

Radiography Managers Perspectives on Radiographer Supply and Demand in KwaZulu-Natal Public Healthcare, South Africa

Perspektif Manajer Radiografi tentang Pasokan dan Permintaan Radiografer di Perawatan Kesehatan Masyarakat KwaZulu-Natal, Afrika Selatan

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Abstract

The unbalanced distribution of Health Workers (HCWs) is a public health challenge. In South Africa, public sector radiography services are not meeting demand due to vacant positions, recruitment freezes, increased workloads, and low retention of radiographers, which negatively impacts quality and service delivery. This study aimed to explore radiography managers' perceptions and views about supply and demand in relation to the radiographers working in the public healthcare sector of KwaZulu-Natal province (KZN). The exploratory qualitative study utilized semi-structured interviews with open-ended questions to acquire data. Ten radiography managers were purposefully selected from the 22 hospitals in the province of KZN. Thematic analysis was used to identify themes from the qualitative data using NVIVO Pro 12. The results showed that the decision-makers do not properly understand or value, the need for radiographers in the health environment. The lack of advocacy for and representation and engagement between the employing principals and radiographers leaves the sector understaffed and overworked. Disharmony between employers and radiographers, as well as unresponsive decisions, affect retention and recruitment. The oversupply and low uptake of qualified radiographers is due to delays in policy implementation, particularly recruitment and retention. Key gaps include professional advocacy in decision-making bodies, effective policy implementation with monitoring, improvement of the working environment, and development of radiographer career pathways.

Abstrak

Ketidakeimbangan distribusi Tenaga Kesehatan (HCW) menjadi tantangan kesehatan masyarakat. Di Afrika Selatan, layanan radiografi sektor publik tidak memenuhi permintaan akibat posisi kosong, pembekuan rekrutmen, peningkatan beban kerja, dan rendahnya retensi radiografer, yang berdampak negatif pada kualitas dan pemberian layanan. Penelitian ini bertujuan untuk mengeksplorasi persepsi dan pandangan manajer radiografi tentang penawaran dan permintaan terkait dengan radiografer yang bekerja di sektor perawatan kesehatan masyarakat di provinsi KwaZulu-Natal (KZN). Penelitian kualitatif eksploratif ini menggunakan wawancara semi-terstruktur dengan pertanyaan terbuka untuk memperoleh data. Sepuluh manajer radiografi dipilih secara sengaja dari 22 rumah sakit di provinsi KZN. Analisis tematik digunakan untuk mengidentifikasi tema dari data kualitatif dengan menggunakan NVIVO Pro 12. Hasil penelitian menunjukkan bahwa para pengambil keputusan tidak memahami atau menghargai dengan baik, kebutuhan akan radiografer di lingkungan kesehatan. Kurangnya advokasi dan representasi serta keterlibatan antara kepala sekolah yang mempekerjakan dan radiografer membuat sektor ini kekurangan staf dan terlalu banyak bekerja. Ketidakharmonisan antara pemberi kerja dan radiografer, serta keputusan yang tidak responsif, memengaruhi retensi dan perekrutan. Kelebihan pasokan dan rendahnya penyerapan radiografer berkualitas disebabkan keterlambatan implementasi kebijakan, khususnya rekrutmen dan retensi. Kesenjangan utama meliputi advokasi profesi di badan pengambil keputusan, implementasi kebijakan yang efektif dengan pemantauan, perbaikan lingkungan kerja, dan pengembangan jalur karir radiografer.

Graphical Abstract



Exploratory Qualitative Study



Radiography managers (n=10)
from 22 public hospitals in KZN

Radiography service quality and workforce sustainability



Workforce Disharmony
Leading to inefficiency and poor service delivery.

