

Peer Reviewed **Original Article****A JOURNEY THROUGH RURAL COMMUNITY RADIOGRAPHY PRACTICE IN SOUTH-SOUTH NIGERIA: RADIOGRAPHERS' PERCEPTIONS, WILLINGNESS AND BARRIERS**

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Abstract

Introduction. The lack and retention of healthcare professionals in rural areas has become a serious concern to the health sector globally. Retaining health staff in rural areas has proven difficult as young professionals prefer urban postings. This study aimed to assess radiographers' perceptions, willingness and barriers to work in rural areas of Rivers State.

Method. This cross-sectional questionnaire-based study was conducted among radiographers in Rivers State. The participants' socio-demographic variables and their responses to perceptions, willingness and barriers to work in rural areas were obtained and analysed.

Results. Only 30% (n=12) of the participants were willing to work in the rural areas of Rivers State. The majority of the participants (95%; n=38) indicated they were willing to work in rural areas due to the incentive they received in the form of extra remuneration. Most participants indicated that unfavourable working conditions (88%; n=35), poor housing (85%; n=34) and militant activities (88%; n=35) in rural areas, as well as their marital status (55%; n=22) as reasons for being unwilling to work in these areas in Rivers State. There were statistically significant relationships between the participants' willingness to work in the rural areas of Rivers State and their biological sex ($\chi^2 = 48.000$, $p=0.000$), years of working experience ($\chi^2 = 47.500$, $p=0.000$), marital status ($\chi^2 = 84.966$, $p=0.000$) and age ($\chi^2 = 76.758$, $p=0.021$).

Conclusion. The results of this study suggest that the majority of the radiographers were not willing to work in the rural areas of Rivers State. The main reasons identified are unfavourable working conditions, poor housing, militant activities and marital status. It was found that financial inducement could influence participants' willingness to work in rural areas.

Keywords. barriers, communities, radiography, rural

INTRODUCTION

Radiographers play a critical role in the quality of healthcare service delivery and are in great demand worldwide. Radiographers provide both diagnostic and therapeutic services. In Nigeria there is an acute shortage and inappropriate distribution of radiographers. The availability and retention of healthcare professionals (HCPs) in rural areas is a chal-

lenge to the health sector globally.^[1] Radiographers, like other HCPs, prefer to work in urban areas due to higher incomes, good career opportunities, good infrastructure and social amenities.^[2-3]

Previous studies found that rural exposure, poor working conditions, low job satisfaction, political and ethnic problems, civil strife and poor security in most rural areas,

predispose young graduates to gravitate towards urban centres.^[4,5] A study conducted by Okeji et al.^[6] in Nigeria found that only 27% of the participants showed a strong willingness to work in rural areas. A study conducted by Khanagar et al.^[7] showed that 58% of dental interns were willing to work in rural areas of Riyadh, Saudi Arabia. Similarly, a study by Sharma et al.^[8] among medical students showed that 55% of them were willing to work in rural communities. Unemployment and job opportunities influence regional labour migration.^[9,10] Factors such as social amenities (electricity, pipe bore water, good schools, good market and good access roads) and hospitals with high technological imaging modalities, which are not readily available within rural communities, may then attract radiographers to work within urban areas. People who move to urban areas are also usually driven by their expectation of improved employment status or earnings and desire to urbanise.^[11,12] The rural/urban divide impacts negatively on access to both basic and comprehensive healthcare as well as skilled HCPs. In Nigeria most radiographers, including radiography students, prefer to work in urban areas, yet 54% of the population of Nigeria are rural dwellers.^[2,6]

Radiographers' perceptions, willingness and barriers to work in rural areas of Rivers State, Nigeria have not been previously studied. Hence the present study was carried out to assess the perceptions, barriers and willingness of radiographers towards working in rural areas of Rivers State.

MATERIALS AND METHODS

This was a cross-sectional survey design, which was conducted among radiographers in Rivers State. Rivers State is located in the South-South geopolitical zone of Nigeria with Port Harcourt as the administrative capital. The state is made up of rich and diverse cultures and ethnic groups such as Ogoni, Ikwerre and Ijaw, which comprise the greater population.^[13]

The study population comprised licensed radiographers working in government and private-owned hospitals and diagnostic centres in Rivers State. Non-licensed radiographers and X-ray technicians were excluded from the study. Ethical approval (NAU/FHST/2021/RAD34) for this study was obtained from the Research Ethical Committee of the Faculty of Health Sciences and Technology, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, Anambra State, Nigeria. The aim of the study was adequately explained to the participants and their consent was duly sought and obtained. Their privacy and confidentiality were guaranteed, and they were at liberty to withdraw from the study at any time without any harm.

