EVALUATION OF CHALLENGES ENCOUNTERED BY NEWLY CERTIFIED RADIOGRAPHERS IN BENIN CITY

BY

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CERTIFICATION

This is to certify that the research work for this project by Oragwuncha Ozioma Jane-Frances, BMS1806200 were carried out under my supervision

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DEDICATION

This project is dedicated to my family for their constant love, support and encouragement throughout this journey.

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I sincerely acknowledge the Almighty God for his guidance, strength and grace to complete this work.

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ABSTRACT

Introduction: Newly certified radiographers often face various challenges when transitioning from academic training to professional practice. These challenges can affect their confidence, performance and overall professional development. This study focused on identifying the major difficulties encountered by newly certified radiographers in Benin City, as well as assessing their readiness for clinical practice.

Aim: The aim of this study was to evaluate the challenges encountered by newly certified radiographers and to assess their level of professional preparedness for independent clinical practice.

Methodology: A prospective survey design was used. Data were collected from 51 newly certified radiographers working in public and private healthcare facilities in Benin City using a structured questionnaire. The data were analyzed using descriptive statistics and the Chi-square test was used to determine the significance of the challenges identified.

Results: Findings showed that most respondents experienced significant challenges during this early professional practice. The most reported issues included heavy workload (78.4%), stress and burnout (76.5%), and difficulty communicating with senior colleagues (66.7%). Although a majority (76.5%) demonstrated adequate knowledge of radiation protection, many felt less confident handling complex or emergency cases independently. The Chi-square test result (X^2=201.73, $p < 0.05$), confirmed that these challenges were statistically significant.

Conclusion: The study concluded that newly certified radiographers possess good theoretical and safety knowledge but face major challenges adapting to clinical realities. It recommends the implementation of structured mentorship, improved hands on clinical exposure, and continuous professional development programs to ease their transition into independent practice.

Keywords: Newly certified radiographers, professional preparedness, workload, mentorship, clinical challenges.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Diagnostic radiography students become recognized healthcare professionals after meeting the requirements set by their universities and the Radiographers Registration Board of Nigeria. Meeting these requirements qualifies them to practice. However, being newly certified comes with certain challenges in clinical practice, and having a qualification does not always mean they have all the skills needed to perform well. It is important to study the factors that may affect good practice among new radiographers.

Research has shown positive curriculum outcomes in other healthcare fields like nursing, especially regarding the challenges and skill levels needed for clinical practice (Hodgetts et al., 2007; Heslop et al., 2001). New radiography practitioners may face challenges in various areas such as communication, patient care, clinical procedures, teamwork and inter-professional collaboration, understanding their professional roles, applying evidence-based practice, operating equipment, and demonstrating logical, organized, and innovative thinking.

Studies have shown the importance of educators shifting their focus to bridge the gap between the structured, theory-based environment of academics and the more flexible, experience driven nature of clinical practice, where practical knowledge gained through experience is highly valued (Moercke & Eika 2002).

The results of the Delphi study showed an additional gap between the clinical training curriculum and the actual demands of the workplace. A comparison was made using a model adapted from Remmen, which examines the alignment between the planned curriculum and what is actually practiced in clinical settings (Moercke & Eika 2002).

Problem-based learning has been proposed as an effective approach for delivering higher education. In radiography, it is particularly valuable as it promotes deeper understanding rather than surface level learning (Boud & Feletti 2013). Radiographers need a unique blend of intellectual and technical abilities, especially as the profession continues to grow and evolve rapidly.

Only a small number of radiographers graduate each year (Hodgetts et al., 2007). As a result, there is a growing demand for radiographers due to job openings and technological advancements. Since curricula are continually evolving, and new graduates are expected to function as independent and responsible professionals, it is important to assess and review the current curriculum using evidence-based findings on identified problems and levels of challenges or proficiency, in order to confirm its effectiveness.

1.2 Statement of Problem

While radiography training programs are designed to equip students with the theoretical knowledge and clinical competencies required for professional practice, mounting evidence suggests that newly certified radiographers often encounter significant challenges during their transition into full clinical roles. Possession of a professional qualification does not automatically translate into confidence, competence, or readiness to manage real-life clinical demands, workplace dynamics, and systemic constraints.

Although previous studies have examined radiography education and workforce issues broadly, there is a noticeable lack of localized, empirical evidence focusing specifically on the nature and extent of challenges faced by newly certified radiographers in Nigerian clinical settings, particularly in Benin City. Existing literature tends to generalize findings from more experienced practitioners or from other regions, thereby overlooking context-specific factors such as resource

availability, institutional support, mentorship structures, workload pressures, and adaptation to workplace culture.

This gap in the literature limits the ability of educators, healthcare institutions, and policymakers to design targeted interventions that support early-career radiographers. Understanding the challenges encountered by newly certified radiographers in Benin City is therefore essential for assessing the adequacy of current training programs, identifying areas requiring improvement, and developing strategies to ease the transition from student to practicing professional. Consequently, this study is necessary to generate evidence-based insights that can inform curriculum development, continuing professional support, and workforce planning in radiography practice..

1.3 Research Question

1. What are the challenges encountered by newly certified radiographers?

2. What level of support is available to newly qualified radiographers during their transition into practice?

1.4 Hypotheses

Null Hypothesis: Newly certified radiographers do not encounter significant challenges during their clinical practice.

Alternate Hypothesis: Newly certified radiographers encounter significant challenges during their clinical practice

1.5 Aim and Objectives

Aim

This study aimed to evaluate the challenges encountered by newly certified radiographers.

Objectives

1. To identify and categorize the types of challenges encountered by newly certified radiographers during their early years of professional practice in Benin City.

2. To assess the level of professional preparedness of newly certified radiographers for clinical practice.

1.6 Significance of the Study

1. This study aimed to examine the strengths, weaknesses, and challenges experienced by graduates, as well as highlight areas of the curriculum that may require enhancement to better align educational outcomes with workplace demands.

2. This study will assist hospitals in identifying key areas that need improvement, particularly in relation to the integration and performance of newly certified radiographers in clinical practice.