Keyword

demand; health care sector; health personnel; radiography; supply

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INTRODUCTION

South Africa is experiencing a quadruple disease burden, with health indicators showing a demand for service provision and health workforce development which has to be addressed urgently (World Health Organization, 2020). The extensive and changing burden of disease in SA has implications for Human Resource development and planning. Therefore, health professional training and development must provide for the wide spectrum of conditions which form the disease burden. An important first step in health workforce planning is to determine the current number and density of health workers in South Africa (Chipere & Nkosi, 2019). Radiography is perceived as a struggling emergent profession, with a low professional status, due to its low public profile (Britton et al., 2017). This in turn leads to a lack of recognition in this healthcare profession, which affects the confidence and self-esteem of radiographers. In addition, the absence of opportunities and career growth within the profession negatively impact on recruitment and retention (Britton et al., 2017). The need for professional growth, management roles, greater autonomy in the work environment, as well as the introduction of skill-mix and consultant radiographers are methods of increasing overall job satisfaction and therefore improving retention rates (Gam et al., 2015; Khoza et al, 2021). Radiographer employment positions have grown steadily, both nationally and internationally, over the past decade (Khoza & Pieterse, 2018). Literature has responded to this trend by focusing on concepts such as supply and demand and retention strategies amongst radiographers. Radiographer views have shown questionable levels of job satisfaction, which has a negative impact on patient care received (Kossivi & Kalgora, 2016).

According to Debus et al., (2019) promotions provide opportunities for personal growth and development, but it also provides responsibilities, challenges and increased social status. The authors indicate that job satisfaction is likely to be experienced and achieved by individuals who perceive promotional opportunities to be fair (B-Lajoie et al., 2014; Lup, 2018). This is supported by other authors, who argue that employees with autonomy, promotions, growth prospects and organisational security are significantly satisfied with their jobs, thereby reducing employee retention (Rambur et al, 2003; Nielsen et al, 2021).

According to Khoza et al. (2018), radiographers should be recruited and retained based on criteria that increase job satisfaction. The retention of employees is greatly influenced by job satisfaction. According to the research, pay, professional support, working circumstances, and career development plans are some of the key elements that influence radiographers' level of job satisfaction (Aiken et al, 2013; Taheri et al., 2020). As shown by Manyazewal & Matlakala (2017) job satisfaction creates a delightful emotional state that frequently results in a positive work attitude and enhanced performance as well as the ability to be empathetic, adaptable, innovative, and devoted to one's employer. Healthcare executives should concentrate on personnel development and training if they want to increase job satisfaction. High attrition rates are common among skilled healthcare workers who work for little pay, live in restrictive

conditions, and are subject to stringent operating conditions (Ding et al. 2013; McIntosh et al, 2016; Manyazewal & Matlakala, 2017).

The one of the most crucial factors for an employer to retain staff and ensure they are happy in the workplace is to implement the 3R's strategy namely, Respect, Reward and Recognition. According to the study conducted by (Shoaib et al., 2013), recognition has a positive impact on an employee's attitude, morale and performance in the workplace even if it is non-financial. Rewards and remuneration policies by the organisation's Human Resources department are the key determining factors that stimulate the company's performance and growth since it is a pivotal motivation for the workforce (Graber et al, 2017).

Rewards are significant in organisations because they affect a range of employee motivational factors and work-related behaviour (Wiant et al, 2018; Deng et al., 2021). To recruit and retain the most qualified employees and keep them satisfied and motivated, they are used to guide behaviour and performance (Kunz, 2019). Given that healthcare workers have a significant impact on an organisation's performance, which applies to hospitals and other related institutions of health care as well, effectively and efficiently rewarding personnel is a difficulty for all of these organisations (Jerg-Bretzke et al, 2014; Deng et al., 2021). The best personnel can be attracted, motivated, and retained with the help of rewards, and radiographers are no different. Because of this, developing an effective compensation program for radiographers is a significant problem for hospital administrators. A reward need not be monetary because non-monetary rewards can be equally as essential as or even more so (Deng et al., 2021).

Radiographers in South Africa are overworked as they strive to handle workloads that ideally should have been distributed amongst a much larger workforce (Britton et al., 2017; Chipere & Nkosi, 2019). Studies conducted between 2015 and 2020 demonstrated that the absence of appropriate human resources policies is responsible for a chronic imbalance of care with multifaceted effects on the health workforce in many countries (Gam et al., 2015; Khoza et al., 2018). The effects include quantitative mismatch, qualitative disparity, unequal distribution and a lack of coordination between Human Resource Management (HRM) actions and health policy needs which is still a major problem (Nightingale et al., 2019).

