

Assessment of Attitudes and Barriers of Ghanaian Radiographer Towards Postgraduate Radiography Education

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ABSTRACT

Introduction: There has been a great evolution since X-ray was discovered. The profession has expanded with advanced medical imaging techniques such as computed Tomography (CT), Magnetic resonance imaging (MRI) and a host of them. The need therefore for radiographers to upgrade their knowledge and skills cannot be over emphasized. It is therefore imperative to assess the barriers that make most Ghanaian radiographers miss out opportunities for postgraduate radiography education in Ghana. **Methods:** This was a mixed method study (qualitative and quantitative). Questionnaires with close and open-ended questions were employed as the data collection technique and Purposive sampling technique was used in the questionnaire administration. **Results:** It was identified that 86.4% of the total respondents being aware of postgraduate radiography education opportunities in Ghana. 88% were willing to enroll in postgraduate radiography education and 76% willing to self-fund their postgraduate education. 170 responses were received from the questionnaire for this study giving a response rate of 70%. Seventy seven percent of respondents were males while 23% were females. **Conclusion:** The study has shown that Ghanaian radiographers have a positive attitude towards postgraduate radiography education and have enthusiasm to self-sponsorship. However, factors such as high cost of postgraduate education, lack of funding, aging and increase responsibility of radiographers' content against radiographers' postgraduate education.

Keywords: attitudes, barriers, radiography, postgraduate, education, Ghanaian.

INTRODUCTION

Radiography has evolved over the years since X-rays were discovered. It continues to be one of the evolving medical disciplines associated with medicine. There have been enormous changes within the profession for the past two decades. These changes comprise of curriculum, learning methods and educational funding (Malamateniou, 2009). This period has seen the profession drift into a knowledge-based discipline as well as an evidence-based practice instead of it being mainly a university related degree. (Malamateniou, 2009).

The profession has seen tremendous expansion with new imaging techniques such as computerized tomography (CT), magnetic resonance imaging (MRI), ultrasound and a host of them making the radiography discipline quite challenging and demanding (Oghawu et al, 2010). These new imaging techniques make it of greater importance for radiographers to enhance their skill and knowledge to remain relevant in this evolving medical discipline. (Ugwu et al,

2012). These technologies thus make certain old skills less relevant hence justifying the need for continuing education and training (Ugwu et al, 2012). It is now widely agreed that the attainment of skills and knowledge by healthcare professionals in their undergraduate years provides a foundation for their career and this knowledge will be inadequate to support them in the years to come (Wareing et al, 2017).

The World Health Organization World Report (WHO 2000:76) identifies human resources, as the most important resource input in any health system. Mubuke & Pope (2015) in their study conducted at the Cardiff University, UK on the factors that influence the decision of radiographers to pursue postgraduate education revealed that, intrinsic and extrinsic factors influenced radiographer's decision to pursue postgraduate education in radiography.

Absence of funding, non-existence of management support and family commitment were seen as some of the difficulties radiographers encountered with respect to CPD participation (Castillo & Caruana, 2014). There is the urgent need for radiographers to take up extended roles such as film reporting and research which have routinely remained within the field of radiologists because of the increasing patient numbers and the scarcity of radiologists in most African countries (Price et al., 2007).

It has become very necessary for the current class of radiographers to accept postgraduate education to remain relevant in this era where evidence-based medicine is being practiced (Muller, 2002).

METHODOLOGY

Study Design

Studies involving research are directed by a set of theories referred to as research paradigms. The positivistic (also known as quantitative) and the naturalistic (also known as qualitative) are the two main paradigms. This was an exploratory study, involving radiographers in Ghana using semi-structured questionnaires as the data collection tool. This was to enable a larger geographical coverage and a bigger sample size as well as getting a lot of information from a large audience in a short period. A nonprobability sampling method (purposive sampling) was employed in the questionnaire administration.

Sample Size Determination

The researcher received a list of 300 radiographers from the Ghana Society of Radiographers. Out of this number, about 30% had postgraduate qualifications equating to 90 Radiographers. The researcher reached out to the remaining 210 radiographers. The researcher used Yamans simplified formula for sample size determination which is;

$$n = \frac{N}{1 + Ne^2}$$

Where N= Total number of Radiographers

e = Margin of error (0.05)

n= Sample size

Data Analysis

Statistical Package for Social Sciences as well as thematic analysis were used to analyse the quantitative and qualitative data respectively. Frequency distribution, percentages, pie chart and bar charts were used to represent the results.

Inclusion and Exclusion Criteria

Consenting Ghana radiographers with a basic qualification such as Bachelor of Science or national diploma were eligible for the study. Radiographers who did not have the basic qualification (bachelors and national diploma) and non-consenting Radiographers were exempted from the study.

Recruitment and Ethical Consideration

The researcher liaised with the Head of Professional Development, Education and research committee of the Ghana Society of Radiographers for the list and email addresses of radiography practitioners with the required academic qualification from all the sixteen regions of Ghana.