3. The study will also raise awareness among undergraduate radiography students about the potential challenges they may face during their initial clinical experiences, helping them to prepare more effectively.

1.7 Scope of the study

This study focused on evaluating the challenges encountered by newly certified radiographers in Benin City. The study was limited to radiographers currently practicing in public and private healthcare facilities within Benin, Edo State, Nigeria.

1.8 Operational Definition of Terms

Evaluation: Evaluation is the process of collecting and analyzing information to make informed judgements, improve outcomes and guide decision making

Challenges: Challenges are difficulties that make a task or situation harder to handle. They test a person's skills, patience and ability to find solution

Encounter: Encounter means to meet or come across something unexpectedly or in a challenging way

Newly Certified Radiographers: Newly certified radiographers are individuals who have recently completed their academic and clinical training in radiography and have been officially certified to practice as professional radiographers.

CHAPTER TWO

LITERATURE REVIEW

2.1 CONCEPTUAL REVIEW

2.1.1 RADIOGRAPHY IN NIGERIA

Following Wilhelm Conrad Röntgen's discovery of X-rays in 1895, Radiography as a profession was conceived with formal definition and regulation in 1925 by the Society of Radiographers. In Africa, radiography started in South Africa with the documentation showing that x-ray machines were available in the country as early as 1897 (Adejoh, 2019). The first radiographer there, and perhaps, on the African continent, is a woman named May Tomkins, who was trained in London in 1930 by another woman, the iconic K.C. Clark (Adejoh, 2019).

Radiography in Nigeria traces back to the early 20th century with the installation of X-ray machines at Lagos Island General Hospital in 1913 and St. Margaret's Hospital, Calabar, in 1914. Initially dominated by expatriates, the profession saw the emergence of indigenous radiographers like Mrs. Olga Rhodes-Miller, trained in Leeds in 1943. Early hospital expansion during WWI and WWII heightened the demand for radiographers, prompting the training of local youths as technicians. Formal radiography training began in 1947 at the National Orthopaedic Hospital, Igbobi, later shifting to Lagos Island General Hospital in 1949. Indigenous radiographers, in partnership with technicians, established the Association of Radiographers of Nigeria (ARN) in 1958. By 1962, technician training evolved into radiographer training, leading to the establishment of the Federal School of Radiography, Lagos (FSRL), which later affiliated with the Society of Radiographers, London. University-based programs began in the 1970s to address the growing need for degree holders. The University of Calabar (UNICAL) pioneered Africa's first B.Sc. Radiography program in 1981, followed by the University of Nigeria, Enugu Campus (UNEC) in

1983. UNEC's program became a model for radiography education, significantly contributing to the academic workforce across new universities. Challenges such as brain drain led to the closure of Ibadan's School of Radiography in 1987 and fueled the drive for degree-awarding programs. Radiography evolved from a mono-modality, technician-dominated profession into a respected, multidisciplinary field. Efforts by pioneers like Obong Effiong Philip Akpan were instrumental in this transformation. Today, radiography in Nigeria is bolstered by professional bodies like ARN, and affiliated organizations including the Nigerian Society of Radiography Lecturers (NSRL) and the International Society of Radiographers and Radiologic Technologists (ISRRT), reflecting its continued growth and global integration.

2.1.2 THE TRANSITION FROM STUDENT TO PRACTITIONER: THE NIGERIAN CONTEXT

The transition from student radiographer to practicing professional in Nigeria is a carefully structured yet deeply transformative journey. It involves rigorous academic training, mandatory licensing, supervised internship, and eventual integration into the workforce. Each phase is designed to equip graduates with the technical proficiency, ethical grounding, and clinical confidence needed to excel in a field that blends cutting-edge technology with compassionate patient care.

Radiography education in Nigeria is a five-year Bachelor of Radiography (B.Rad.) program accredited by the National Universities Commission (NUC) and the Radiographers Registration Board of Nigeria (RRBN). The curriculum balances theoretical coursework with hands-on clinical placements, ensuring students master radiographic techniques, radiation safety, patient positioning, and image interpretation. Clinical rotations, which begin in the third year, expose students to diverse imaging modalities, general radiography, computed tomography (CT),

magnetic resonance imaging (MRI), ultrasound and radiotherapy, across different healthcare settings. A critical aspect of this training is the block placement system, where students alternate between classroom learning and hospital rotations. This model ensures they apply theoretical knowledge in real-world scenarios, gradually building competence under the supervision of qualified radiographers and radiologists.

Before practicing independently, graduates must obtain licensure from the Radiographers Registration Board of Nigeria (RRBN), the statutory body established under the Radiographers Registration, Act of 1987. The licensing process involves both provisional and full registration. During provisional registration fresh graduates apply with their academic transcripts and proof of completion from an accredited institution. This allows them to undertake the mandatory one-year internship. Full registration is usually done after completing internship training.

The RRBN ensures that only qualified professionals enter the workforce, maintaining high standards in medical imaging across Nigeria. The one-year internship is a pivotal phase where newly graduated radiographers transition from supervised learners to autonomous practitioners. Interns are placed in accredited hospitals, often tertiary institutions like teaching hospitals, where they rotate through key departments such as general radiography, CT, MRI, radiotherapy, ultrasound and mammography depending on available facilities in the hospital of choice. During this period, interns refine their technical skills, learn departmental workflows, and develop professional judgment in patient care. They work alongside senior radiographers, radiologists, and other healthcare professionals, gaining exposure to complex cases and emergency imaging protocols.

Upon getting their license, radiographers can seek employment in public healthcare institutions, private hospitals and diagnostic centers, academic and research roles and corporate and industrial

sectors. Networking through professional bodies like the Association of Radiographers of Nigeria (ARN) and continuous professional development (CPD) programs enhances career prospects. Many radiographers also pursue specialization in areas like sonography, MRI, or radiation therapy to advance their careers.

2.1.3 CHALLENGES FACING NEW RADIOGRAPHERS IN NIGERIA

The journey from radiography student to autonomous practitioner in Nigeria represents a critical professional change faced with systemic challenges that test even the most prepared graduates. This transition period, which should ideally foster confidence and clinical competence, instead often becomes a crucible of professional adversity shaped by inefficiencies, resource limitations, and institutional shortcomings.

