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WILLINGNESS OF GRADUATE RADIOGRAPHERS TO CONTINUING PROFESSIONAL DEVELOPMENT IN NIGERIA

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ABSTRACT

BACKGROUND: Continuing professional development (CPD) is a systematic and ongoing process of education undertaken by health professionals to maintain up-to-date knowledge and development skills.
OBJECTIVE: To assess the level of willingness of Radiographers to undertake continuing professional development in Nigeria.
MATERIALS AND METHODS: A convenience sampling technique was adopted for the study. A self-administered and well-structured questionnaire consisting 21 items with 3 sections; A, B and C was developed. Section A was on the socio-demographic data of the respondents with 7 items. Section B had 12 items that elicited responses on the level of willingness and section C with 2 items that focused on suggestions to encourage CPD. These were distributed online and offline to Radiographers in Nigeria. A total of 100 respondents were recruited for the study: 30 respondents were offline and the remaining 70 via the online route. Across the six geopolitical zones of Nigeria, 30 respondents were gotten from the South-South, 18 from the South-East, 20 from the South-West, 10 from the North-West, 10 from the North-East, and 12 from North-Central. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0 at a p-value of ≥ 0.05. Statistics used were descriptive statistics which included charts and tables, inferential statistics which include Kruskal-Wallis Test which was used to test for differences in level of willingness across the 6 geopolitical zones. Cochran's Q test was used to compare the willingness simultaneously. A correlation test using Spearman's rho was used to assess the relationship between years of working experience and level of willingness. A Chi-square analysis was also used to check for association.
RESULTS: A total of 84 respondents (84%) willingly participated in continuing professional development programme out of the 100 participants used in this study. There was no significant difference in the level of willingness across the six geo-political zones of Nigeria. Lack of finance (41%) and location of programmes (27%) were observed to be the major barriers to continuing professional development. There was also a significant positive relationship between years of working experience and willingness to participate in Continuing Professional Development programmes. A majority (39%) suggested that the cost of the programmes be reduced and 21% suggested the programmes be decentralized.
CONCLUSION: The study concluded that there is a high level of willingness of graduate Radiographers to undertake continuing professional development in Nigeria. However, the high cost of training and the location of the training programmes are the major barriers.

KEYWORDS: Willingness, Radiographers, Training, Professional, Development.

INTRODUCTION

Continuing professional development/advancement has been defined by multiple authors in different professions.

The Health and Care Professions Council (Health and Care Professions Council, 2014) defined continuing professional development (CPD) as a range of learning activities through which health professionals

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maintain and develop throughout their career to ensure that they retain their capacity to practice safely, effectively and legally within their evolving scope of practice (Sadler, 2000).

The Society and College of radiographers (SCOR) defines CPD as "systematic maintenance, improvement and broadening of knowledge and skills and the development of personal qualities necessary for execution of professional and technical duties throughout the practitioner life". This definition was revised in 2008 (Society and College of Radiographers, 2008) to "CPD is an ongoing professional activity in which the practitioner identifies, undertakes and evaluates learning appropriate to the maintenance and development of the highest standard of practice within an evolving of scope of practice (Society and College of Radiographers, 2008).

According to White (2004), CPD is the ongoing maintenance, acquisition and development of knowledge, skills and attitude to enable a medical practitioner to improve constantly as practicing professional. Multiple definitions for CPD were publicized, but most emphasized ongoing learning to ensure current and future competence (Filipe *et al*., 2014), increase professional performance and promote accountability (Thompson, 2008), which will benefit individuals, organizations and wider community.

Diagnostic radiographers are responsible for providing safe and accurate imaging examinations in a wide range of clinical environment. They do so, by using a variety of imaging modalities and techniques so that the appropriate management and treatment of patient can continue. For this reason, a continuing professional advancement programme for radiographers is crucial to meet the goal of providing improved service standards to patients. The implementation of new radiographic techniques, and replacement of old diagnostic equipment with modern digital equipment, obligate radiographers to keep themselves technologically updated by undertaking continuing professional development activities (Muharemovic, 2011).