The questionnaires, information sheets and consent forms were emailed to all radiographers who met the inclusion criteria listed by the researcher. In all, 210 questionnaires were shared to radiographers who met the inclusion criteria. To be able to get a higher return rate for the questionnaires, the researcher from time to time communicated with participants by mail to ensure the questionnaires were being answered and also reminded of the return time which was by latest first week in May 2020.

Ethical Consideration

This study involved radiographers and like any other study, ethical approval was sought from the appropriate local ethical committee (Ghana Society of radiographers and Sheffield Hallam university ethical application via shurec7 form) before the research began in accordance with the Helsinki declaration (World Medical Association, 2013). Informed consent for participation and data usage was achieved prior to handing over the questionnaires by asking participants to sign the consent form. Participants were informed they had the full right to decide to withdraw from the study.

Results

Data collected from the questionnaire are presented with the aid of tables, charts and thematic analysis.

Descriptive Analysis

Table 1. Demographic characteristics of respondents

Variables	Frequency	Percentage (%)
Age range (years)		
20-29	37	25.2
30-39	69	46.9
40-49	30	20.4
50-59	11	7.5
Total	147	100
Gender		
Male	113	76.9
Female	34	23.1
Total	147	100
Marital Status		
Single	60	40.8
Married	86	58.5
Divorced/Separated	1	0.7
Total	147	100
Qualifications Degree Diploma		
Total	118	80.3
	29	19.7
	147	100
Work Experience (years) 1-5		
5-10	44	29.9
>10	45	30.6
Total	58	39.5
	147	100

Most of the respondents were within the age bracket of 30-39 with 46.9% n=69 and the smallest age bracket according to the data being 50-59 representing 7.5% n=11. An overwhelming majority of respondents were males with 76.9% n=113 while a lower percentage of respondents were females 23.1% n=34. 58.5% representing n=86 of respondents were married. 40.8% representing n=60 were single. 80.3% representing n=118 of respondents had bachelor’s degrees in radiography while a smaller percentage of 19.7% n=29 had National Diplomas in radiography.

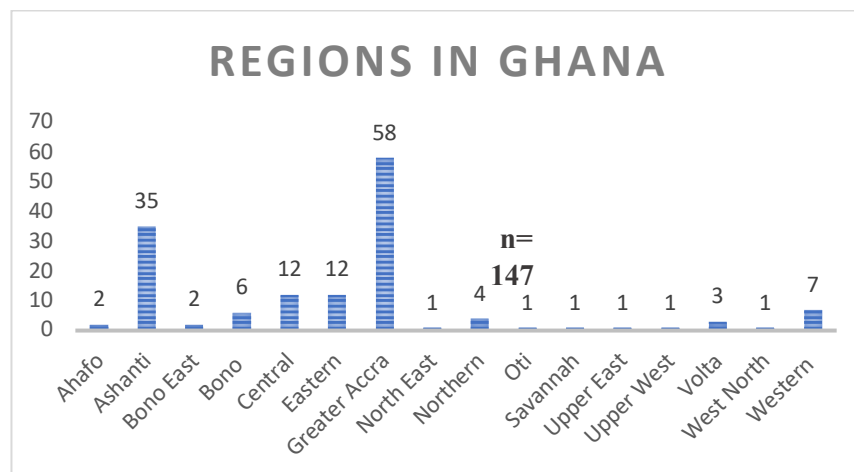


Figure 1. Regional analysis of respondents

Figure 1 above showed that a greater percentage of respondents were from the Greater Accra region with a score of 39.5% n=58 followed by Ashanti region with percentage score of 23.8% n=35. North East region, Oti region, Savannah region, Upper east region, Upper West region and North West regions with 1 respondent each.

Attitudes towards postgraduate radiography education

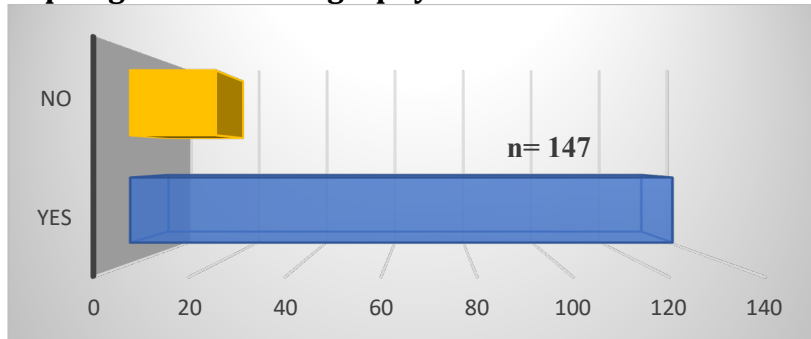


Figure 2. Awareness of postgraduate radiography education

Figure 2 above shows an overwhelming percentage of radiographers 86.4% n=127 who were aware of postgraduate radiography education and opportunities in Ghana. 13.6 % representing n=20 were not aware of postgraduate radiography education in Ghana.

