REVIEW ARTICLE

Is there a need to establish clinical specialist and consultant radiographer positions in our settings: Zambia and Zimbabwe?

Osward Bwanga[1], Bornface Chinene[2], Ncheebe Sindaza[3]

[1]*Midlands University Hospital Tullamore, Radiology Department, Ireland*
[2]*Harare Institute of Technology, Department of Radiography, Harare, Zimbabwe*
[3]*Cancer Diseases Hospital, Radiology Department, Lusaka, Zambia*

ABSTRACT

The practice of radiography is developing and changing globally. This development is due to the availability of a range of advanced imaging modalities such as ultrasonography (US), computed tomography (CT), mammography, magnetic resonance imaging (MRI), dual-energy X-ray absorptiometry (DEXA), and nuclear medicine (NM) and meeting the changing demands of the healthcare delivery system. The radiography career pathways in Zambia and Zimbabwe were created when advanced imaging modalities were unavailable. With radiographers obtaining specialised qualifications in these imaging modalities, it is necessary to establish clinical specialist radiographer positions similar to medical doctors in our settings and radiographers in most non-African countries. The clinical specialist radiographer position is unavailable in our local radiography career pathway despite the Health Professions Council of Zambia (HPCZ) and Allied Health Practitioners Council of Zimbabwe (AHPCZ) having a specialist register for radiographers. In our settings, radiographers also depend on consultant radiologists for clinical leadership. However, radiology and radiography are different professions. To develop the radiography profession and retain radiographers, it is necessary to revise the career pathway and incorporate consultant radiographer positions to provide clinical leadership to their colleagues. This would improve the delivery of imaging services in Zambia and Zimbabwe.

INTRODUCTION

The practice of radiography is developing and changing globally. [1] This is due to the development of different imaging modalities, the shortage of radiologists, the need to utilise the knowledge and skills of radiographers at their full potential and to improve the delivery of imaging services.[1-4] Globally, radiographers, like any other professionals, are bound by their scope of practice that defines their responsibilities and boundaries. [5] However, in some developed countries such as the United Kingdom (UK), radiographers have found these restrictions and sought ways to improve and expand the professional scope of practice to fully

Corresponding author:
Osward Bwanga
Midlands University Hospital Tullamore, Ireland,
E-mail: o.bwanga@yahoo.com

Keywords: Clinical specialist radiographer, Consultant radiographer, Radiography, Role development

This article is available online at: http://www.mjz.co.zm, http://ajol.info/index.php/mjz, doi: https://doi.org/10.55320/mjz.51.1.459

The Medical Journal of Zambia, ISSN 0047-651X, is published by the Zambia Medical Association

realise their potential as practitioners in medical imaging.[2] The professional scope of practice for radiographers in a few countries, led by the UK has developed new positions in the radiography pathway: clinical specialist radiographer and consultant radiographer.[1,4,6] However, many other countries, such as Zambia and Zimbabwe, are striving towards the establishment of new radiography posts.

Literature shows that clinical specialists' and consultant radiographers' roles do benefit the delivery of quality medical imaging services. [7-9] The benefits reported include a reduction in patient waiting times, career progression and job satisfaction among radiographers, cost reduction to healthcare, and a reduction in the workload of radiologists. This results in improved medical imaging service delivery and overall patient satisfaction.[7,8] The challenges faced by the UK and other countries that have established these new positions are worse than in our settings. The question is: *"Is there a need to establish clinical specialist and consultant radiographers' positions in Zambia and Zimbabwe"?* Therefore, this paper reviews the literature on this subject to answer this important question.

CURRENT RADIOGRAPHY POSITIONS IN ZAMBIA AND ZIMBABWE

The professional scope of practice and career pathways should be reviewed periodically to meet the changing needs of healthcare delivery. The radiography career pathways in Zambia and Zimbabwewere created by the Ministry of Health (MoH) at a time when there was non-availability of different advanced imaging modalities such as ultrasonography (US), computed tomography (CT), magnetic resonance imaging (MRI), mammography, nuclear medicine (NM) and dual-energy X-ray absorptiometry (DEXA). Table 1 shows the current radiography career pathways in Zambia and Zimbabwe.

