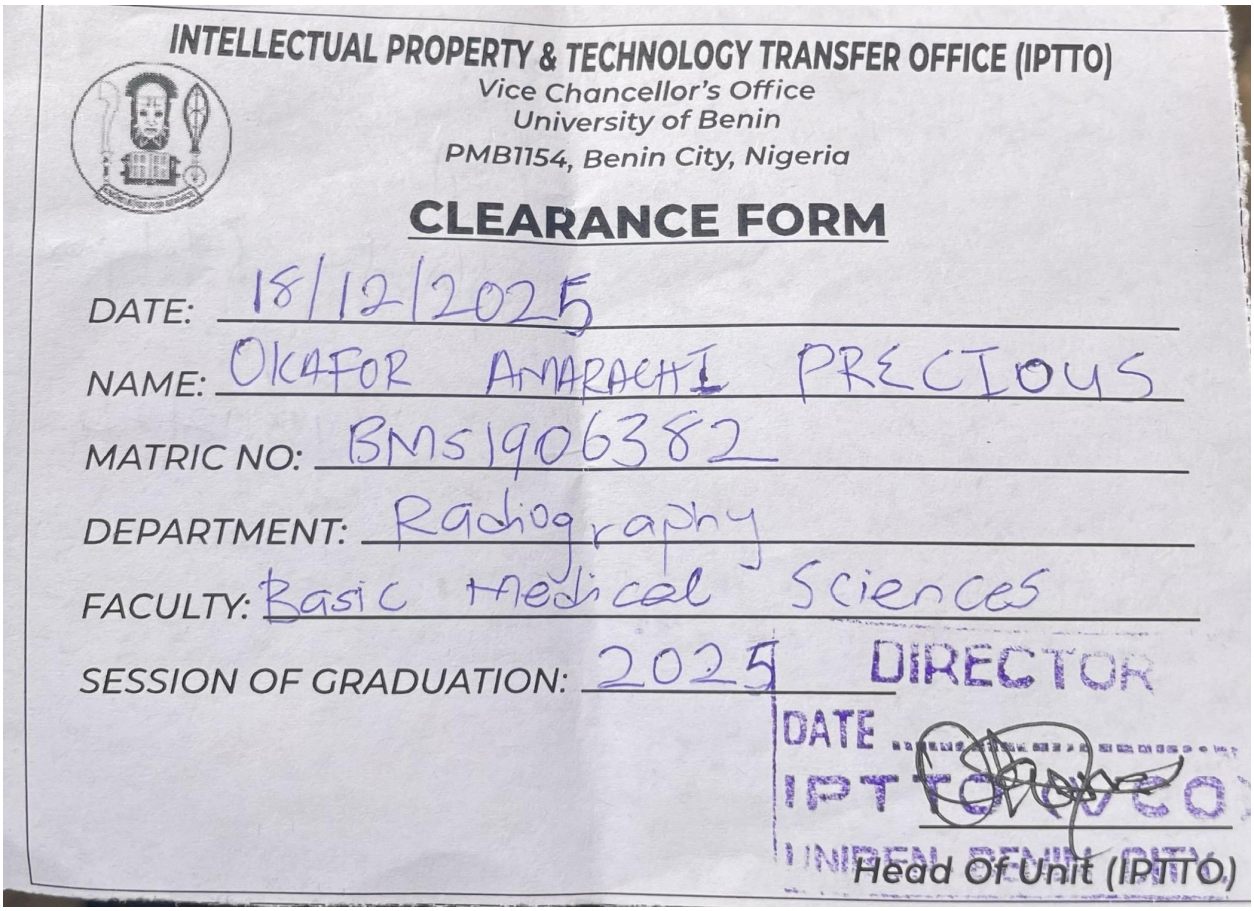
This approval dates from **18th September, 2025 to 19th September, 2026.** In multi-year research, Endeavour to submit your annual report to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

PROF. F.A IMARHIAGBE
Chairman, REC

Promoting best ethical & scientific standard for research in Nigeria

APPENDIX III: PLAGIARISM CLEAREANCE FORM



INTELLECTUAL PROPERTY & TECHNOLOGY TRANSFER OFFICE (IPTTO)

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CLEARANCE FORM

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DEPARTMENT: Radiography

FACULTY: Basic Medical Sciences

SESSION OF GRADUATION: 2025

DIRECTOR

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