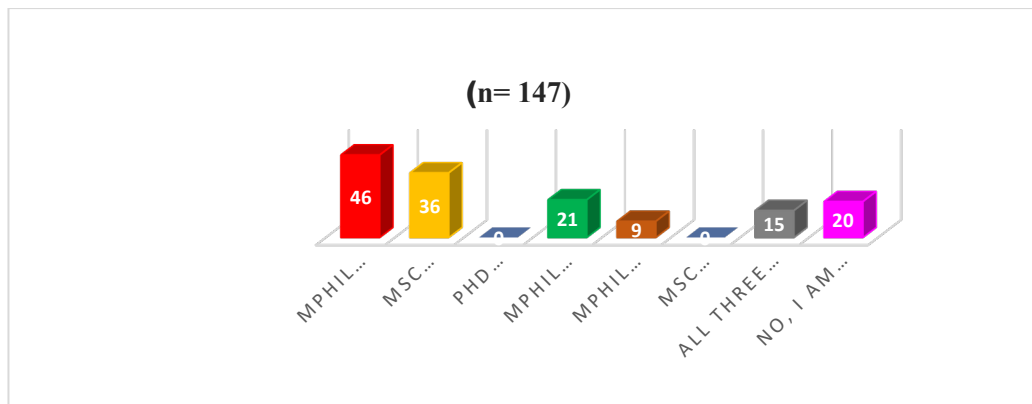


Figure 3. Level of awareness of postgraduate radiography education among respondents

Figure 3 revealed that 36.2% n=46 of respondents were aware of the existence of an MPhil programme in radiography. 28.3% n=36 of respondents were aware of the existence of an MSc programme in Sonography. 11.8% n=15 of respondents were aware of the existence of an MSc, MPhil and PhD programmes in Ghana.

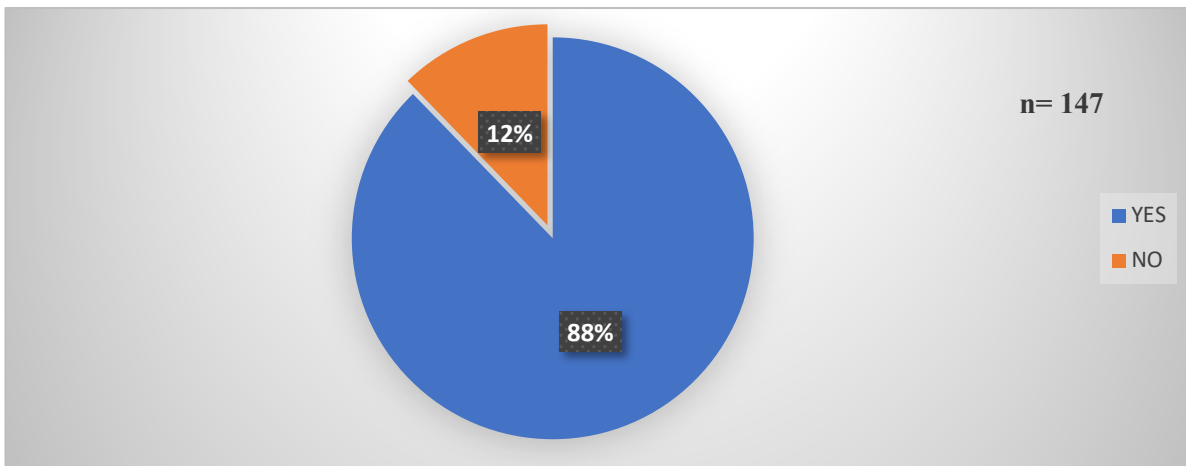


Figure 4. Radiographer’s willingness to enrol in postgraduate radiography education

Figure 4 above indicate an overwhelming number of respondents n=129 representing 88% of respondents who were willing to enrol in postgraduate radiography education.12% of respondents revealed their unwillingness to enrol in such programmesFigure 5. Proposed geographical location for postgraduate radiography education by respondents.

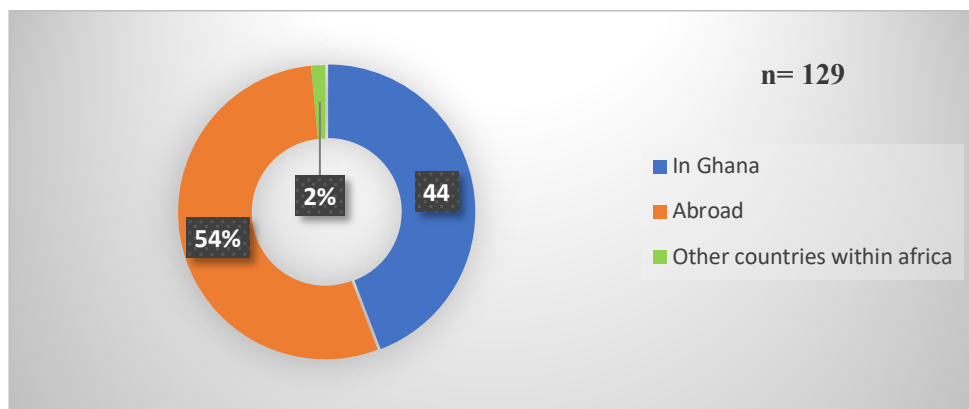


Figure 5 revealed that out of the 129 respondents who were willing to enrol in postgraduate radiography education, 54% n=70 were interested in studying abroad. 44% n=57 were interested in studying in Ghana. The remaining 2% n=2 of respondents were interested in studying in other countries within Africa.