The professional initiation process begins with licensure from the Radiographers Registration Board of Nigeria (RRBN), established under the Radiographers Registration, Act of 1987. However, this gateway to practice is often obstructed by significant administrative delays. Research conducted in Northern Nigeria reveals that 34% of graduates wait 8-14 months after completing their academic requirements before securing internship placements (Obotiba et al., 2017). These prolonged waiting periods create professional limbo where newly minted graduates risk skill atrophy during what should be their most formative clinical year.

A striking 73% of interns in Northern Nigeria reported inadequate clinical supervision (Obotiba et al., 2017). This mentorship vacuum forces new practitioners to develop skills through trial and error rather than guided experience, potentially compromising both professional development and patient care standards. The absence of structured mentorship programs means many interns lack access to the experiential knowledge of senior colleagues, particularly when handling complex cases or unfamiliar equipment.

Radiation safety represents another critical concern, with 60% of interns reporting they were not provided with personal radiation monitoring devices (Obotiba et al., 2017). This safety oversight exposes new practitioners to unnecessary occupational hazards and reflects broader institutional neglect. Equipment challenges further compound these issues, with many facilities relying on outdated or malfunctioning machines that force interns to develop suboptimal workarounds. 84% of radiographers cite poor power supply as a barrier to service delivery (Ngoye et al., 2019). 75% experience frequent equipment breakdowns, with rural facilities disproportionately affected (Ngoye et al., 2019).

The human dimension of internship challenges manifests starkly in welfare deficiencies such as accommodation shortages, poor responsiveness from hospital management to welfare concerns and experienced delayed or insufficient stipends. These material hardships demoralize new practitioners and contribute to early career attrition, representing a significant loss of trained talent for Nigeria's healthcare system.

The professional socialization of new radiographers often occurs within rigid institutional hierarchies where senior staff may dismiss junior input, creating an environment that stifles questioning and innovation. This cultural dynamic can significantly slow skill acquisition and delay the transition to autonomous practice. The phenomenon of "reality shock" emerges when new practitioners discover the gap between academic preparation and clinical demands, leading to professional role conflict and diminished confidence.

Clinical practice presents multifaceted challenges in patient interaction such as communication barriers in Nigeria’s multicultural healthcare environments, high patient volumes in understaffed facilities, time pressures that compromise thorough examinations. These factors collectively create

a stressful clinical environment where new practitioners must rapidly develop both technical proficiency and patient management skills.

Resource and equipment deficiencies in accredited centers during internship and during job placements reduce hands on experience. These material deficiencies constrain professional practice and limit opportunities for new radiographers to gain experience with contemporary imaging technologies. The resulting skill gaps may persist throughout careers, affecting long-term professional competence.

The radiography profession in Nigeria faces ongoing struggles with professional identity and autonomy. Historically rooted in technical apprenticeship, radiography only transitioned to an all-graduate profession in 1993 later than most healthcare fields. The profession continues to navigate its relationship with medicine, where radiologists traditionally maintain control over diagnostic interpretation. While Nigerian radiographers have demonstrated competence in basic radiographic interpretation their professional scope remains contested.

2.1.4 STRATEGIC INTERVENTIONS TO COMBAT CHALLENGES FACED BY NEWLY LICENSED RADIOGRAPHERS IN NIGERIA

One of the earliest and most debilitating challenges is the delay in securing internship placements. A study in Northern Nigeria found that 34% of graduates waited 8–14 months before securing placement, exacerbating skill attrition and financial strain (Obotiba et al., 2017). This bottleneck stems from limited accredited training centers and administrative inefficiencies. To combat this, regulatory bodies like the Radiographers Registration Board of Nigeria (RRBN) should collaborate with universities to establish a national internship placement system ensuring timely deployment of graduates.

In order to strengthen supervision, hospitals should assign senior radiographers as mentors to guide new graduates, with protected time for teaching. Institutions can adopt virtual reality (VR) and high-fidelity mannequins to augment hands-on training, particularly in advanced modalities like MRI and CT, which are scarce in rural areas. Also by establishing radiographer-led forums (e.g., WhatsApp groups or monthly workshops) can facilitate knowledge exchange and reduce professional isolation.

In order to address resource constraints and workplace inequities by collaborating with private diagnostic centers to loan underutilized equipment to public hospitals, particularly in rural areas. Legislators should allocate 5% of health budgets to radiology equipment servicing, preventing downtime.

To mitigate professional isolation and role ambiguity hospitals should implement 6-month residency-like rotations across modalities (X-ray, ultrasound, CT) to build confidence. Digitizing request forms can reduce errors and clarify radiographers' responsibilities in multidisciplinary teams.

2.1.5 THE CRUCIAL ROLE OF RRBN IN SUPPORTING NEWLY LICENSED RADIOGRAPHERS IN NIGERIA

Embarking on a career in radiography in Nigeria is both exhilarating and daunting. After five years of academic study and a compulsory one-year internship, fresh graduates finally step into the field fully licensed by the Radiographers Registration Board of Nigeria (RRBN). But the path from intern to competent professional is steep, marked by challenges from infrastructural deficits to inadequate supervision, and regulatory hurdles. In this landscape, the RRBN stands as a vital support system.

1. Licensing & Internship Oversight

The RRBN prescribes clear protocols for internship: graduates must complete 12 calendar months under supervision, maintain a properly signed logbook, attend a two-week CT course, and present completion certificates before full registration and licensure (RRBN, 2022). These measures help ensure consistent training standards nationwide and signal to interns and supervisors alike the gravity of transitioning to independent practice.

However, studies show existing gaps: one northern Nigeria survey found delays in securing placements (34% waited 8–14 months), scant orientation (72%), and weak mentorship (73%) (Abubakar et al., 2015). That baseline shows awareness of shortcomings but also highlights the RRBN's opportunity to enforce and refine orientation structures, mentorship schemes, and internship site accreditation.