The sample size for the study was determined using the statistical formula for unknown population $n = Z(\alpha)^2 pq/d^2$ used in a study by Charan and Biswas.^[14]

Where:

N = expected sample size

Z α = significance level usually set at 95% confidence level,

Z α is 1.96 (two sided)

p = portion of the population with similar attributes under study = 60% (0.6)

d = margin of error tolerated or absolute error = 15.2% (0.152)

q = 1-p = 1- 0.6 = 0.4

Therefore: $n = 1.96^2 \times 0.6 \times 0.4 / (0.152)^2$

$n = (2.30496) / (0.023104)$

The final sample size was thus determined as n=40.

A convenience sampling technique was used to recruit 40 participants (n=40).

A 23-item self-completion questionnaire was the instrument for data collection. The questionnaire contained 23 questions divided into three (3) sections. Section I: elicited information on radiographer's socio-demographic variables, section II was concerned with general questions on radiographers' willingness to work in rural communities and section III consisted of questions evaluating the barriers militating against radiographers' willingness to work in rural areas.

The questionnaire was in electronic and hardcopy versions. The electronic version was hosted on Google Forms and sent to participants using the WhatsApp group of the Association of Radiographers of Nigeria (ARN) Rivers State chapter. Participants used an electronic link to access the questionnaire and anonymously complete the questionnaire in their own time. The hardcopy version was distributed by the researchers using a one-on-one method. The completed questionnaires were collected. Participants were not required to provide their names on the questionnaire. Data were collected over a period of three months (December, 2021 to February 2022).

The data collected were analysed using the Statistical Package for Social Sciences software (SPSS) version 21.0 (IBM Corp, Armonk, NY, 2012). The results were listed as frequency tables and percentages. Inferential statistics was done using Chi-square to evaluate the association between participant's socio-demographic variables and their perceptions, barriers and willingness to work in rural areas of Rivers State. The level of statistical significance is shown by a p-value less than 0.05.

• Reliability and validity

A pilot study was carried out with 10 questionnaires (n=10) distributed among radiographers before the commencement of this study. Cronbach's alpha reliability test was performed. The questionnaire had an acceptable internal consistency (Cronbach's alpha = 0.87).

The validity of the questionnaire was calculated using the index of term-objective congruence (IOC) method discussed in the literature by several authors.^[15-17] This was done by computing the index of item-objective congruence (IOC). Based on the index parameters, an IOC score greater than 0.6 was assumed to show adequate content validity, and all the scores obtained in this study for all the items of the questionnaire after IOC analysis was greater than 0.6.

Table 1. Frequency and percentage distributions of the socio-demographic variables

Variables	Classification	Frequency (n=40)	Percentage
Biological sex	Female	12	30%
	Male	28	70%
Total		40	100%
Marital status	Married	13	32.5%
	Single	27	67.5%
Total		40	100%
Qualification	B.Sc	32	80%
	M.Sc	7	17.5%
	Ph.D	1	2.5%
Total		40	100%
Years of working experience	0-5	26	65%
	6-10	13	32.5%
	11-15	1	2.5%
Total		40	100%
Age	<20	2	5%
	21-30	27	67.5%
	31-40	8	20%
	41-50	3	7.5%
Total		40	100%