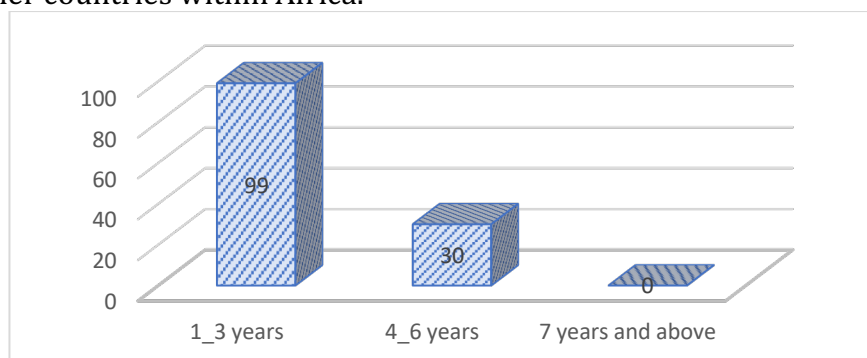


Figure 6. Timescale anticipated for respondents to enrol in postgraduate radiography education

An overwhelming percentage of 76.7% of respondents said they were willing to enrol in postgraduate radiography education within the next 1-3years. 23.3% of the respondents n=30 were willing to enrol within 4-6years. No one was planning more than six years in advance to enrol.

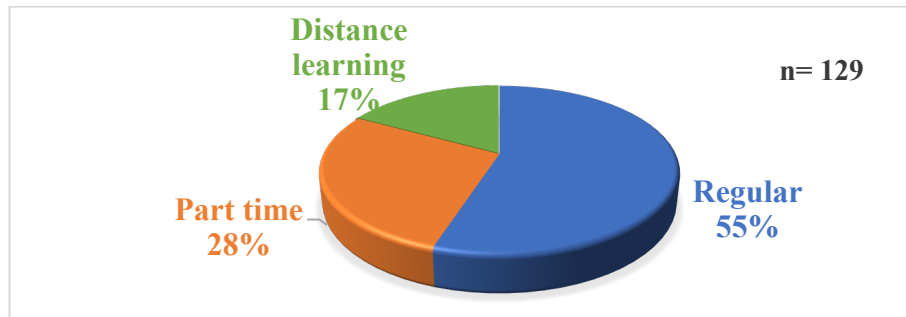


Figure 7 revealed the mode of learning chosen by respondents who were willing to enrol in postgraduate radiography education.

From the figure above, out of the 129 respondents who said they were willing to enrol in postgraduate radiography education, 55% n=71 said they preferred learning full time. 28% n=36 said they preferred learning on part-time basis and the remaining 17% n=22 of respondents said they preferred studying through distance learning.

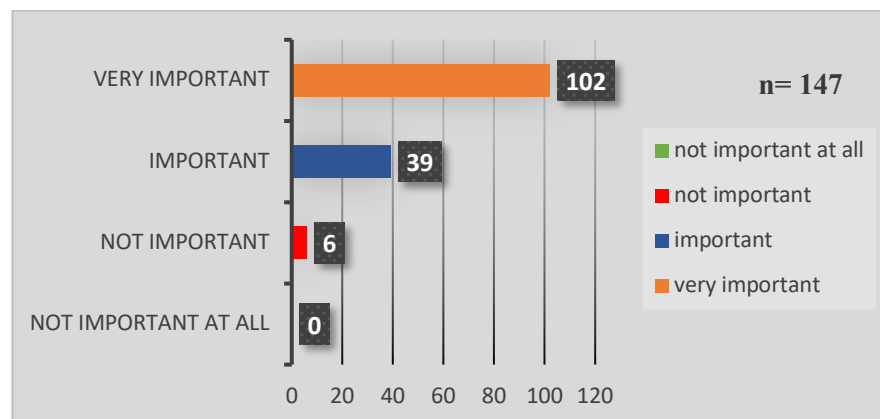


Figure 8. Level of importance of postgraduate radiography education to radiographers

From the figure above, 69.4% n=102 of respondents said postgraduate radiography education was very important. 26.5% n=39 of respondents said postgraduate education in radiography was important. 4.1 % n=6 of respondents said postgraduate education in radiography is not important.

Open Responses on the Importance of Postgraduate Radiography Education To Radiographers

Radiographers gave varying responses on the above theme with the majority of them acknowledging the importance of postgraduate radiography to the radiographer. Some of these responses are presented in more detail using direct quotations from radiographers to ensure that their views and perspectives are accurately expressed. Their views are listed below.