Few qualitative studies have explored supply and demand of radiographers against changing disease profiles in a profession plagued by high stress levels, low levels of job satisfaction and high staff turnover rates. It seems important to note that although radiographers have been on the frontline during the SARS COVID 2 pandemic, and played a significant role in the patient diagnosis and monitoring function albeit behind the faces of the medical staff, there are no publications in this regard. As such the need for this study should be invaluable in terms of enabling the development of guidelines to address staff retention in KwaZulu-Natal Province to possibly improve efficiency and the quality of patient care received. After such guidelines have been implemented a follow-up study would be necessary to gain insight into the effect on staff. The aim of this study is to explore radiography managers' perception and views about supply and

demand in relation to the radiographers working in the public sector of KwaZulu-Natal with the intention of alerting the authorities about the need to monitor and evaluate policy implementation in relation to actual service needs.

METHODS

A qualitative cross-sectional survey was employed in this study to underpin the interpretive research approach using interviews. Small samples that are frequently purposefully chosen for a qualitative study and non-statistical methods are used to reach data saturation. Research about people’s lives, lived experiences, behaviours, emotions, and feelings as well as about organizational functioning, social movements, cultural phenomena, and cross-national interactions is considered qualitative. This method is used to explore substantive areas about which little is known or about which much is known to gain novel understandings in the KZN Province. In this case, the researcher asked the radiography managers and stakeholders for their opinions and comments about the questions regarding supply and demand of radiographers.

The population in this phase included radiography managers employed in the public health sector hospitals of KZN province. These are managers who are performing, or have a direct input into human resource management. Depending on the category of the hospital, and whether it is a district, regional or tertiary hospital, they are referred to as deputy directors, head of department or radiography manager and assistant directors in the public sector. Creswell (2014) refers to a sample as a portion or population that represents that population. In this phase, a purposive sample of radiography managers employed in public hospitals of KZN Province from the population were invited to participate in the study. According to Saunders, Lewis and Thomhill, (2013) the researcher’s judgement is a prominent factor in choosing a purposive sample. The participants included stakeholders from the university and managers from the tertiary hospital, four from regional hospitals and five from district hospitals of KZN public sector. Data collection continued until data saturation was noted.

RESULTS

Two major themes arose from the thematic analysis of the interview scripts: Recruitment Policies Implementation and Perception of the Profession. Recruitment policies influenced decision-making from recruitment to the appointment and placement of radiographers. Perceptions about the profession impacted the speed of the process, thereby affecting staffing on the ground. Meanwhile, the perception of the profession, particularly a poor understanding of the role by personnel across

the sector, affected the willingness to fill posts despite the evident need. This led to ineffective or insufficient engagement in recruitment and retention efforts, resulting in a lack of appropriate support and resources necessary for effective job performance. From these two major themes, subthemes emerged, which were classified under each relevant theme. A summary of the themes and subthemes is presented in Table 1.

Recruitment Policies Implementation and Process

The respondents found the recruitment policies challenging because the process showed deficiencies in planning and implementation, through the requirements of the post, advertisements and, the selection through the interviews. The policies impacted availability of posts (demand) for example posts were frozen due to budget cuts.

“I think it’s not difficult, but policies and budget constraints make it difficult.” (Participant A)

“Policy says post should be filled in three months of it becoming vacant and that is not happening because this practice is not followed” (Participant D).

Budgetary constraints resulting in frozen posts provided opportunities for radiographers to take up posts in other provinces in efforts to meet family obligations and change geographic location. Radiographers who leave their posts due to family commitments and greener pastures create vacant posts (demand) which attract large number of applications from qualified candidates.

“The biggest challenge is the unfunded and freezing of posts”. (Participant J).

“When you look at different institutions, the challenges managers are having is keeping their departments staffed and covering the shift work because posts are frozen but radiographers are sitting at home” (Participant H).

“So, when posts do become available in other districts or provinces, people move to those provinces, because of family commitments” (Participant B).