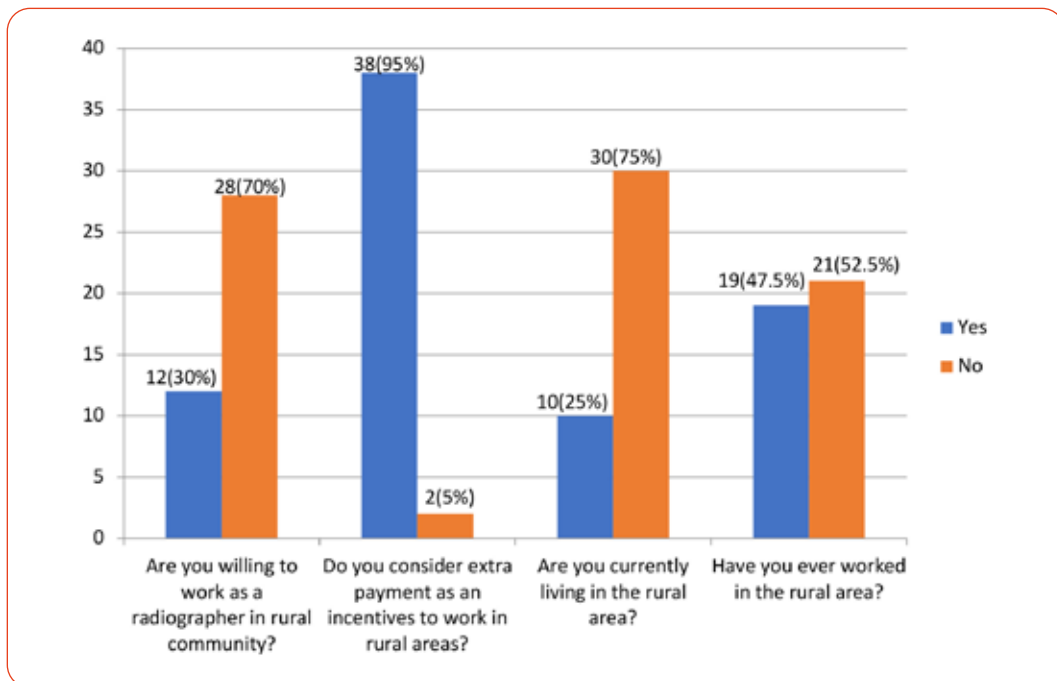


Figure 1. Frequency and percentage distributions of the radiographer’s responses to questions on their willingness to work in rural areas.

Table 2. Frequency and percentage distributions of the radiographer's responses questions on barriers to their willingness to work in rural areas

QUESTIONS	RESPONSES	FREQUENCY	PERCENTAGE
The rural area has unfavourable working conditions	Yes	35	87.5%
	No	5	12.5%
Total		40	100%
Lack of transportation facilities a barrier to work in rural areas	Yes	31	77.5%
	No	9	22.5%
Total		40	100%
Does lack of infrastructure pose as a barrier to work in rural areas?	Yes	37	92.5%
	No	3	7.5%
Total		40	100%
Do you consider difficulty in communicating with illiterates as a barrier?	Yes	25	62.5%
	No	15	37.5%
Total		40	100%
Do you think your marital status influences your willingness to work in rural areas?	Yes	22	55%
	No	18	45%
Total		40	100%
Does the rural area have less human resource support and thus serve as a barrier?	Yes	35	87.5%
	No	5	12.5%
Total		40	100%
Do you consider poor accommodation as a barrier to work in rural areas?	Yes	34	85%
	No	6	15%
Total		40	100%
Does the activity of militancy especially in rural areas pose a threat to work in rural?	Yes	35	87.5%
	No	5	12.5%
Total		40	100%

Table 3. Associations between radiographer's gender, years of experience and marital status and their willingness to work in rural areas

Socio-demographic variables	Participants' willingness to work in rural areas of Rivers State		
	χ^2	DF	p-values
Gender	48.000	9	0.000
Years of working experience	47.500	10	0.000
Marital status	84.966	9	0.000
Age	76.785	10	0.021

RESULTS

Forty participants participated in this study (n=40). The majority of the participants were male (70%, n=28), between 21 - 30 years of age (65.7%, n=27), single (67.5%, n=27), had only a BSc degree (80%, n=32), and had 0 - 5 years working experience (65%, n=26) (Table 1).

Only 30% (n=12) of the participants were willing to work in the rural areas of Rivers State. Ten participants lived in rural areas (25%) and more than half of the participants had no previous experience of working in rural areas (53%). Extra remuneration was found to be a facilitator of willingness to work in rural areas among the majority of participants (95%, n=38) (Figure 1).

The responses to questions on barriers to radiographers' willingness to work in rural areas of Rivers State are presented in Table 2. Unfavourable working conditions (87.5%), poor accommodation (85%), militant activities (87.5%), lack of human resource support (87.5%) and lack of infrastructure (92.5%) were identified as the most significant barriers.