“With modern technology and advancement in radiography, postgraduate education will help me have fair knowledge in most of these advancements (48)

“The dynamics in radiography is changing fast and requires specialization and postgraduate training to meet the trend (30)

“As a professional, one needs to advance his knowledge not only for better healthcare delivery but also to keep with the rapid advancement made in the use of modern technologies (i.e., techniques, equipment’s in the field and also for enhancement of once curriculum vitae). (5)

“Advanced learning increases your overall knowledge, improves your skill and competence as a radiographer, gives exposure and opens up new opportunities, improves your confidence and your thinking capabilities (52).

In contrast, the few radiographers who were of the view that postgraduate radiography education was not important to the radiographer shared these sentiments below.

“You don’t need postgraduate education to practice or qualify as a radiographer (102).

“Your employers don’t recognize your knowledge level and it doesn’t reflect in your salary (6).

“Radiographers are not appreciated in salary levels after studying (38)

“It does not pay (13).

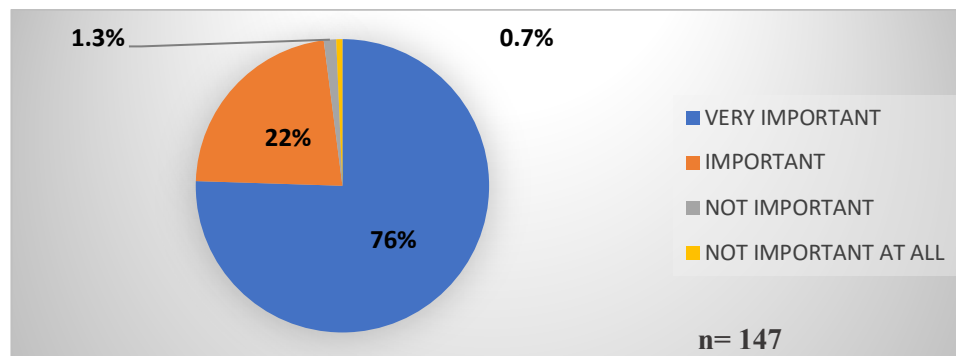


Figure 9. Level of importance of postgraduate radiography education to the radiography profession

Data from the responses above indicates that an overwhelming majority of respondents 76% n=111 said postgraduate radiography education was very important to the radiography profession. 22% of the respondents n=33 said postgraduate radiography education was important to the radiography profession. Two respondents said postgraduate radiography education was not important. One respondent said postgraduate radiography education was not important at all.

Open responses on the importance of postgraduate radiography education to the radiography profession

Responses from radiographers on the importance of postgraduate radiography education to the radiography profession were presented in more detail using direct quotations from radiographers below.

“Postgraduate studies will help advance the radiography profession in Ghana. Radiography is a growing profession in Ghana with several challenges. The main challenge is insufficient number of lecturers in the universities. An advanced knowledge will help address that challenge. It will also encourage radiographers to conduct research which will further improve the profession in Ghana and ensure fairness and equity for radiographers in the country (52)

“There is always new development and advancement in radiography and postgraduate education will push the profession up (113)

The quest for knowledge is an unending process especially in the medical field hence the importance to always pursue higher education (28)

“Makes the profession attractive and known to the youth (38) (68)

In contrast, the few patients who said postgraduate radiography education was not important and not important at all to the radiography profession shared the sentiments below.

“It is not a prerequisite for the profession (102)

“It does not really pay (13)

“They think you are doing the same job (6)

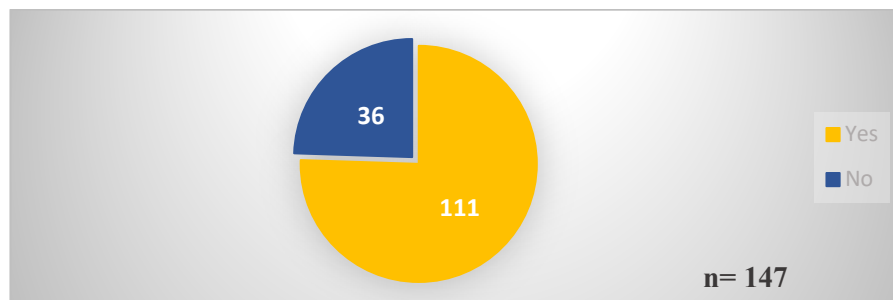


Figure 10. Funds for postgraduate radiography education

Figure 10 above indicates that the majority of the respondents 76% n=111 respondents said they were willing to self- fund their postgraduate radiography education. 24% n=36 of the respondents said they were not willing to self- fund their postgraduate radiography education