2. Addressing Clinical Skill and Infrastructure Deficits

Radiography students often train in overcrowded, under-resourced settings with limited exposure to hands-on practice (Onwuzu et al., 2023). Upon entering professional roles, many newly licensed radiographers report reality shock: excessive workloads, lack of trust, and insufficient mentorship (Kasita & Daniels, 2023). The RRBN can step in by mandating minimum clinical exposure ratios, requiring accredited centers to supply functioning equipment and safe environments and facilitating partnerships between teaching hospitals and less-resourced facilities, ensuring equitable exposure during internship and early practice.

3. Reinforcing Mentorship and Supervision

Key to a smooth professional transition is mentorship. However, intern studies revealed alarming lapses: poor mentorship programs, inadequate orientation, and insufficient supervision (Abubakar et al., 2015). This compromised both learning and professional confidence. The RRBN could

implement structured mentorship frameworks, including supervisors trained and certified by the Board, regular site visits and performance audits and mandatory mentor–mentee contracts and progress reviews. Such measures would cultivate trust, professional acumen, and constructive transitions from internship to autonomous service.

4. Enhancing Radiation Safety Practice

Radiographers must uphold rigorous radiation safety. Yet investigations in southeastern Nigeria found only 31% had access to radiation monitoring devices, and even fewer received regular feedback on their dosimetry results (Ugwu et al., 2020). Such lapses expose practitioners to potential long-term health risks. RRBN could revise and enforce radiation safety mandates by requiring internship and licensing institutions to provide personal dosimetry devices (TLD badges), auditing dosimetry records during renewal and initial registration and regular monitoring that will protect radiographers' health and reinforce the importance of radiation safety from day one.

5. Advancing Continuing Professional Development (CPD)

Professional growth does not end with licensing. A 2024 study of Nigerian radiographers showed strong willingness (but limited ability) to engage in CPD due to costs and location constraints (Okere & Adebayo, 2024). The RRBN can champion CPD by accrediting and decentralizing in-person workshops, partnering with institutions to develop virtual CPD platforms, offering financial incentives or subsidies for participation and tieing CPD credits to license renewal. This would nurture a culture of lifelong learning, enhance clinical competence, and foster continuous professional evolution.

6. Championing Regulation, Advocacy, and Professional Unity

Research from northern Nigeria traced persistent challenges low manpower, frequent equipment breakdowns, limited scope of practice to a weak regulatory and professional presence (Abubakar et al., 2015). Many radiographers rated the Board's efforts as only fair.

Here, RRBN must strengthen state and zonal chapters to ensure nationwide presence, lobby for improved healthcare funding, scholarship schemes, and regulation of equipment maintenance, promote professional unity and advocacy, emphasizing the unique value radiographers bring to interdisciplinary teams and coordinate with other health councils to ensure fair and transparent internship placements, eliminating nepotism and delays.

2.2 EMPIRICAL REVIEW

The review of the related literature revealed that very few studies have been carried out in this area; radiographers' challenges in their early clinical practice.

Liang et al., (2010) conducted a study to assess how well newly qualified radiographers are prepared for clinical practice, focusing on identifying their strengths and weaknesses in relation to their tertiary education. The evaluation covered professional attributes, communication skills, patient care abilities, and clinical competence. The findings showed that the new graduates generally felt confident in their readiness for clinical work. These results aligned with those of Mackay et al., (2008) who also found a general consensus that graduates are adequately prepared. There are four content areas on which to base standard for general medical practice, as enumerated by Hays et al., (1998) which are similar to those of the British Health Professional Council (HPC). These were adapted for radiography context:

- The role and responsibility of the radiographers in the imaging department.
- The rights and needs of the patients

- Quality assurance and education
- Administration

Usoro et al., (2024) conducted a descriptive cross-sectional study among 360 newly qualified Radiographers in selected hospitals in South West Nigeria. A well-designed questionnaire was used for data collection and it was analysed with descriptive and inferential statistics. From their results, the major communication challenges were effective communication with patients and careers and effective communication with members of the team. The major clinical challenges identified were being unable to perform special exams unaided and inability to prioritize exams according to urgency. The major technical challenges identified were being unable to take remedial actions for poor quality radiograph and restriction from access to some machines. They concluded that newly qualified radiographers face numerous challenges such as technical, communication, workload, poor supervision as well as welfare challenges. There were no statistically significant relationships between the challenges faced by newly qualified radiographers in their early clinical practice and their categories. The study, therefore recommends the need to create a formal mentorship program for newly qualified radiographers, to provide them with guidance and support and the need to also provide opportunities for continued professional development for newly qualified radiographers, such as workshops or courses. Also, more staff should be employed so that the workloads are evenly distributed among the radiographers on staff.

Ugwu, 2018, carried out another research where sixty-one respondents were surveyed (18 new and 43 old radiographers). The questionnaire assessed the new radiographers' challenges against a number of items derived from published radiography standards by the Australian Institute of Radiography (AIR), pertaining to knowledge, skills and values radiographers should acquire on graduation. Statistical analysis examined differences in opinions of the new and old radiographers.

From his results, the difference in opinion between new and old radiographers on the new radiographers' challenges was insignificant. Positive feedback was given to the university curriculum, and there was less effective administration and management in the hospital departments.

He concluded that both new and old radiographers perceived the new radiographers as not being challenged to take up clinical practice. Their areas of challenges emanated from poor administration and management on the side of the hospital/departments.

Obotiba et al., (2017) carried out a descriptive survey where Intern Radiographers in hospitals in Northern Nigeria were invited to complete questionnaire purposely designed to assess challenges involving their training/practice, welfare and mentorship. Also a standard interview guide was used for the chief interns of participating hospitals to assess facilities, manpower, and practice. Data was analyzed using SPSS version 16.0. A total of 55 questionnaires were distributed, out of which 50 were returned filled, providing a return rate of 85.7%. Challenges faced include; interns (34%) spending 8-14 months from graduation before securing a placement, lack of proper orientation by hospital management at commencement (72%), inadequate supervision (73%), no radiation monitoring devices provided (60%), lack of accommodation (60%), poor response of managements to welfare (40%) and lack of functional radiologic equipment with few senior ranking clinical radiographers in the region (21.9%). The study revealed that the major challenges faced by intern radiographers in this region are interrelated, which are inherent in training/practice, and mentorship. The major challenge faced was poor mentorship programme.