Statistically significant relationships were found between participants' biological sex ($\chi^2 = 48.000$, $p=0.000$), years of working experience ($\chi^2 = 47.500$, $p=0.000$), marital status ($\chi^2 = 84.966$, $p=0.000$) and age ($\chi^2 = 76.758$, $p=0.021$) and their willingness to work in the rural areas of Rivers State (Table 3).

DISCUSSION

Radiographers are important in the provision of quality healthcare services to the population because they render diagnostic and therapeutic services, and are invaluable for the monitoring of treatment outcomes. Increased utilisation of facility-based health services becomes more visible in some rural communities due to the launching of imaging services.^[18-19] Imaging has also been proved to impact positively on health management decisions.^[20-21]

It was found that very few of the participants were positive and willing to work in the rural areas of Rivers State (Figure 1). This is inconsistent with the findings of similar studies conducted by Thammatacharee et al.^[22] in Thailand among medical, dental and pharmacy graduates, Khanagar et al.^[7] in Riyadh, Saudi Arabia among dental interns, Okeji et al.^[6] among final year radiography students in Southeast, Nigeria and Anzenberger et al.^[23] among health workers in Ukraine, which reported that the majority of the participants were positive and willing to work in the rural communities areas of their study locations. The discrepancies in our findings could be ascribed to the different sample sizes studied, geographical locations of the studies as well as the compositions of the study population. According to Anzenberger et al.^[23], participants were interested in working in rural areas as long as opportunities align with their individual expectations.

Despite the fact that there was poor willingness to work in rural areas of Rivers State among the radiographers in our study, the majority of the participants perceived extra pay-

ment as the most significant motivating factor for them to be willing to work in the rural areas. This may be due to the fact that most radiographers would like to make more revenue so as to enable them to invest in the rural areas, and cater for their family. This finding is similar to those of a study carried out by Okeji et al.^[6] in Southeast, Nigeria among final year radiography students. According to Okeji et al.,^[6] they noted that their participants felt that as upcoming professionals, they were more interested in higher salaries to assist them to start life and alleviate their family challenges. On the other hand, Khanagar et al.^[7] found close proximity to their hometown was the most important motivating factor that influenced their willingness to work in rural areas. This difference in our findings could be ascribed to the different sample size used in different studies.

The barriers included in our study's questionnaire were all found to have an influence on the participants' willingness to work in rural areas of Rivers State (Table 2). The results imply that the participants were dissatisfied with the organisational structure of hospitals/diagnostic centres and security in rural areas of Rivers State. This may be because health priorities in rural areas are more focused on prevention of infectious diseases with medical imaging services not being prioritised.^[24] In instances where there are imaging centres and functional equipment these tend to be very basic, old and in poor functional state.^[21] These barriers to our participants' willingness to work in rural areas of Rivers State may explain why fewer radiographers are working in the rural areas.

Statistically significant relationships were found between the participants' biological sex, years of working experience, marital status and age, and their willingness to work in the rural areas of Rivers State (Table 3). These findings imply that biological sex, years of working experience, marital status as well as the age of the participants have a significant influence on their willingness to work in rural areas. Married couples who were already residing in the urban centres may find it difficult to relocate to the rural areas. This could be because they have to consider their family conditions as well as the challenges of lack of social amenities that are commonly associated with a rural area. Younger radiographers may find it difficult to work in the rural areas because they may want to advance their education and wish to work with sophisticated equipment and in specialised modalities. These are not prospects associated with the rural areas at present.^[21]

CONCLUSION

The key findings suggest that the majority of the radiographers were not willing to work in the rural areas of Rivers State. Work conditions, environmental and personal factors were found to influence their willingness. Remuneration was identified as a motivating factor for radiographers to work in rural areas.

To attract younger radiographers to the rural areas, specific policy intervention should be established to motivate radiographers to work in rural areas. These policies should fo-

cus on retention strategies, optimising working conditions, infrastructure and incentives.

CONFLICT OF INTEREST

Nil to declare.

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None.

ETHICAL APPROVAL

Approval was obtained from the Human Research and Ethics Committee of the Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nigeria (NAU/FHST/2021/RAD34).

AUTHOR CONTRIBUTIONS

All authors have read and approved the manuscript. MPO, CJI, ANM and BUM were the main researchers, drafted the manuscript, collected and captured the data. MPO, BUM, OFE, UNE, NA, EBE, VKN and ROA analysed and interpreted the results, provided recommendations on the review of literature and critical comments for the improvement of the manuscript.

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