The supply of radiographers has been reported to be well managed by the educational institutions. However, the work sector has not absorbed all the supplied graduates. Poor planning including monitoring and evaluation of policy implementation results in underutilization of graduate supply producing under-resourced departments.

Table 1
Themes and subthemes of data

Themes	Sub-themes
Recruitment Policies Implementation and Process	Freezing of posts Supply and demand Radiographers Role
Perception of the Profession	Lack of recognition Lack of support

"The main thing is if they can balance, supply and demand of radiographers that is the main thing, like this imbalance normally impacts in various ways" (Participant D).

"There is a major lack of absorption, I've got CV's sitting in the drawer of people that say let me know when there's a post, even ultrasound posts you know" (Participant F).

Perception of the Profession

Although the radiography profession is considered as "essential" and "important" by the radiography managers, this is not reflected in the actual recruitment and retention strategies implemented on the ground. Decision makers fail to understand the actual need or importance of the service. This lack of recognition of the importance of the service to health care affects the urgency with which the employer acts to meet the need.

"Even filling of post is a big problem because they don't understand the radiography profession." (Participant I).

"We need a representative up on national level or even in provincial level that can understand our needs and address our issues that we have that's what I think" (Participant A).

The most outstanding and relevant word is "essential and lack of understanding", though not as frequent as the "need". Radiographers play a crucial role in the healthcare system as they provide essential services and they are the ones who support the diagnosing process.

"They realize when services are interrupted from the hospital level, I would say the management they feel the pressure that the only time they know the role of radiography" (Participant D).

"But we are not seen as being very important unlike doctors and nurses, who will see to the basic health of the population" (Participant I).

The perceived value of the profession disadvantages radiography staff through the displacement of responsibility and workload, and filling of posts. There is lack of recognition by the employer which results in professionals undertaking nonspecific duties. Basically, the radiographers felt discriminated and described themselves as being treated as underdogs.

"There is lack of recognition and poor understanding of the environment" (Participant F).

"We do not have adequate infrastructure and non-human infrastructure because radiography does not get the recognition that it deserves like other health professions" (Participant D).

The participants cited the combination of workload and infrastructure issues as a pushing factor for the radiographers out of the public sector. Also, the shortage of other supplies was considered a contributing factor to the leaving of the radiographers.

"They're taking on more job responsibilities together with their workload and then you have the infrastructure issues

but that on it is the reason why radiographers are leaving" (Participant D).

"Break down of infrastructure all of that so inadequate infrastructure and human resources" (Participant B).

DISCUSSION

Malema & Muthelo (2018) postulated that governments need to ensure that the recruitment of health workers is part of their national health plan. Such planning could be informed by the WHO Global Code of Practice on International Recruitment of Health Personnel adopted in May 2010 at the 63rd World Health Assembly. This aligns with the study's findings, which emphasize the importance of well-structured recruitment policies to address staffing shortages in the radiography profession. Without such planning, the recruitment and retention of radiographers are hindered, ultimately affecting service delivery.

The study conducted in Ngwelezana Hospital provided a clear picture of the consequences of cost-cutting strategies that are implemented without proper planning, engagement, and involvement of relevant stakeholders in the Department of Health. These compromise service quality, putting communities at risk. This resonates with the current study's theme of recruitment policy implementation, where the lack of timely and effective recruitment due to financial constraints and bureaucratic processes negatively impacts staffing levels. Given that 84% of patients in South Africa access healthcare in the public sector, ensuring an adequate radiography workforce is essential to prevent service disruptions and maintain diagnostic capacity (Ndebele, 2021).

Nightingale et al. (2021) concluded that reducing the mismatch between workforce supply and demand cannot be achieved solely by increasing the number of new entrants to the service. It is much faster and less expensive to retain staff than it is to recruit more people. This aligns with the study's findings, which highlight that improving retention through better working conditions and professional recognition can help address staffing shortages more efficiently. Retaining staff facilitates continuity and allows improvements in experience and morale, which are likely to be passed on to patients in their care. Therefore, focusing on both recruitment and retention is crucial for building a sustainable radiography workforce.