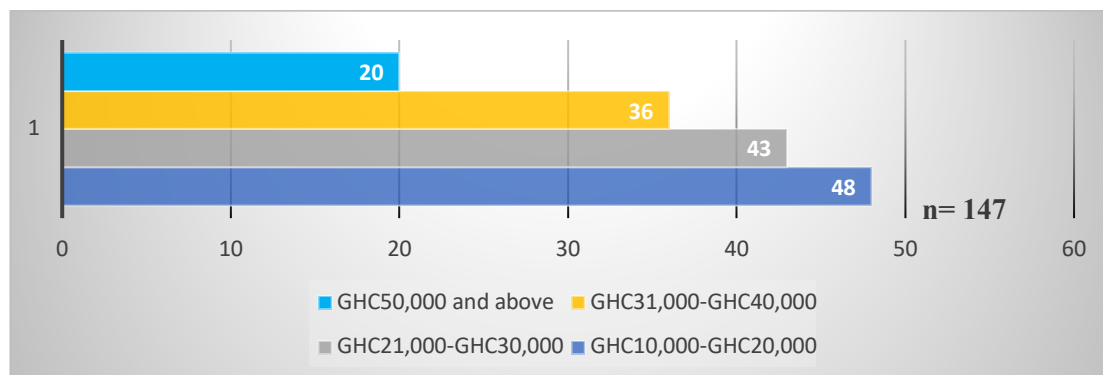
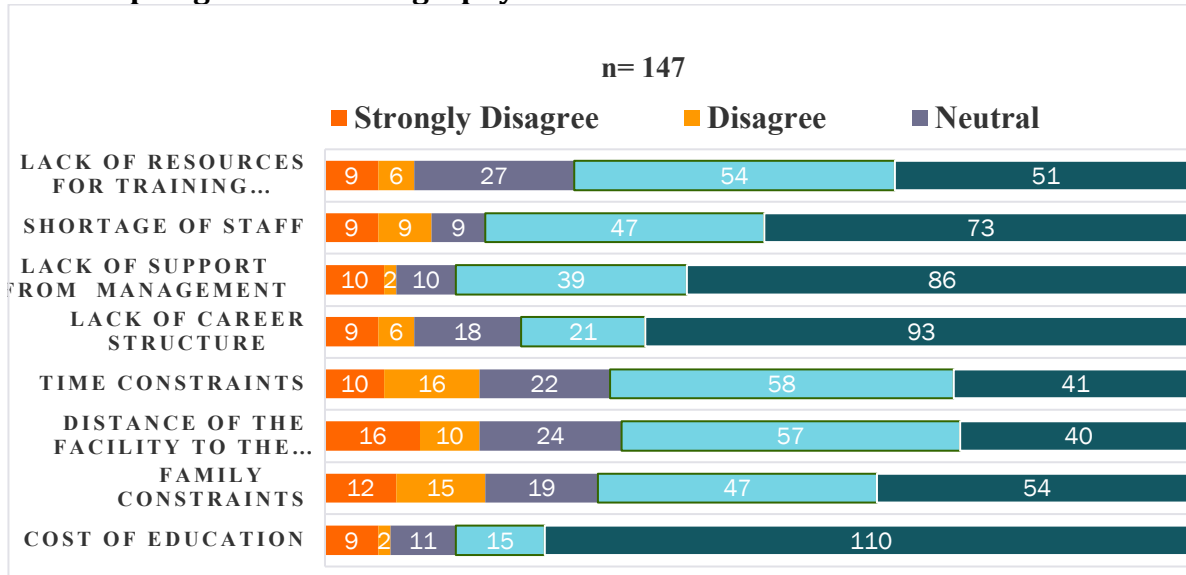


Figure 11. Proposed cost of postgraduate radiography education to respondents

Data from the figure 11 depicts that 32.7% n=48 of respondents estimated postgraduate education in Ghana to cost between GHC 10,000-GHC 20,000. 29.3% of respondents n=43 estimated postgraduate radiography education to cost between GHC21,000-GHC30,000. 13.6% representing n=20 of respondents estimated postgraduate radiography to cost GHC50,000 and above.

Barriers to postgraduate radiography education**Figure 12. Barriers to Postgraduate Radiography Education**

Data from figure 12 above shows that 74.8% n=110 of the respondents strongly believe cost of education is a barrier to postgraduate education. A small percentage 6% n=9 of the respondents strongly disagree cost of education is a barrier to postgraduate radiography education. 36.7% n=54 of respondents strongly agree family constraints is a barrier to postgraduate radiography education. 27.9% n=41 of the respondents strongly agree time constraints is a barrier to postgraduate radiography education. 63.2% n=93 of the respondents strongly agree lack of career structure is a barrier to postgraduate radiography education. 58.5% n=86 of the respondents strongly agree lack of support from management is a barrier to postgraduate radiography education. 6.8% n=10 strongly disagree. 49.7% n=73 of respondents strongly agree staff shortage is a barrier to postgraduate radiography education.

Open responses on other hindrances to postgraduate radiography education outlined by respondents

"Refusal of the Ghana Health Service in accepting postgraduate qualifications into the service (49)

"No appreciable increase in salary after graduating from such studies (26)

"The absence of a laid down role extension for radiographers on completion of such programmes thus making radiographers perform the same duties on completion of such studies (113)

"I believe some are just not willing to take it up. They are content with a first degree or diploma. Nothing is in place to entice them to seek furtherance. I mean postgraduate qualification is not recognized in clinical practice (87).