Table 1: Current radiography career pathways in Zambia and Zimbabwe

	Zambia	Zimbabwe
1	Radiography technologist	Intern radiographer
2	Radiographer	Radiographer
3	Senior radiographer	Senior radiographer
4	Principal radiographer	Principal radiographer
5	Chief radiographer	Chief radiographer

In Zambia, there are two types of undergraduate radiography qualifications being offered: a diploma and *a* Bachelor of Science (BSc) in diagnostic radiography. Evelyn Hone College offers a three-year diploma in diagnostic radiography. A holder of a diploma in diagnostic radiography is called a radiography technologist. The radiography technologist performs imaging duties under the supervision of a radiographer and radiologist.[5] On the other hand, a BSc in Diagnostic Radiography is offered by the Lusaka Apex Medical University (LAMU), University of Zambia (UNZA), and Levy Mwanawasa Medical University (LMMU). A holder of a BSc in diagnostic radiography is called a radiographer. After completing a BSc in diagnostic radiography, a radiographer often starts working at the level of basic grade and can progress up to the top management level of a chief radiographer (Table 1). With a postgraduate qualification in any field of medical imaging, a radiographer at any level is registered by the Health Professions Council of Zambia (HPCZ) as a specialist. However, this position or title is unavailable in the radiography career pathway (Table 1).

In Zimbabwe, the radiography career pathway is the same as in Zambia, except there is no radiography technologist position but the intern radiographer. The diploma training programme in diagnostic and therapeutic radiography were discontinued in 2019. Currently, three institutions offer the BSc in Diagnostic Radiography. The University of Zimbabwe (UZ) and the National University of

Science and Technology (NUST) introduced the programmes in 2002, with the Harare Institute of Technology (HIT) launching its BSc programme in 2018. NUST offers a two-year bridging course enabling Diploma holders to upgrade to a BSc degree, given the similar entry requirements for both programmes.After completing the BSc programme, individuals are registered as intern radiographers (Table 1). Interns are required to work under a qualified radiographer's supervision for at least one year. Upon completion of this supervised period, the supervising radiographer writes a letter of recommendation to the Allied Health Practitioners Council of Zimbabwe (AHPCZ) for the intern to be moved to the main register as a radiographer.

ROLE DEVELOPMENT IN RADIOGRAPHY

Radiography has developed since the discovery of X-radiation by Wilhelm Rontgen in 1895. During this period, imaging techniques comprised conventional radiography, contrast-aided examinations, and fluoroscopy. The 1970s, known as the "golden decade" of radiology, saw the discovery of advanced imaging modalities such as US, CT, MRI, and NM.[10] The other development happened in the 1990s when digital radiography was discovered and implemented in radiography.[11,12] During the old days, X-ray film was the primary method of handling radiological imaging, with transferring and filing being a manual clerical process.[13] From the 1990s onwards, recent years have seen the move away from film-based radiography to digital radiography.[11,12] This has resulted in the development of Radiology Information Systems (RIS) and Picture Archiving and Communication Systems (PACS) as new areas in medical imaging. During this development two positions have been introduced in radiography career pathways: clinical specialist radiographer and consultant radiographer.

Clinical specialist radiographer

A clinical specialist radiographer is the title given to a radiographer who has specialised in any medical imaging field. After introducing different imaging modalities in the healthcare system, it was realised that radiographers need to pursue a postgraduate specialisation to be effective and competent in their practice.[6] The undergraduate qualification in radiography focuses on general radiography and basic aspects of different medical imaging modalities.[14,15] At the postgraduate level, the focus is on training radiographers in specialised fields of medical imaging such as CT, MRI, nuclear medicine (NM), mammography, radiation protection, image interpretation and reporting, DEXA, and PACS administration.[6,14,15] This is similar to the medical profession, where training in a medical speciality is introduced at the postgraduate level. Medical doctors obtain a specialist title after completion of specialised training.[6] This is the practice of radiography in most non-African countries.[14,16]