Both formal and informal activities which may be required to maintain up-to-date professional skills, knowledge and attitudes of healthcare professionals, are incorporated in continuing professional advancement (Giri, 2012). In United Kingdom, New Zealand, South Africa and Australia, it is mandatory for health care professionals to obtain a certain number of continuing education units (CEUs), in order to maintain their registration with their respective regulatory bodies (Henwood *et al.,* 2004; Sholer *et al.,* 2011).

Professional qualification is the minimum requirement of knowledge and competencies within a specific profession (Drummond, 2011) and multiple authors claim that knowledge has a half-life of two to five years after which competencies decline. Since the late 1970s, it became evident that undergraduate education alone could not prepare individuals for professional life or ensure lifelong knowledge and competence (Payne, 1993). Henwood *et al.* (2004) contented that numerous changes occur after graduation and relying on initial qualification are inadequate; thus, knowledge and competencies must be updated especially considering recent trends and rapid growth of information and changes in technology and health care.

The Health and Care Professions Council (2014) stated that the ultimate goal of CPD for health care professionals is quality care provided by skilled and knowledgeable professionals who continuously maintain, develop and improve their professional practice (Sadler *et al.,* 2000). Gambling *et al.* (2011) argued that CPD will improve radiographers' skills, sustain and enhance their knowledge and allow them to cope with professional changes and expanding roles.

The purpose of CPD is to develop individual abilities, change practices and improve provided services. CPD should be a continuous process of learning and personal growth. Universities and colleges have the educational experience to provide CPD, workplace and managers handle providing CPD to their workers (Lester, 1999). There are three main models of continuing professional advancement; Voluntary, which is not monitored and not linked to professionalism, obligatory which is expected but not monitored or linked to professional code of conduct, and mandatory which is monitored and linked to some sort of penalty, if not fulfilled.

It has been reported that the Radiographers. Registration Board of Nigeria (RRBN) ''determines standards of knowledge and skills to be possessed by persons seeking to become members of the profession and improve those standards from time to time. Hence, the RRBN introduced some Professional Development Programmes (PDP) to help build up every radiographer in the country on the imaging modalities and other health sector activities. The PDP carried out by RRBN include Computed tomography course, Ultrasound course, Magnetic Resonance Imaging course, Mammography course, Management workshop etc. This was introduced to improve the level of professionalism and build the health sector for the benefit of service users.

However, the professional bodies have a moral duty in each case to guide individuals under the professional code of conduct, but they hold not direct power to influence compliance beyond appealing to an individual sense of professionalism. Hence, this study seeks to investigate the level of willingness of graduate radiographers towards continuing professional advancement with the aim of determining the factors responsible for their attitude and participation in CPD, as well as their opinion towards mandatory CPD.

On account of the dynamic nature of Radiography profession as well as increase in innovative discovery in terms of modalities and techniques that are being introduced on regular basis and with the fact that radiographers are the primary users of these technologies, the need for radiographers to keep themselves technologically updated by undertaking continuing professional development activities is thus crucial, hence the need for this study.

MATERIALS AND METHODS:

A total number of 100 participants, who were willing to participate in the study, were drawn from the 6 geo-political zones of Nigeria. A self-administered and well-structured questionnaire which consisted of 21 items with 3 sections A, B and C was developed. Section A was on the socio-demographic data of the respondents with 7 items. Section B had 12 items that elicited responses on the level of willingness and section C, with 2 items that focused on suggestions to encourage CPD. The research questionnaires were distributed to medical radiographers online and offline. Data were descriptive statistics which included charts and tables, inferential statistics which included Kruskal-Wallis Test, used to test for differences in level of willingness across the 6 geopolitical zones. Cochran's Q test was used to compare the willingness simultaneously. A correlation test using Spearman rho was used to assess the relationship between years of working experience and level of willingness. A significant positive relationship ($p \leq 0.05$) existed between them. A chi-square analysis was also used to check for association.