Medical resistance has been previously cited as a potential barrier to radiographer role development, whether through entrenched hierarchies (Khoza et al., 2018) or perceived lack of underpinning clinical knowledge (Bam et al., 2022). This resistance aligns with the study's second theme, which highlights how perceptions of the radiography profession influence recruitment and retention. Negative perceptions within the healthcare sector limit professional growth and discourage individuals from pursuing or remaining in the field. In reality, role development is often initiated and limited by external political influences (e.g., waiting lists, staff shortages, and budgets) and internal departmental factors (e.g., management philosophical approach to skill mix and existing staff skills). To ensure flexibility and value for money, advanced practice is a necessity in developing a dynamic workforce fit for the future (Bam et al., 2022). These factors underscore the need for supportive

leadership and strategic workforce planning to address both external and internal challenges.

Britton et al. (2017) found that radiographers appeared to have a profound sense of sadness that other professions, such as nursing, appeared to be well known and respected, but the radiographic profession was not afforded the same respect. This perceived lack of recognition is echoed in a study conducted in the Western Cape, in which South African radiographers are seen to be primarily technical due to their complacent demeanor (Gqweta, 2012). These findings reinforce the study's theme of perception, illustrating that the radiography profession's limited visibility and perceived lack of prestige contribute to recruitment and retention challenges. Addressing these perceptions through awareness campaigns, professional advocacy, and education can help attract more individuals to the profession and improve morale among current practitioners.

Clark et al. (2020) and Mkhize (2020) highlighted that radiographers find themselves working in a novel environment where, without efficiency, effectiveness, and adequate staffing, lives are at risk because equipment is not repaired on time. This connects to the study's findings, which emphasize the critical role of recruitment and retention in maintaining service delivery. Poor planning in the initial phases contributes to infrastructure challenges and increased workload, pushing radiographers out of the public sector. Consequently, addressing recruitment and retention issues is essential to ensure that diagnostic services are delivered efficiently and effectively.

The alignment between the study's findings and the concept of equity, access, and sustainability in healthcare is crucial. By emphasizing the viewpoints of radiography managers, this study underscores the significance of leadership in managing limited resources to ensure efficient and fair service delivery. The findings provide insights into workforce issues within KwaZulu-Natal's public healthcare system, highlighting the disparities between radiographer availability and the increasing demand for diagnostic services. Strategic workforce planning and policy measures are essential to address these disparities and optimize service provision. Improving perceptions of the radiography profession can further support recruitment and retention efforts, ensuring that the workforce is adequately staffed and motivated.

Implications for policy include enhancing strategic workforce planning at both provincial and national levels by incorporating radiography managers' perspectives. This approach can lead to more equitable allocation of radiographers between urban and rural areas, mitigating healthcare disparities. The study's results may also inform adjustments in education and training programs to increase radiography training opportunities and attract more students to the profession. These measures can help address both recruitment and retention challenges, ensuring a sustainable workforce.

Retention policies should prioritize improving working conditions, providing competitive compensation, and enabling continuous professional development. Effective recruitment strategies should focus on attracting radiographers to underserved areas through incentives such as housing allowances, relocation assistance, and student debt forgiveness. These strategies address the study's findings by making the

profession more attractive and accessible, particularly in areas where staffing shortages are most acute. Retention programs should address excessive workloads, insufficient support, and limited career progression opportunities through mentorship programs, career advancement pathways, and professional recognition. By addressing these factors, healthcare organizations can improve morale and job satisfaction, reducing turnover and ensuring long-term workforce stability.

Finally, workforce sustainability strategies, including job-sharing arrangements, flexible work hours, and support for work-life balance, are essential to prevent burnout and ensure the long-term viability of the radiography workforce. These strategies align with the study's emphasis on improving both recruitment and retention, ensuring that radiographers are supported throughout their careers. By addressing both the practical and perceptual challenges identified in this study, policymakers and healthcare leaders can build a more resilient and effective radiography workforce that meets the growing demand for diagnostic services.