Specialist practice is defined, and it is suggested that specialists must be the elite few who act as leaders in their field and who have gained recognition from within and outside the profession.[6] In radiography, a clinical specialist radiographer's principal duties and responsibilities are divided into three areas: clinical, education and training, and management (Figure 1).[16]

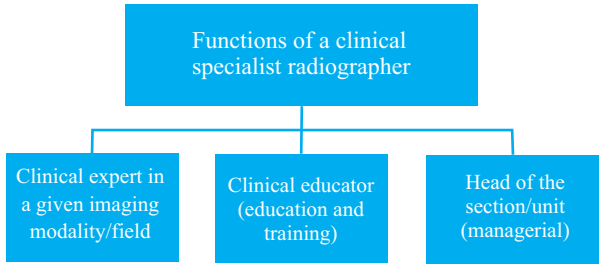

Figure 1: Three functions of a clinical specialist radiographer

The first is clinical duties that involve acting as an advanced clinical advisor to colleagues, ensuring that radiographers adhere to best practice guidelines, performing imaging, and ensuring that professional standards are maintained. The second is education and training duties that encompass

acting as a clinical educator of undergraduate radiography students and radiographers undertaking on-the-job training and postgraduate studies,[17] participating in continuing professional development (CPD) learning activities, and involving in the induction of new members of staff. The third is managerial or administrative duties that include heading a section/unit of their speciality, assisting the budgeting, managing the use of consumables efficiently in their respective section, maintaining records of equipment under their care, and liaising with the Head of the Radiology department on human resource issues.

At the time of writing, the HPCZ had 908 registered radiographers, and the AHPCZ had 330. In Zambia and Zimbabwe, HPCZ and AHPCZ have a specialist register for radiographers with postgraduate qualifications in medical imaging fields. There are about 6 and 75 registered specialists in Zambia and Zimbabwe, respectively. However, this title or position is not in the radiography career pathway (Table 1) to match the regulators' registers. In addition, due to the relatively high cost of being on the specialist register without corresponding financial (salary and allowance) benefits, many radiographers are hesitant to register their postgraduate qualifications.[18] This is against the medical doctors in our setting and radiographers abroad who are on the specialist register and have corresponding positions in the career pathway and salary/allowances. With the availability of different advanced imaging modalities and postgraduate training programmes for radiographers in Zambia and Zimbabwe, it is a necessity to introduce clinical specialist radiographer positions to motivate radiographers, develop the radiography profession, and overall improve the delivery of imaging services. However, this should come with corresponding financial benefits.

Consultant radiographer

The establishment of a consultant position is another role development that has taken place in the radiography profession. According to the Oxford Learners Dictionaries,[19] a consultant is an expert in a particular job. The Department of Health of the UK [20] defined a consultant as an individual who provides clinical leadership within a specialism, bringing strategic direction, innovation, and influence through practice, research, and education. The consultant position is not limited to the medical profession. This title has been available in the business sector for a long time (e.g., financial consultant). This means any medical, nursing, and allied health expert can be called a consultant. The second healthcare professional to establish consultant posts after medical doctors were nurses in Australia in 1986. [21] In 2000, nurse consultants were also introduced in the UK as part of the Government's strategy for developing the nursing profession and meeting the changing demands of the healthcare delivery system. [9,20,22] This initiative was later extended to allied health professionals such as physiotherapists, pharmacists, and radiographers. Consultancy positions in non-medical professions are now well-established in the UK.

Traditionally, in medical imaging, a consultant position was limited to radiologists. However, this changed in the early 2000s when the position of consultant radiographer was developed in the UK. [4,20] In radiography, the position was developed to provide better outcomes for patients by improving quality and services, providing a new career opportunity to help retain experienced radiographers and recognise their clinical contribution, and strengthening professional leadership.[4] Literature reports four functions of the consultant radiographer, including expert clinical practice, professional leadership and consultancy; practice and service development, research and evaluation; and education and professional development[4,20] (Figure 2).