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RESULTS

Results showed that, for the age distribution of the respondents, most were between 20-29 years (64%) while the least respondent 1(1%) was 50 years and above (Figure 1). Figure 2 shows the gender distribution of the respondents used in the study. Figure 3 indicated that 75 (75%) respondents were single while 25 (25%) respondents were married. Figure 4 indicated that 91% of respondents were Bachelor Degree holders, 8% were Masters degree holders while 1% of the respondent was a PhD holder. Figure 5 revealed that in the North Central, 10 (83.3%) of respondents were willing to attend CPD programmes while 2 (16.7%) were not. In the North East, 9 (90%) of respondents were willing while 1(10%) was not. In the North West 7 (70%) were willing to attend while 3 (30%) were not willing. Results from the South West showed that 18 (90%) were willing while 2 (20%) were not. In the South East, 15(83.3%) of the respondents were willing while 3 (16%) were not and in the South- South, 25 (83.3%) were willing while 5(16.7%) were not. Figure 6 revealed that 41% of respondents were of the opinion that lack of finance was a barrier to their attending CPD programmes, 13% said employers permit, 10% said lack of infrastructure, 3% said age, 27% said location of program and 6% mentioned other barriers. Figure 7 indicated that 39 percent of respondents suggested a reduction of cost for CPD programs, while just 1 respondent suggested that the time be made suitable.

Table 1 revealed that 56% respondents were intern radiographers, 13% respondents were of the rank of Radiographer II, 13% were Radiographer I, 11% were senior Radiographers, 4% were principal Radiographers and 2% were chief Radiographers. Table 2 revealed that 50% of the respondents had working experience of under 1 year, 34% had working experience of between 1-5 years, 11% had working experience of between 6-10 years, 4% had working experience of between 11-15 years and 1% had working experience of 16-20 years.

Table 3 revealed that 59% of the respondents have participated in Computed Tomography course, 21% in Ultrasonography course, 5% in Mammography, 3% in Pattern Recognition, 10% in Magnetic Resonance Imaging while 2% participated in management workshops. Tables 4 and 5 are the Hypothesis test summaries using Kruskal-Wallis test and Cochran's Q test respectively. Table 6 revealed that there is a significant positive relationship between rank and willingness to participate in CPD programmes. Also, there was a positive relationship also between years of working experience and willingness. Table 7 revealed the responses based on the years of experience of respondents as practicing radiographers. The chi square test results are shown in Table 8.