Figure 13. Measures to improve postgraduate radiography education

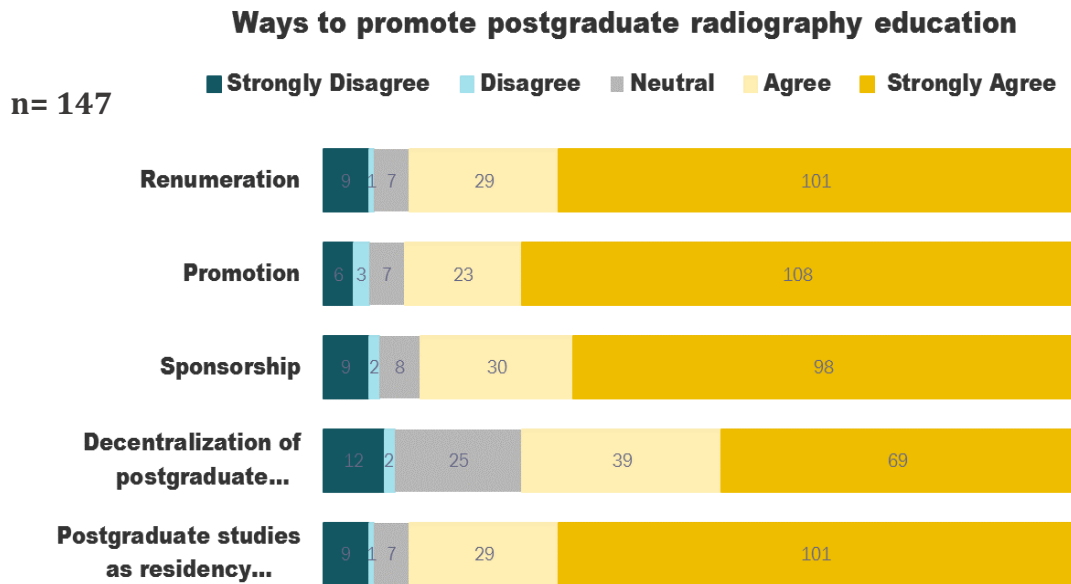


Figure 13. Measures to improve postgraduate radiography education

Information from figure 13 above shows that 73.5% n=108 of the respondents strongly agree enhanced promotion after postgraduate radiography education has the tendency to increase enrolment in postgraduate radiography education. 4.0% n= 6 of the respondents strongly disagree. 68.7% of respondents n=101 strongly agree increased remuneration will be a way to increase participation in postgraduate radiography education among Ghanaian radiographers 66.6% n= 98 of the respondents strongly agree the availability of scholarships for postgraduate radiography education has the tendency to increase enrolment. 68.7% n=101 of the respondents strongly agree making postgraduate radiography education as a residency (work study arrangements) has the tendency to increase enrolment in postgraduate radiography education.

Open responses on measures to improve postgraduate radiography among Ghanaian radiographers

The profession should have a representation at the Ministry of Health to serve as a mouth piece for radiographers (141)

Postgraduate qualifications should be recognized on completion and be paid accordingly (72)

“Postgraduate programmes should enable radiographers to be able to report on conventional x - ray film (20)

“Postgraduate certificates should be made a basic requirement for service promotions to some of the highest ranks in our health system (5)

“Postgraduate studies in Ghana should be made flexible in terms of fees and course calendar (113)

Influence of radiographers’ years of experience on their willingness to enrol in postgraduate radiography education

Table 2. Pearson Correlation Analysis on years of experience of radiographers on their willingness to enrol in postgraduate radiography education

	Yes, I am willing to enrol	No, I am not willing to enrol	Years of experience
Yes, I am willing to enrol	1.0000		
No, I am not willing to enrol	-0.1890	1.0000	
Years of experience	-0.5000	0.9449	1.0000

The table above shows a correlation analysis between respondents' years of experience and their willingness to enrol in postgraduate radiography education. There is a negative correlation (-0.5000) between the years of experience of respondents and their willingness to enrol in postgraduate radiography education. However, there is a positive correlation (0.9449) between years of experience of respondents and the non-willingness to enrol in postgraduate radiography education.

DISCUSSIONS

Findings from the study showed that the majority of the respondents were males (76.9%) while (23.1%) were females. This is comparable with similar studies conducted by Ugwu, Erundu and Onwuazombe, (2012) and Ipingbemi & Durowaiye, (2016) . This was however not the case in other studies conducted by Neep et al, (2014) & Castillo & Caruana, (2014) in Australia and Malta where there were more females (67%) and (55%) respectively than males. There is no known reason why the radiography profession in Africa is dominated by males but possibly this might be cultural. However, more females should be encouraged to diversify the radiography profession in Ghana.

A greater percentage of respondents had worked for 10 years and above. The majority of respondents were from the Greater Accra region followed by the Ashanti region and this study therefore confirmed the long-held notion that the majority of practising Ghanaian radiographers are concentrated in these two regions. Regions such as North east, Oti, Savannah, Upper east, Upper west and North West recorded 1 respondent each. This inequality of distribution of radiographers however is a likely factor in the inability of some staff in very remote areas of the country to access postgraduate education.