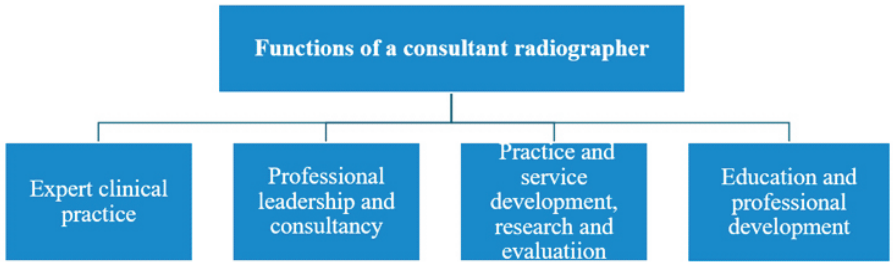

Figure 2: Four functions of a consultant radiographer

A study conducted in the UK by Nachalwe and Bwanga,[9] found that consultant radiographers enjoyed their new role and reported carrying out roles similar to those performed by consultant radiologists before even being appointed as consultants. A few challenges faced by consultant radiographers have been reported in the literature. This includes increased workload and time pressure, isolation, and a*nimosity from a few radiologists*. [7,23]

In Africa, there are no consultant positions within the radiography career pathways. However, in Uganda, Zimbabwe, and Zambia, discussions within the radiography professions have been reported about establishing consultant radiographer positions in the radiography career pathway. This is against the background that there is an increasing number of radiographers acquiring higher qualifications up to the doctorate level who need to be considered in the radiography career pathways with clinical positions. In Zambia, UNZA started offering postgraduate training programmes in 2022. This includes a PhD in Radiography. Literature reports that consultant radiographers should have the very highest level of academic qualification because they are the leading edge of practice. [6] This means that a consultant radiographer should have a doctorate in the medical imaging field. In Zambia, the clinical positions linked to qualifications have been proposed [15,24] (Table 2).

Table 2: Radiography qualifications linked to proposed clinical positions

	Level of qualification	Proposed clinical position
1	Diploma in radiography (Level 6 of ZQF)	Radiography technologist
2	Degree in radiography (Level 7 of ZQF)	Radiographer
3	Master's (Level 8 of ZQF)	Clinical specialist radiographer
4	Doctorate (Level 9 of ZQF)	Consultant radiographer

In Zimbabwe, postgraduate training programmes in radiography have been available since 2012. The first programme was a Master of Science Degree in Radiography offered by the NUST. In 2018, NUST introduced a Master's of Science degree in Ultrasound. HIT started offering postgraduate Diplomas in Ultrasound and Medical Dosimetry in 2018, which were later upgraded to Master's Degrees in 2023. [25] Currently, no PhD in the medical imaging training programme is available in Zimbabwe. Similarly, in Zimbabwe, ongoing discussions are being held regarding clinical positions linked to qualifications.

POTENTIAL IMPLEMENTATION BARRIERS

The following are potential barriers to the successful implementation of clinical specialist and consultant radiographer positions in our settings (Table 3).[26,27]

Table 3: Barriers to implementation of clinical specialist and consultant radiographer positions

	Zambia
1	Critical shortage of radiologists to coach and mentor clinical specialists and consultant radiographers
2	Lack of a range of postgraduate training programmes in specialised areas: CT, MRI, and mammography
3	Medical resistance due to the traditional view of firmly demarcated professional boundaries
4	Perceived lack of funding to adequately reward clinical specialists and consultant radiographers
5	Lack of research culture in radiography and high research ethical clearance fees
6	Lack of supporting structure/establishment and understanding of the job roles of new positions

Shortage of radiologists - Clinical specialists and consultant radiographers during training need radiologists with professional knowledge and expertise to coach and mentor. [9] The current situation in Zambia and Zimbabwe with only 16 and 25 consultant radiologists,[25] respectively may be a barrier to the training of radiographers due to the increased workload: clinical, managerial, and teaching roles.