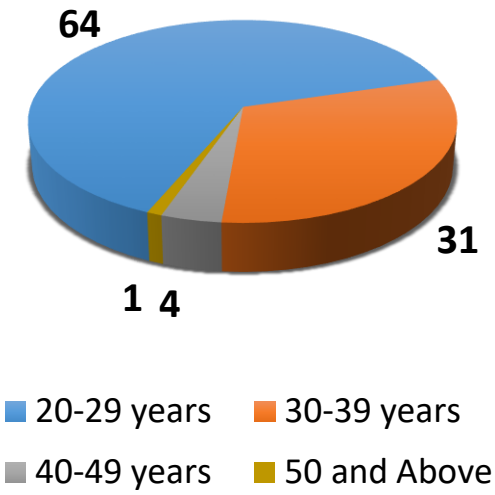

Figure 1: Age distribution among respondents

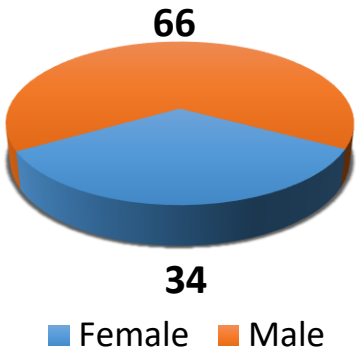

Figure 2: Gender of the respondents

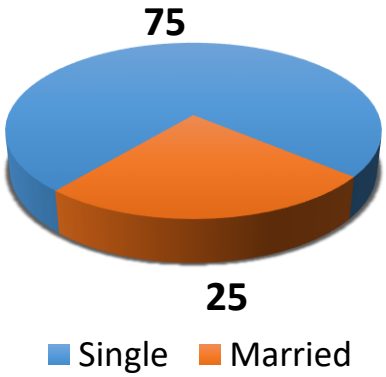

Figure 3: Marital status of respondents

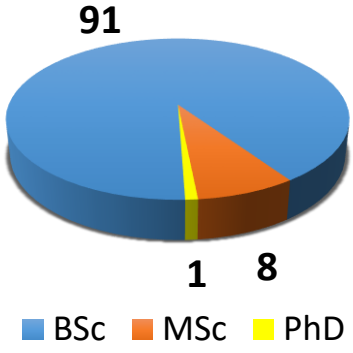

Figure 4: Qualification of respondents

Table 1: Rank of the respondents

Rank	Frequency	Percent (%)
Internship Student	57	57.0
Radiographer II	13	13.0
Radiographer I	13	13.0
Senior Radiographer	11	11.0
Principal Radiographer	4	4.0
Chief Radiographer	2	2.0
Total	100	100.0

Table 2: Years of work experience of respondents

Years		Percent (%)
Under 1 year	50	50.0
1-5 years	34	34.0
6-10 years	11	11.0
11-15 years	4	4.0
16-20 years	1	1.0
Total	100	100.0

Table 3: CPD courses attended by respondents

Course	Frequency	Percent (%)
CT course	59	59.0
Ultrasound course	21	21.0
Mammography course	5	5.0
Pattern recognition	3	3.0
MRI course	10	10.0
Management Workshops	2	2.0
Total	100	100.0