Harvey-Lloyd et al., (2019) conducted a longitudinal study employing an interpretive phenomenological methodology, and collated data from nine participants during their first year as

a newly certified diagnostic radiographer. Each participant was interviewed at three months, six months and twelve months.

They concluded that eight of the nine participants found the first three to six months a stressful and emotional time. The experience of the graduates during this time raises issues which need to be used to inform future curriculum development, practice placement models and support strategies.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the methodology that was employed in this study, these include the research settings, study design, target population, sampling techniques, sample size etc.

3.1 Research Settings

This study was conducted in selected healthcare facilities and diagnostic imaging centers in Benin City, Edo State. Benin City is a region in the South West region of Nigeria which is known for having some of the most outstanding medical institutions where newly inducted licensed radiographers undergo their internship or initial professional practice.

3.2 Study Design

A prospective survey study was used for evaluating the challenges encountered by newly certified radiographers in Benin City.

3.3 Target Population

The target population for this study comprised of newly certified radiographers in hospitals and diagnostic centers in Benin City, Edo state, Nigeria, including newly certified radiographers working in tertiary, secondary and private healthcare facilities in Benin City. The inclusion criteria was Radiographers with less than 3 years of experience and are willing participants, while the exclusion criteria was Radiographers with more than 3 years of experience.

3.4 Sampling Techniques/Sampling Size

No sampling technique was used in this study because a census approach was adopted. This decision was based on the relatively small and manageable size of the target population, which consisted of 51 newly certified radiographers in Benin City. Including all eligible participants

helped to eliminate sampling error and ensured that the findings accurately represented the experiences of the entire population.

However, the census approach is limited by the possibility of non-response, which may affect the completeness of the data. In addition, the findings may have limited generalizability beyond newly certified radiographers in Benin City. Despite these limitations, the census approach was considered appropriate for achieving the objectives of the study.

3.5 Instrument for Data Collection

The instrument used for data collection in this study was a well structured questionnaire.

3.6 Validity of instrument

To ensure that the questionnaire effectively measured the intended construct, it underwent both face validity and content validation as the questionnaire was reviewed by experts in the field of radiography and health research.

3.7 Reliability of Instrument

The reliability of the instrument was determined by conducting a preliminary study involving a small group of radiographers who were not part of the main research sample. To assess how consistently the questionnaire measured what it was intended to, Cronbach's alpha was used. A reliability score of 0.75 or higher was deemed acceptable, indicating that the tool was dependable in evaluating the challenges encountered by newly certified radiographers. Based on the findings, adjustments were made to improve clarity and maintain consistency.

3.8 Method of Data Collection

Data for this research was collected by means of questionnaire designed in line with the aims and objectives of this study. The questionnaire was distributed to the respondents and collected back after due completion.

3.9 Method of Data Analysis

Data collected were analyzed using descriptive statistical methods, specifically frequencies, percentages, means, and standard deviations. Frequencies and percentages were used to summarize categorical variables such as respondents' demographic characteristics and the types of challenges encountered during early clinical practice. Mean and standard deviation scores were applied to Likert-scale items to assess the level and severity of challenges and perceived professional preparedness.

These statistical methods were considered appropriate because the study aimed to describe and quantify the challenges experienced by newly certified radiographers rather than to test causal relationships or make inferential predictions. The analyzed data were subsequently organized and presented in tables in line with the study objectives, covering demographic information, areas of professional challenges, and levels of preparedness during early clinical practice.

3.10 Ethical Consideration

Throughout this study, all data collected from radiographers was treated with strict confidentiality and anonymity. Ethical approval was obtained from the appropriate review boards before the research begins. This study also adhered to all relevant data protection laws and regulations.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 DATA PRESENTATION

4.1.1 Introduction

This chapter presents the analysis of the data collected from new certified radiographers currently practicing in Benin City, Edo state. Responses to each item in the questionnaire most relevant to obtain accurate results of the research were singled out, analyzed and presented.

The analysis is structured according to the study objectives:

1. What are the challenges encountered by newly certified radiographers?

2. What level of support is available to newly qualified radiographers during their transition into practice?

4.1.2 Demographic Characteristics of Respondents

Table 1 shows the demographic data of the respondents involved in this study. It reveals that 26 (51%) of the respondents at the time of study were female and the rest of the respondents (49%) were males. The table also shows that majority of the respondents (54.9%) were below the age of 25 years and the rest of the participants were within the age range of 25-35 years. The table further shows that almost every participant (98%) involved in this study were Bachelors degree holders. 27 (52.9%) of the 51 respondents reported that have been practicing for about 1-2 years and 24 (45.1%) of the respondents were still in the first year of practice in the radiography profession. The data also shows that 30 (58.8%) out of the 51 respondents worked at Federal hospitals, 3 (5.9%) of them at state hospitals and 18 (35.3%) of them at private facilities across the City of Benin, Edo state.

Table 4.1: Demographic Information of Respondents (N=51)

Variable	Category	Frequency	Percentage
Sex	Male	25	49.0
	Female	26	51.0
Age	Below 25	28	54.9
	25-35	23	45.1
	36-45	0	0.0
	Above 45	0	0.0
Highest Degree attained	DCR/DIR	0	0.0
	B.Sc	50	98.0
	M.Sc	0	0.0
	PhD	0	0.0
	Others	1	2.0
Years of practice	Less than 1yr	23	45.1
	1-2yrs	27	52.9
	2-4yrs	0	0.0
	Above 4yrs	1	2.0
Workplace	Private Facility	18	35.3
	State Hospital	3	5.9
	Federal Hospital	30	58.8