Lack of a range of postgraduate training programmes - The three Higher Education Institutions (UNZA, NUST, and HIT) only offer postgraduate training programmes in diagnostic radiography and ultrasound. There are no postgraduate training programmes in other specialised fields of medical imaging such as CT, MRI, nuclear medicine, DEXA, mammography, image interpretation and reporting, interventional radiography, and PACS administration. These courses are essential in building workforce capacity for new positions.

Medical resistance –Medical resistance has been reported in the literature as a potential barrier to radiographer role development, whether through entrenched hierarchies or a perceived lack of underpinning clinical knowledge and skills. [27]The aim of role development is not for one profession to replace another but to provide high-quality imaging services. [28] Resistance from some radiologists has been reported in the literature. [23,27] However, radiology is also developing through the introduction of new areas such as interventional radiology resulting in an increased workload for radiologists. This was a perceived barrier in the UK, but the radiologists realised the benefits of role development in radiography and started supporting this initiative. This is evidenced by the guidelines produced by the Royal College of Radiologists (RCR) in conjunction with the College of Radiographers (COR). The most important documents are the standards for the education and training of reporting practitioners in musculoskeletal plain radiography and chest.[29,30]In our settings, there may be potential resistance from ***clinical officers, medical licentiate practitioners, and*** medical doctors mainly due to resistance to change. However, referring clinicians is the main beneficially of role development in radiography because they refer patients for medical imaging examinations. Thus, need to support new positions aimed at enhancing the quality of medical imaging services in our settings.

Perceived lack of funding – Literature reports perceived lack of funding to adequately reward clinical specialists and consultant radiographers for their additional responsibilities as a barrier to the implementation of new positions.[26]Most of the budgets of the Governments of the Republic of Zambia and Zimbabwe are spent on salaries for public workers. The establishment of clinical

specialist and consultant radiographer positions would result in increased expenditure on the government. However, the new positions are limited to a few radiographers working in hospitals with a different range of imaging modalities such as CT and MRI. At the time of writing, Zambia had 40 CT and 8 MRI scanners, while Zimbabwe had 21 CT and 10 MRI scanners. Some of the newly bought scanners in Zambia included in this number are still waiting for installation.

Lack of research culture in radiography and high research ethical clearance fees- The role of extension and development requires research to provide evidence to stakeholders and plan for its implementation. [2,27, 31,32] However, there is a lack of research culture in radiography in our settings. Radiographers mostly engage in academic research for undergraduate and postgraduate research projects. This can be evidenced by the small number of published local research in radiography. The high research ethical clearance fees are also a barrier to research. To conduct research in Zambia, researchers need approximately K7,500 **(**K2,500 for the research ethics committee and K5,000 for registration and research proposal clearance fees payable to the National Health Research Authority). On the other hand, in Zimbabwe, a PhD radiography student seeking ethical clearance from the Medical Research Council of Zimbabwe (MRCZ) will have to pay at about $300 for an unfunded study. Most research conducted in radiography in our settings is not funded, researchers bear all the expenses which is costly.

Lack of supporting structure/establishment and understanding of the job roles of clinical specialist and consultant radiographer

While regulatory bodies such as HPCZ and **AHPCZ** have a specialist register for health professions, there is currently no establishment in the Ministry of Health to support the implementation of clinical specialist positions in radiography. Further, there is a perceived lack of understanding of the job roles of clinical specialists and consultant radiographers in radiography. A lack of understanding of the new roles in radiography and uncertainty around line management are potential implementation barriers. [32] Therefore, support from the Ministry of Health in Zambia and Zimbabwe as well as other stakeholders must be established for clinical specialists and consultant radiographer roles to be successful.