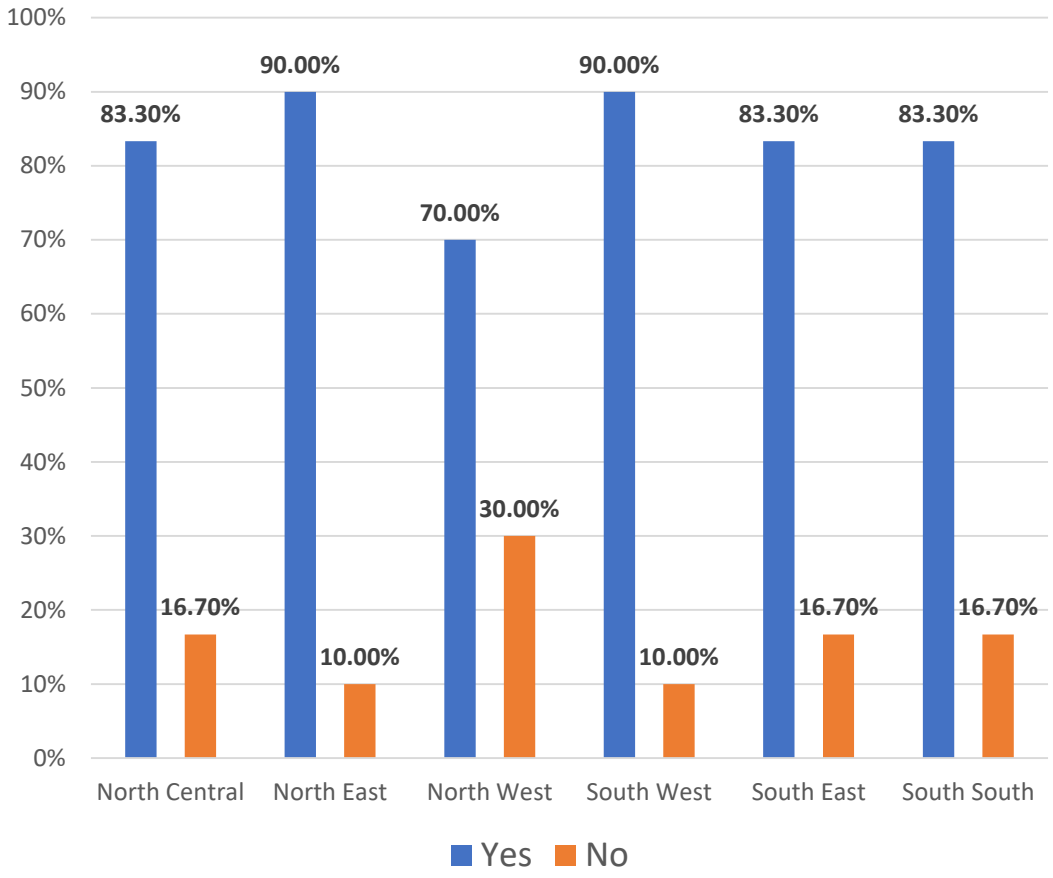

Figure 5: Level of willingness across the 6 geo-political zones of Nigeria

Table 4: Hypothesis Test summary using Kruskal-Wallis Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of NorthEast is the same across categories of SouthSouth.	Independent-Samples Kruskal-Wallis Test	.739	Retain the null hypothesis.
2	The distribution of NorthCentral is the same across categories of SouthSouth.	Independent-Samples Kruskal-Wallis Test	.507	Retain the null hypothesis.
3	The distribution of NorthWest is the same across categories of SouthSouth.	Independent-Samples Kruskal-Wallis Test	.127	Retain the null hypothesis.
4	The distribution of SouthWest is the same across categories of SouthSouth.	Independent-Samples Kruskal-Wallis Test	.276	Retain the null hypothesis.
5	The distribution of SouthEast is the same across categories of SouthSouth.	Independent-Samples Kruskal-Wallis Test	.622	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 5: **Hypothesis Test summary using** Cochrans Q Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of NorthCentral, NorthEast, NorthWest, SouthWest, SouthEast and SouthSouth are the same.	Related-Samples Cochran's Q Test	.681	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

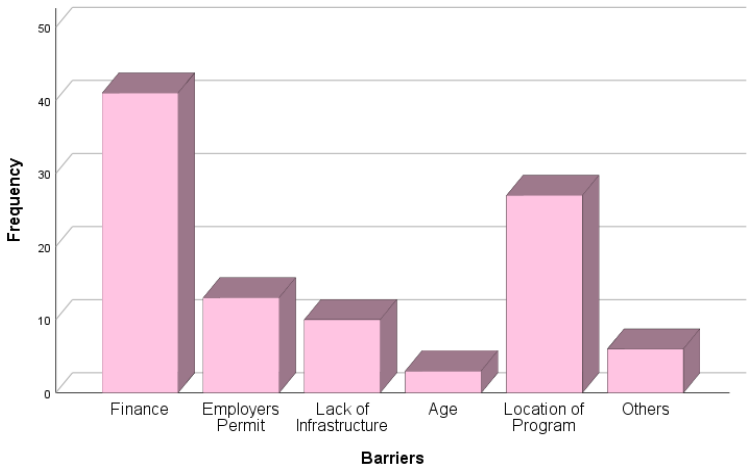

Figure 6: Barriers to Continuing Professional Development

Table 6: Correlation of Rank, Years of Work Experience and Willingness

			Rank	Years of Work experience	Willingness
Spearman's rho	Rank	Correlation Coefficient	1.000	.777**	.263**
		Sig. (2-tailed)	.	.000	.009
		N	99	99	99
	Years of Work experience	Correlation Coefficient	.777**	1.000	.347**
		Sig. (2-tailed)	.000	.	.000
		N	99	100	100
	Willingness	Correlation Coefficient	.263**	.347**	1.000
		Sig. (2-tailed)	.009	.000	.
		N	99	100	100

Table 7: Years of working experience * Willingness to participate in CPDP Cross tabulation