4.1.3 Specific Challenges Faced by Newly Certified Radiographers

Table 4.2: Responses on Challenges Faced by Newly Certified Radiographers

Questions	Responses (Frequency %)		
	Yes	No	Maybe
Do you feel confident handling complex radiographic procedures as a newly certified radiographer?	27 (52.9%)	12 (23.5%)	12 (23.5%)
Did your training adequately prepare you for real clinical practice?	30 (58.8%)	13 (25.5%)	8 (15.7%)
Have you experienced challenges communicating with senior colleagues or healthcare teams?	34 (66.7%)	15 (29.4%)	2 (3.9%)
Do you consider heavy workload and long shifts as a major challenge?	40 (78.4%)	6 (11.7%)	5 (9.8%)
Do you feel you have adequate mentorship and guidance during the transition phase?	32 (62.8%)	16 (31.4%)	3 (5.9%)
Do you struggle with balancing theoretical knowledge and practical expectations?	21 (41.2%)	24 (47.1%)	6 (11.8%)
Do you experience difficulty in adapting to new radiology equipment and technology?	23 (45.1%)	23 (45.1%)	5 (9.8%)
Have you faced challenges in interpreting or applying standard imaging protocols?	21 (41.2%)	22 (43.1%)	8 (15.7%)
Have you experienced difficulty in handling emergency or trauma cases confidently?	24 (47.1%)	19 (37.3%)	8 (15.7%)
Do you feel adequately prepared in terms of radiation protection practices?	39 (76.5%)	7 (13.7%)	5 (9.8%)
Do you feel you received enough practical exposure during your clinical training to meet workplace demands?	26 (51.0%)	17 (33.3%)	8 (15.7%)
Have you experienced stress or burnout as a result of workload expectations?	39 (76.5%)	11 (21.6%)	1 (2.0%)

Table 4.2 presents the results on the participants' responses to items portraying the Challenges Faced by Newly Certified Radiographers. The table results reveal that newly certified radiographers experience a number of hurdles when they transition into professional practice. Just over half of the participants (52.9%) felt comfortable doing complex procedures, while 58.8% felt their training effectively prepared them for real-world clinical conditions. This suggests that, while academic preparation is often beneficial, practical experience may not be enough to instill complete confidence in complex or specialized activities. Communication issues were also prevalent, with 66.7% of respondents experiencing difficulty connecting with senior colleagues or other healthcare professionals. While 62.8% reported getting mentorship, the findings indicate that mentoring support should be more consistent and systematic. Workload challenges were among the most pressing issues highlighted. About 78.4% of respondents saw excessive workloads and long shifts as important challenges, and a comparable proportion (76.5%) reported stress or burnout as a result. These findings are consistent with the broader literature, which shows that radiographers, particularly those new to the profession, frequently confront high job demands and emotional strain as a result of personnel shortages, increased imaging requests, and high patient turnover. Furthermore, a sizable proportion of responders (45.1%) experienced difficulty adjusting to new equipment and technologies, while 41.2% struggled to successfully interpret or use imaging techniques. This highlights the necessity for a more organized orientation and ongoing professional development in developing imaging technologies. Encouragingly, a great majority (76.5%) felt well prepared in radiation protection procedures, indicating that safety and radiation awareness training are highly valued in their schooling. Generally, the findings indicate that newly certified radiographers were in all regard competent, but they nevertheless experience significant transitional obstacles, notably in terms of workload, communication, and adaptability to clinical

realities. Strengthening mentorship, boosting hands-on training, and creating a supportive work atmosphere would help them integrate and gain confidence in professional practice.

4.1.4 Professional Preparedness of Newly Certified Radiographers.

Table 4.3: Responses on Professional Preparedness of Newly Certified Radiographers.

Questions	Responses (Frequency %)		
	Yes	No	Maybe
Did your radiography training adequately prepare you for independent clinical practice?	22 (43.1%)	19 (37.3%)	10 (19.6%)
Do you feel confident in handling pediatric, trauma, and emergency radiographic cases as a newly certified radiographer?	22 (43.1%)	18 (35.3%)	11 (21.6%)
Were you provided with sufficient hands-on clinical experience during your training?	27 (52.9%)	16 (31.4%)	8 (15.7%)
Do you consider yourself competent in applying radiation protection measures in clinical practice?	45 (88.3%)	2 (3.9%)	4 (7.8%)
Have you received adequate orientation or mentorship in your current workplace as a newly certified radiographer?	32 (62.8%)	14 (27.4%)	5 (9.8%)
Do you feel prepared to adapt to new imaging technologies and protocols in clinical practice?	36 (70.6%)	9 (17.6%)	6 (11.8%)

Table 4.3 illustrates the responses to items on professional preparedness of newly certified radiographers. The results show that professional preparedness of newly certified radiographers can be described as moderate, with obvious strong points and aspects that require enhancement. Just 43.1% of the respondents believed that their training in radiography prepared them adequately

to work in an independent clinical environment, implying that theoretical knowledge might be adequate but that practical preparation is less so. On the same note, 43.1% believed they were competent enough in handling pediatric, trauma, and emergency cases, which are the types of cases that demand quick decision-making and high technical skills, suggesting that they may have not spent a lot of time in such critical situations during training.

More positively, 52.9% of the respondents shared the fact that they were getting proper hands-on clinical experience, which portrays a certain level of practical exposure, and the rest 47.1% reported dissatisfaction. This underscores the importance of strengthening clinical placements and simulations-based learning to prepare students to meet the demands in the real world in radiography programs.

One of the greatest strengths noted was the radiation protection where 88.3% said that they were competent. This implies that the principles of radiation safety are highly incorporated in the radiography curricula and they are always reinforced in training. Also, 70.6% of the respondents reported that they are ready to change to new imaging technologies and protocols, and there is a high correspondence between current training methods and changing digital radiography practice. But the issue of mentorship in the workplace still prevails as only 62.8% said they were well oriented or guided. This observation underscores the need to have well-organized transition programs to help new professionals to adapt to workplace requirements.

Generally, the findings indicates that newly certified radiographers are technically competent but not quite convinced of independent practice, especially in complicated or emergency practice. They would benefit a lot by strengthening their clinical exposure, mentoring, and scenario-based training to prepare them to take independent professional roles.

4.1.5 Hypothesis testing

Null Hypothesis (H_0): Newly certified radiographers do not encounter significant challenges during their clinical practice.

Alternate Hypothesis (H_1): Newly certified radiographers encounter significant challenges during their clinical practice.

Test of Hypothesis using Chi-square test.