RECOMMENDATIONS

In order to overcome the potential barriers to the successful implementation of clinical specialists and consultant radiographer positions in Zambia and Zimbabwe, the following recommendations are made:

- Conduct local research on role extension and development in radiography to provide evidence to stakeholders and plan for the implementation of the new positions. To overcome the high cost of conducting research in our settings, postgraduate radiography students at three HEIs offering imaging training programmes: UNZA, HIT, and NUST, can be encouraged to research this subject.
- The Radiological Society of Zambia (RSZ), Zimbabwe Government Radiographers (ZIGRA), and the Radiography Association of Zimbabwe (RAZ), the professional bodies should start engaging the key stakeholders and bring awareness on this important subject. Presentation on role development in radiography could also be organised and presented during the clinical officers, medical licentiate practitioners and medical doctors' annual conferences.
- With the increasing number of different imaging modalities such as CT, MRI, and mammography and proposed clinical specialist radiographers, the schools of radiography should also start planning for postgraduate courses in these areas. This also includes the establishment of a PhD in medical imaging fields in Zimbabwe.

- Through stakeholder engagement, develop recruitment and retention strategies within the Ministry of Health establishment to attract radiographers to pursue careers as clinical specialists and consultants and be registered as such.
- To ensure standard contribution to quality healthcare, it is recommended to work with regulatory and professional bodies to develop standards to ensure clinical specialists and consultants radiographers meet the highest standards of competency and professionalism.

CONCLUSION

The review of the literature has provided us with evidence that the delivery of medical imaging services is changing to meet the needs of the patients. The scope of professional practice and career pathways should also be reviewed periodically to correspond with this new development. This paper has provided evidence of the necessity to establish clinical specialist radiographer and consultant radiographer positions in our radiography career pathway as a strategy for developing the radiography profession and meeting the changing demands of the healthcare delivery system in Zambia, Zimbabwe, and other similar settings. The recommendations are made to overcome the potential barriers to the successful implementation of the proposed new positions in the radiography career pathways.

REFERENCES

1. Williams I. Professional role extension for radiographers. *South African Radiographer.* 2006; 44 (2): 14-17.
2. Cowling C. A global overview of the changing roles of radiographers. *Radiography.* 2008;14:e28-32.
3. Kelly J, Piper K, Nightingale J. Factors influencing the development and implementation of advanced and consultant radiographer practice - A review of the literature. *Radiography.* 2008;14:e71-78.
4. College of Radiographers. Consultant radiographer-guidance for the support of new and established roles. London: College of Radiographers; 2022.
5. Health Professions Council of Zambia. Scope of practice for health practitioners registered under the Health Professions Council of Zambia. Lusaka: HPCZ; 2021.
6. White P, McKay JC. The Specialist Radiographer- does the role justify the title? *Radiography.* 2004;10 (3): 217-227.
7. Henwood S, Booth L, Miller PK. Reflections of the role of consultant radiographers in the UK: The perceived impact on practice and factors that support and hinder the role. *Radiography.* 2016;22 (1): 44-49.
8. Thom SE. Does advanced practice in radiography benefit the healthcare system? A literature review. *Radiography*. 2018;24(1):84-89. doi:10.1016/j.radi.2017. 08.002
9. Nachalwe MC, Bwanga O. Experiences of consultant breast radiographers regarding breast imaging services in the United Kingdom. *Int J Health Sci (Qassim)*. 2021a;15(1):9-16.
10. British Institute of Radiology. History of radiology; 2024. From https://www.bir.org.uk/useful-information/history-of-radiology (Accessed 03 March 2024)
11. International Atomic Energy Agency. Worldwide implementation of digital imaging in radiology. Vienna: IAEA; 2015.
12. Bwanga O. Causes of reject and repeat of digital radiographic images: a literature review to guide the practice of radiography in Zambia. *Medical Journal of Zambia*. 2021a: 48(1):38 - 45.
13. Whitley AS, Jefferson G, Sloane KHC, Anderson G, Hoadley G. Clark's positioning in radiography. 13th ed. London: CRC Press Ltd; 2015.
14. Du Plessis J, Friedrich-Nel H, Van Tonder F. A postgraduate qualification in the specialisation fields of diagnostic radiography: A needs assessment. *African Journal of Health Professions Education.* 2012; 4 (2):112-117.