			Willingness to participate in CPDP		
			No	Yes	Total
Years of working experience	Under 1 year	Count	15	35	50
		% within	30.0%	70.0%	100.0%
	1-5 years	Count	0	34	34
		% within	0.0%	100.0%	100.0%
	6-10 years	Count	1	10	11
		% within	9.1%	90.9%	100.0%
	11-15 years	Count	0	4	4
		% with	0.0%	100.0%	100.0%
	16-20 years	Count	0	1	1
		% within	0.0%	100.0%	100.0%
Total		Count	16	84	100
		% within	16.0%	84.0%	100.0%

Table 8: Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15.111[a]	4	.004
Likelihood Ratio	20.146	4	.000
Linear-by-Linear Association	8.541	1	.003
No of valid case	100		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .16

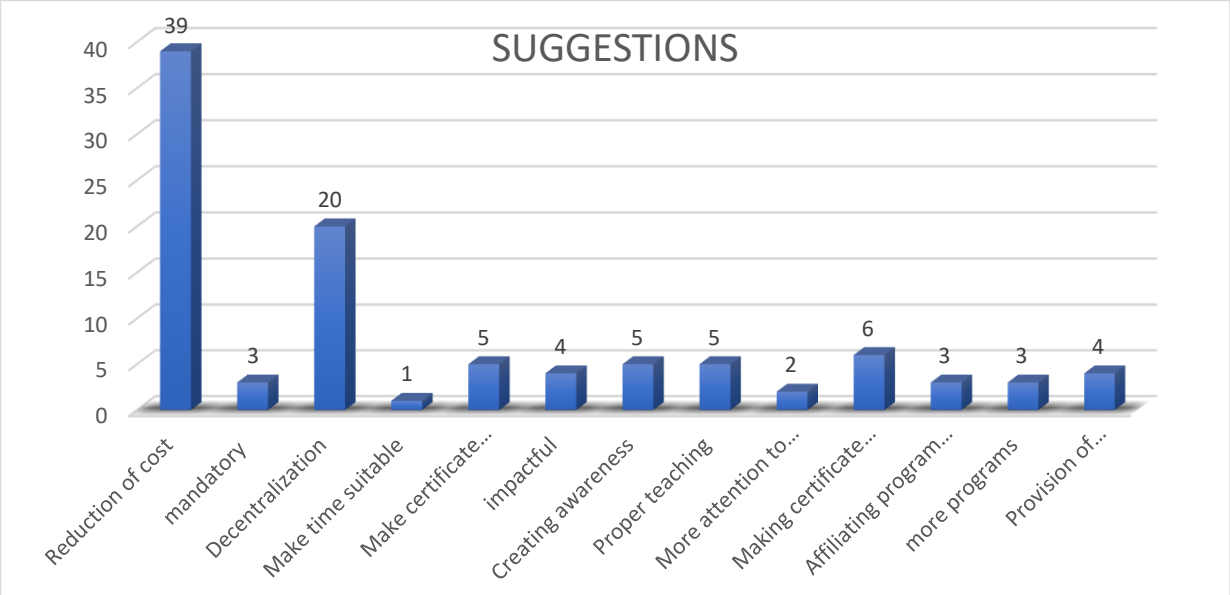

Figure 7: Suggestions made by respondents

DISCUSSION

Continuing professional development programs prepare a graduate among other things, for adaption to current trends in line with evidence- based practice. It is therefore an essential foundation in the training of radiographers, not just for better clinical practice but also to imbibe them with research mindedness that is needed to impact on their work environment. From the research, majority of the radiographers were between 20-29 years (64%) and thus require more participation in CPD activities to improve and enhance their skills to provide high quality service (Gawugah *et al.,* 2011).

The findings of this study showed that the awareness level of the existence of CPDP and willingness to enroll for such programmes, is high among radiographers across the six Geo-political zones of Nigeria, which is similar with the findings of Ugwu *et al*., (2009). It was also discovered from this study that there is no statistical difference in the level of willingness across the six geopolitical zones. Ninety-nine percent (99%) of respondent agreed that CPD is necessary, improves practice and ensures better patient care. It is very similar from the percentage reported by Marshall *et al*., (2008). The high percentage observed in this study may be due to the fact that the radiographers surveyed needed to update their knowledge as 98% agreed that participating in CPD will improve their performance at work. Similar findings were gotten from a study conducted in Australia by Sholer *et al.,* (2011) as 60% of the respondents agreed that participating in CPD will improve their work performance.