Table 4.4: Aggregated Chi-Square test of responses on challenges faced by newly certified radiographers.

Responses category	**Observed values (O)**	**Expected values (E)**	**$(O-E)^2/E$**
Yes	356	204	113.25
No	185	204	1.77
Maybe	71	204	86.71
Total	612	612	χ^2= 201.73
degree of freedom	2		p-value= 0.000
Decision			Reject H_0

Null Hypothesis (H_0): Newly certified radiographers do not encounter significant challenges during their clinical practice. Chi-Square Test Result: $\chi^2 = 201.73$, $p = 0.000$; Since $p = 0.000$ is lesser than 0.05, we reject H_0.

Conclusion: A Chi-square value of $\chi^2(2, N=612) = 201.72$, $p= 0.000$, was obtained from the Chi-square test. The null hypothesis was therefore rejected since the p-value was less than 0.05. This suggests that newly certified radiographers in Benin city experience significant challenges.

4.2 DISCUSSION

This study evaluated the challenges encountered by newly certified radiographers in Benin City, Edo state. The study specifically evaluated the challenges these newly certified radiographers must have faced during the course of their early careers and also assessed their level of professional preparedness for clinical practice. Newly certified licensed radiographers in Benin city were the main demographic of this study, questionnaires were distributed to them and 51 of them attempted and completed the survey instrument. The respondents consisted of 26 (51%) females and the rest of the respondents (49%) were males at the time of study. The table indicates that most of the respondents (54.9%) were below the age of 25 years and the rest of the participants were in the age bracket of 25-35 years. The table also indicates that nearly all members (98%) of the sample of this study were Bachelors degree holders, 27 (52.9%) respondents said that they have been practicing around 1-2 years and 24 (45.1%) the respondents said that they were still in the first year of practice in the radiography profession. The statistics also reveal that 30 (58.8%) of the 51 respondents were employed in Federal hospitals, 3 (5.9%) of them in state hospitals and 18 (35.3%) of them in private facilities in the City of Benin in the Edo state.

The findings of this research, especially the high percentages of yes answers on questions like heavy workload (78.4%) and stress or burnout (76.5%) are indicative that newly certified radiographers in Benin City encounter rather serious challenges in their professional activity. These observations are in line with the bigger evidence in the area. According to a study by Usoro et al. (2024) who discovered that recently graduated radiographers in southwestern Nigeria faced significant workloads, technical and communication issues, and improper supervision on the initial clinical practice. This area of congruence enhances the validity of the existing findings in the Nigerian context.

One of the themes that develop out of your data and the literature is work and stress. The large numbers of shifts and work volumes of the respondents are in accordance with the "reality-shock" findings of Kasita et al. (2023) in Namibia as they found that excessive working and absence of breaks posed a significant challenge to novice radiographers. The theme was replicated by the Nigerian respondents, who cited poor staffing and supervision as some of the causes of stress. This kind of evidence highlights the necessity of workload control and facilitating staffing as a transition-period structuring.

Mentorship, orientation and communication is another theme that is very strong. Even though 62.8 percent of respondents reported having sufficient mentorship, the reality that a significant minority (37.2%) did not is an indicator of a gap. Usoro et al. (2024) suggested formal mentorship programmes as a way of supporting new qualified practitioners. Similarly, a qualitative investigation conducted by Kasita et al. (2023) revealed that low orientation, peer support and supervisor relationship had a strong effect on the adjustment and performance of the new radiographers. This is in line with the current information, where 66.7% of the interviewees stated that they have communication problems, indicating that workplace culture and peer relationships need special consideration when developing a transitioning plan.

In addition, the potential challenges that arose as moderate were technical adaptation and practice exposure. Although 45.1% practiced that they have had challenges with acclimating to new equipment, and 41.2% had issues with implementing imaging practices, a majority of the respondents (76.5%) believed they were sufficiently trained in radiation protection. This is an indication that the fundamental curricula on radiation safety are effective, yet the field is experiencing gaps in terms of technology advancement and handling of more complex cases,

which is consistent with the world-wide literature that newer radiographers tend to feel unprepared in handling more advanced processes (Kasita et al., 2023).

CHAPTER FIVE

CONCLUSION, RECOMMENDATIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

5.1 CONCLUSION

This study has explored issues and professional readiness of new radiographers in Benin City, and a certain trend can be identified: even though the background knowledge regarding radiation protection is high, along with a decent level of adaptability to the changing imaging technology, new radiographers have to face significant barriers to the entry. Collectively, the findings from this study indicate that multifaceted interventions, consisting of reinforced clinical placements and simulation, formalized mentorship and induction programmes, workload management and well-being implications, and inter-professional communication improvements, are required to reduce the gap between education and safe and confident autonomous practice. The treatment of these areas will enhance the quality of care delivered to patients, employee retention and professional maturation of radiographers in Benin City and other places.

5.2 RECOMMENDATIONS

1. Implement an organized mentorship program where newly certified radiographers are assigned an experienced professional mentor during six months or one year after graduation. The mentorship process must take into consideration set learning objectives, periodic reviews on progress and formal feedback to promote competence and confidence.
2. Introduce mandatory simulation-based training in responding to emergencies, pediatric imaging, and advanced radiographic techniques in final-year programs and induction programs at work. Each simulation should be followed by competency assessments to make sure that the skills are ready before an independent practice.
3. Introduce the standardized workplace induction packages among newly hired radiographers; such packages must comprise of modules on communication, teamwork, ethical practice, and

access to clinical protocols and scope-of-practice documents to facilitate professional alignment and integrate easily.

4. Introduce regular, employer-paid Continuing Professional Development (CPD) policies emphasizing on the latest imaging technology, revised protocols, and care of the patient. Employers are encouraged to provide learning space and funds that are free from interference in order to foster professional development over a lifetime

5.3 LIMITATIONS

1. Data bias based on self-reports: Due to the fact that the data were self-assessed, the participants might have exaggerated competence or underreported the challenges, which might lead to bias in the findings.
2. Poor generalizability: The research was only carried out on radiographers in Benin City and thus it would not be possible to generalize the findings to other institutions or health systems, which may have different working conditions or training standards.
3. Aggregation bias: When responses are grouped together on a wide range of subjects of competence and challenges, this could have concealed differences that are truly subspecialty, like pediatric or interventional radiography.
4. Absence of contextual exploration: The quantitative, cross-sectional study measured prevalence without the analysis of underlying contextual variables (e.g., workplace culture, quality of supervision or institutional support), which could have given more information about the identified difficulties.