15. Bwanga O, Mwansa E, Sichone J, KafwimbiS. Establishment of postgraduate education and training in the specialised areas of diagnostic imaging in Zambia. *African Journal of Health Nursing and Midwifery*. 2020;3(4):55-64.
16. Health Service Executive. Radiographer, Clinical Specialist- job specification and terms and conditions. Dublin: HSE; 2024.
17. Bwanga O. Should clinical education be integrated into the postgraduate radiography training programmes? *South-East Asian Journal of Medical Education*. 2020b; 14(2):137-139.
18. Chinene B, Mutandiro L, Mushosho E, Khumbula L, Zanga A, Banhwa J, et al. The role of radiographers in the provision of diagnostic medical ultrasound services in Zimbabwe: Past, Present and Way Forward. *Medical Journal of Zambia*. 2023a;50(3):273-81. Available from: https://mjz.co.zm/index.php/mjz/article/view/424
19. Oxford learners dictionaries. Consultant; 2024. From (Accessed 20 February 2024)
20. Department of Health. Meeting the challenge- a strategy for the allied health professions. London: Department of Health; 2000.
21. Kennedy F, McDonnell A, Gerrish K, Howarth A, Pollard C, Redman J. Evaluation of the impact of nurse consultant roles in the United Kingdom: a mixed method systematic literature review. *J Adv Nurs*. 2012;68(4):721-742. doi:10.1111/j.1365-2648.2011.05811.x
22. Bwanga O. What nurses need to know about mobile radiography. *Br J Nurs.* 2020 Oct 8;29(18):1064-1067. doi: 10.12968/bjon.2020.29.18.1064. PMID: 33035087.
23. Nachalwe CM, Bwanga O. Impact and challenges of consultancy role regarding the delivery of breast imaging services in the United Kingdom: consultant breast radiographers' perspective. *Medical Journal of Zambia*.2021b;48(1):46-53.
24. Bwanga O, ChandaE, SindazaN, NachalweM. Mammography services in Zambia. *International Journal of Medical Reviews*, 2021b; 8(1): 12-19. doi: 10.30491/ijmr.2020.239681.1124
25. Chinene B, Bwanga O. Exploring the perceptions of radiographers pertaining to the provision of quality radiological services in Zimbabwe. *J Med Imaging Radiat Sci*. 2023b;54(4):632-643. doi:10.1016/j.jmir.2023.07.013
26. Forsyth LJ, Robertson EM. Radiologist perceptions of radiographer role development in Scotland. *Radiography (Lond)*. 2007;13(1):51-55. doi:10.1016/j.radi.2005.10.001
27. Field LJ, Snaith BA. Developing radiographer roles in the context of advanced and consultant practice. *J Med Radiat Sci*. 2013;60(1):11-15. doi:10.1002/jmrs.2
28. Hardy M, Snaith B. Role extension and role advancement - Is there a difference? A discussion paper. *Radiography*. 2006;12(4):327–331
29. Royal College of Radiologists (RCR) and College of Radiographers (COR). Standards for the education and training of reporting practitioners in musculoskeletal plain radiographs. London: RCR & COR; 2022.
30. Royal College of Radiologists (RCR) and College of Radiographers (COR). Standards for the education, training and preceptorship of reporting practitioners in adult chest X-ray. London: RCR& COR; 2023.
31. Harris R, Peterson A. Exploring the research domain of consultant practice: Experiences of consultant radiographers. *Radiography.* 2016;22(1): e25 – e33
32. Caulfield L. A literature review exploring the perceived impact, challenges and barriers of advanced and consultant practice in therapeutic radiography. *Radiography*. 2021;27(3):950-955. doi:10.1016/j.radi.2021.01.002