Results from this study showed that 86.4% of the respondents were aware of postgraduate radiography education and opportunities in Ghana. Ghanaian radiographers were aware of the existence of a Master of Philosophy programme in radiography, a Master of Science in ultrasonography and a Doctorate in radiography. An overwhelming majority (88%) of Ghanaian radiographers who took part in the study were willing to enrol in postgraduate radiography education. This confirms that Ghanaian radiographers have a positive attitude towards postgraduate education. The findings above are comparable with other studies by Eze et al, (2012) where radiographers in Nigeria were known to have a positive attitude and were keener to take up postgraduate education but were however constraint by certain barriers. A similar study conducted by Uarijie et al, (2017) in Namibia also showed that radiographers in

that country had a positive attitude and are self-motivated towards higher education. The higher percentage (54%) of radiographers in this study were willing to study Abroad as compared to 44% willing to study in Ghana. The assertion here is comparable to a study by Ipingbemi & Durowaiye, (2016) on the attitudes of Nigerian Pharmacists to post graduate education where most of the respondents said they preferred seeking postgraduate education in pharmacy abroad.

This study also revealed that a greater percentage 75.5% of Ghanaian radiographers were willing to self-sponsor when it comes to postgraduate radiography education. This was however not true in a study by Eze et al (2012) where most of radiographers in the two Nigerian states (despite their positive disposition to postgraduate education) were not so enthused about self-sponsorship.

There was a perfect positive correlation (0.9449) between increasing years of experience and radiographer's non- willingness to enrol. This meant that as years of experience increases, Ghanaian radiographers (according to the study) are less likely to enrol in postgraduate education. This was as a result of constraints such as time and family commitments as outlined by respondents. Castillo & Caruana (2014) stated that Maltese radiographers had a positive attitude when it came to updating existing qualifications and increasing professional knowledge. This was also found to be true for this study. This study discovered that a higher percentage of Ghanaian radiographers placed a high premium on career growth and personal development and had a positive attitude towards programs that could help them achieve this.

In the case of barriers/constraints to postgraduate radiography education among Ghanaian radiographers, the majority of respondents (74.8%) in this study were of the view that the cost of education/funding was the major barrier to postgraduate radiography education. This observation above was found to be true as previously documented by various studies (Mubuuke & Pope, (2015); Okyere et al, (2016); Castillo & Caruana (2014). Other key barriers to postgraduate radiography education among Ghanaian radiographers as observed in this study were the absence of a structured career path (63.2%), absence of support from management (58.5%) and time (27%). An Australian researcher confirms time to be the main constraint to radiographers in Australia (Neep et al, 2014).

The refusal of the Ghana Health service in accepting postgraduate qualifications into the service, the absence of an appreciable increase in wages upon completion of such programs and the absence of a laid down role extension for radiographers were listed by a section of the respondents as being some of the barriers. The latter was also true as reported by Eze et al, (2012).

This study explored various factors that might improve enrolment in postgraduate radiography education among Ghanaian radiographers. Key among these factors was the need for promotion (enhanced conditions of service) representing 73.5% and remuneration (allowances and additional wages) representing 68.7%. These results were comparable to a study conducted by Mubuuke and Pope, (2015). On the contrary, Ogwu, et al (2012) had different opinion. They had a smaller percentage (12.3%) of respondents that said they were motivated by an increase in remuneration upon completion of such postgraduate programs. Another point highlighted by respondents in improving enrolment in postgraduate

radiography education was the need to make postgraduate education in radiography a residency program (work study arrangements) with (68.7%) of participants sharing this view. The same was also found to be true in a similar study conducted by Eze et al, (2012) where (73%) and (62%) of respondents in Edo and Lagos states respectively shared similar views.

Other views shared by radiographers in this study included the need for sponsorship (grants, loans, study leave) 66.6% where radiographers suggested that postgraduate studies in the country could be made flexible in terms of fees and course calendar. Some section of the respondents were also of the view that postgraduate education in radiography in Ghana should be structured in a way that can promote subspecialty (film reporting) to equip radiographers adequately for a role extension.

CONCLUSION

It is recognized that postgraduate education prepares graduates to adapt to current trends in radiography. The study has shown that Ghanaian radiographers have a positive attitude towards postgraduate radiography education and have enthusiasm to self-sponsorship. The willingness to enrol in postgraduate radiography programs was also high among Ghanaian radiographers. The study established that, as Ghanaian radiographers age, their willingness to enrol in postgraduate radiography programs reduced which is explained by factors such as family responsibilities. The younger generation of Ghanaian radiographers however showed high hopes of enrolling in such postgraduate programs. The changing nature of the radiography profession globally was revealed as one of the reasons why Ghanaian radiographers had a positive attitude and also shared a desired will to self- sponsor themselves despite the glaring impediments. Among the major obstacles that run through the study were cost of education/funding, absence of structured career path and lack of support from management. The cost of Postgraduate education both home and abroad was not within the reach of most Ghanaian radiographers financially. This accounts for the reason why there are few radiographers with postgraduate qualifications in the country.

Promotion (enhanced conditions of service) and remuneration (allowances and additional wages) are capable to enhance enrolment in postgraduate education.

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