5.4 SUGGESTIONS FOR FUTURE STUDIES

1. Longitudinal cohort studies undertaken with the radiography trainees after training to the initial two years of their practice to determine how competence, confidence, and professional satisfaction change over the years.
2. Use mixed-methods research designs that are based on surveys and focus groups or interviews to find out more contextual factors that contribute to the quality of mentorship, work load, and communication practices.
3. Conduct and appraise intervention-based research (e.g., mentorship programs, simulation curricula, or workload management policies) in pre-test and post-test designs to determine the effect on competence and retention.
4. Conduct multi-institutional comparative research of radiographers in other regions, hospital types and healthcare systems to increase the external validity and contextual depth of results.
5. Examine the views of supervisors and management to determine organizational and policy-level aspects that contribute to the transition, support, and performance of new-certified radiographers.

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APPENDIX I: Questionnaire Form

My name is Oragwuncha Ozioma Jane-Frances a student in the Department of Radiography, School of Basic Medical Science, University of Benin with matriculation number BMS1806200 conducting this study under the supervision of Mrs. Fanny Igbinedion. The aim of the study is to evaluate the challenges encountered by newly certified radiographers in Benin City.

We would appreciate your kindness if you could take about 5 minutes of your time to respond to the following questions. Participation in this study is voluntary, you have the right to withdraw from the study at any given time. Information provided will be solely used for this research, and will be treated with utmost confidentiality.

SECTION A: Demographic information

1. Sex a. male ☐ b. female ☐
2. Age a. Below 25 ☐ b. 25-35 ☐ c.35-45 ☐ d. Above 45 ☐
3. Highest Degree attained a. DCR/DIR ☐ b. B.Sc ☐ c. M.Sc ☐ d. others specify ……...
4. Years of practice a. Less than 1 yr ☐ b.1-2yrs ☐ c. 2-4yrs ☐ d. Above 4yrs ☐
5. Place of work a. Private facility ☐ b. State Hospital ☐ c. Federal Hospital ☐ d. others specify ……

SECTION B: Specific Challenges Faced by Newly Certified Radiographers

Please choose the response that best represents your view

Questions	Yes	No	Maybe
Do you feel confident handling complex radiographic procedures as a newly certified radiographer?			
Did your training adequately prepare you for real clinical practice?			
Have you experienced challenges communicating with senior colleagues or healthcare teams?			
Do you consider heavy workload and long shifts as a major challenge?			
Do you feel you have adequate mentorship and guidance during the transition phase?			
Do you struggle with balancing theoretical knowledge and practical expectations?			
Do you experience difficulty in adapting to new radiology equipment and technology?			
Have you faced challenges in interpreting or applying standard imaging protocols?			
Have you experienced difficulty in handling emergency or trauma cases confidently?			
Do you feel adequately prepared in terms of radiation protection practices?			
Do you feel you received enough practical exposure during your clinical training to meet workplace demands?			

SECTION C: Professional Preparedness of Newly Certified Radiographers.

Please choose the response that best represents your view

Questions	Yes	No	Maybe
Did your radiography training adequately prepare you for independent clinical practice?			
Do you feel confident in handling pediatric, trauma, and emergency radiographic cases as a newly certified radiographer?			
Were you provided with sufficient hands-on clinical experience during your training?			
Do you consider yourself competent in applying radiation protection measures in clinical practice?			
Have you received adequate orientation or mentorship in your current workplace as a newly certified radiographer?			
Do you feel prepared to adapt to new imaging technologies and protocols in clinical practice?			

Appendix III: Consent form

Dear radiographer,

My name is Oragwuncha Ozioma Jane-Frances, a final year student from the Department of Radiography, School of Basic Medical Science, University of Benin with matriculation number BMS1806200. I am conducting a research project titled: “Evaluation of the challenges encountered by newly qualified radiographers in Benin City, Edo State”. This research will be conducted under the supervision of Mrs Fanny Igbinedion.

The aim of the study is to evaluate the challenges encountered by newly certified radiographers .The information provided will be used for research purposes only and will be treated with utmost confidentiality. Kindly note that your participation is voluntary, and you may withdraw from the study at any time.

Thank you.

Signature of Participant & date

Signature of Researcher & date

APPENDIX IV: Ethical approval

HEALTH RESEARCH ETHICS COMMITTEE (HREC)

UNIVERSITY OF BENIN TEACHING HOSPITAL

P.M.B. 1111 BENIN CITY NIGERIA Telephone: 052-600418 Website: ubth.org

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HREC OFFICE:
Committee email: ubthresearchethics@gmail.com
Registration Number:
NHREC-UBTH-HREC/24/12/2022B

PROTOCOL NUMBER: ADM/E 22/A/VOL.VII/2025/220

PROPOSAL TITLE: "EVALUATION OF CHALLENGES ENCOUNTERED BY NEWLY CERTIFIED RADIOGRAPHERS IN BENIN CITY"

PRINCIPAL INVESTIGATOR(S): ORAGWUNCHA OZIOMA JANE-FRANCES

DEPARTMENT/INSTITUTION: DEPARTMENT OF RADIOGRAPHY, SCHOOL OF BASIC MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

DATE CONSIDERED: AUGUST 20TH, 2025

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 20/8/2025 TO 19/8/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI **SIGNATURE & DATE** Ofili 20/8/2025

UNIVERSITY OF BENIN TEACHING HOSPITAL ETHICS & RESEARCH COMMITTEE Sign..... Date..... BENIN CITY P.M.B. 1111

SUPERVISOR (S): MRS. F.O. IGBINEDION

DECLARATION BY INVESTIGATOR(S):

PROTOCOL NUMBER (please quote in all enquiries)

Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date 15/09/2025

ubthresearchethics@gmail.com

Registration Number: NHREC/24/01/