In Islam, balance in fulfilling societal needs, including healthcare services, is a fundamental principle. Allah SWT states in the Qur'an Surah Al-Baqarah/2:143:

"And thus we have made you a just community that you will be witnesses over the people and the Messenger will be a witness over you..."

This verse emphasizes the importance of fairness and equity in all aspects of life, including the distribution of healthcare professionals. The imbalance between the demand and supply of radiographers in KwaZulu-Natal's public healthcare system reflects deficiencies in policy planning and implementation. In Islamic principles, public policies should be formulated with consideration for the well-being of all parties involved, including healthcare workers and the communities they serve.

Furthermore, Islam regards healthcare work as a significant responsibility (amanah). The Prophet Muhammad ﷺ said in Hadith Bukhari No. 893 and Muslim No. 1829 :

"Each of you is a shepherd, and each of you is responsible for his flock."

This hadith underscores the duty of policymakers in ensuring the adequate provision of medical personnel. Failure in recruitment and retention strategies indicates a lack of adherence to this fundamental trust.

From the perspective of *maqāṣid asy-syarī'ah* (the objectives of Islamic law), one of the key elements that must be preserved is *hifz an-nafs* (the protection of life). A sufficient number of radiographers in public health facilities is essential for safeguarding public health and well-being. Ineffective recruitment policies that lead to a shortage of radiographers hinder optimal healthcare services and contradict Islam's fundamental principle of preserving human life.

As a solution, stronger advocacy in policy-making is needed, based on the principles of justice (*'adl*), responsibility (*amanah*), and compassion (*rahmah*). In Islam, leaders and policymakers are expected to prioritize the welfare of the people, as the Prophet Muhammad said in Hadith Ahmad No. 8799, At-Tabarani in Al-Mu'jam Al-Kabir):

"The best of people are those who are most beneficial to others."

Thus, improving recruitment and retention policies for radiographers is not only a necessity for the healthcare system but also a social responsibility aligned with Islamic teachings that emphasize providing maximum benefit to society.

This study has strengths that specifically examining leadership perspectives, this study utilises the knowledge and experiences of radiography managers, who hold a prominent position in making operational decisions. Their viewpoints supply a distinctive and pragmatic comprehension of the obstacles and tactics pertaining to the availability and need of radiographers in the public healthcare industry. By focussing on KwaZulu-Natal, a region characterised by a varied and frequently resource-constrained healthcare landscape, the study provides data that is particular to the context and can guide focused initiatives and policy choices. The emphasis on the local focus guarantees that the suggestions are pertinent and suitable to the healthcare requirements of the region. The study tackles a crucial problem in healthcare workforce planning by offering significant data that might enhance staff management and allocation, thereby improving service delivery.

Although the results are very pertinent to KwaZulu-Natal, their applicability to other regions or nations with distinct healthcare systems, worker dynamics, and resource availability may be limited. The study's reliance on the viewpoints of radiography managers introduces the possibility of bias in the responses, especially if participants hold firm views on workforce management or are swayed by institutional considerations. A cross-sectional design in the study captures a single moment in time and may not accurately represent the changing dynamics of radiographer supply and demand over time. Longitudinal studies have the potential to offer more extensive understanding of patterns and transformations in the labour market.

CONCLUSIONS

The greatest area of discontent was the slow pace of the implementation of recruitment and retention policies and procedures because it affected the workforce at the point of service delivery which eventually led to burnout and poor interpersonal relationships. The recruitment policy implementation and process were affected by geographic location, there was no monitoring, reactive and needs-based, poor professional development or career pathing, poor retention strategy and unemployment and yet the market is saturated. The DOH is still offering community service and bursaries even though it is mostly affected by budget constraints. Therefore, it is important that the representative and management are aware of radiographers' demands.

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AUTHORS' CONTRIBUTIONS

Nonkululeko Cibane analyzed the data. Muhammad Hoque wrote the manuscript, acquired the data, revised the manuscript, and read and approved the final manuscript. All authors designed the study, formulated the concept, reviewed the manuscript, enrolled participants, collected data, revised the manuscript, and performed the field work.

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COMPETING INTERESTS

The author(s) declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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