Currently, a shift from optional CPD to mandatory CPD is occurring worldwide, and respondents (90%) agreed that CPD should be mandatory. The high percentage is because 95% of the respondent in this study agreed that CPD activities are an opportunity to learn more.

The most common barrier to CPD participation was lack of finance (41%). Thirteen percent (13%) of the respondents were unable to obtain employers permit to participate in activities. Ten percent (10%) agreed that lack of infrastructure prevented them from attending CPD activities, three percent (3%) said it was age, 27% lacked access to CPD activities due to location and 6% agreed that other factors inhibit their participation. Time and workload were the most common constraints documented in previous study by Henwood *et al*., (2004) which may be due to difference in culture and work environment. Work done by Gawugah *et al*., (2011) in Ghana only 1.6% agreed that time hindered them from CPD but the most constraints were staff shortage and employer's permit. Also, in a work done in New Zealand and UK by Henwood *et al.,* (2004), radiographers complained that with the pressure of work and due to staff shortage, CPD is difficult to maintain and it is difficult to get time off for CPD. This variation may be due to differences in culture and work environment. Lack of finance being the most common barrier to CPD in Nigeria could be as a result of high cost of living in the country, as salaries paid to radiographers cannot meet up their needs not to talk of paying for the programmes. Also, it could be as a result of non-payment of salaries to intern radiographers as at the time of this research.

This study showed that there was a significant positive relationship ($r=0.04$, $p\leq0.05$) between rank and willingness to participate in CPDP. Also, there was a significant positive relationship ($r=0.04$, $p\leq0.05$) between years of working experience and willingness. This finding is contradictory to recent studies which showed negative relationships between years of working experience and willingness to participate in CPD. Under 1 year, 35(70%) of the respondents were willing while 15(30%) were not willing to participate in CPD, 1-5 years, 34(100%) were willing, 6-10 years 10(90.9%) were willing to participate in CPD while 1(9.1%) was not willing to participate, 11-15 years 4(100%) were willing to participate in CPD programs. This means that the higher the years of working experience the more the willingness to participate in CPD. This could be as a result that many radiographers who have had longer years of working experience understand better the benefits attached to participating in CPD programmes than others, and probably need upgrades because of rapid changes in technologies.

Although the study showed positive attitude towards continuing professional development programs, it is revealed that 59% of those that participated have just participated in the CT course that was made mandatory by RRBN, 20% in ultrasound course, 10% in MRI, 5% in mammography, 3% in pattern recognition and 1% in management workshops. The high percentage (59%) gotten from participating in the course made mandatory by RRBN could be as a result that participating in the course was a criterion to retaining your license with the board. Therefore, for the fear of losing their license with the board, Radiographers had to participate in the programme.

Suggestions made by the radiographers across the six geo-political zone of Nigeria in this study were positively disposed to CPD programs. However, the respondents identified incentives to participation in CPD programs as being; reduction of cost for the programs , programs being made mandatory, decentralization of the location(centers for CPD should be made available in all the states), the time should be made suitable, RRBN should regulate the practice of radiography by preventing quackery, making certificate tenable, programs being made more impactful, creating awareness of CPD from grass root, proper teaching, more attention to practical, introduction of more programs, making the certificate relevant, affiliating programs with NUC and provision of accommodation. This could be a result that radiographers are not comfortable with policies made by RRBN as it concerns continuing professional development.

CONCLUSION

There is a high level of willingness of graduate Radiographers to undertake continuing professional development in Nigeria. However, the high cost of training and the location of the training programmes are the major barriers.

CONFLICT OF INTEREST: There was no conflict of interest

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