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# Recruitment and Distribution of Public Sector Health Workers and Determinants of Variation in Their Distribution in Enugu State, Nigeria

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## Authors' contributions

This work was carried out in collaboration between all authors. Authors BSCU, ACN and CCO conceptualized the study. Authors BSCU, AKU, OC and ENO designed the study and wrote the protocol. All authors were involved in literature searches. Authors ENO, AKU and OC did the statistical analyses. Authors CCO, ACN and ENO wrote the initial draft of the manuscript and revised by author BSCU. All authors read and approved the final manuscript.

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## ABSTRACT

**Aims:** The aim of study was to assess the recruitment and distribution of public sector health workers and the determinants of variation in their distribution in Enugu state, Nigeria.

**Study Design:** A cross sectional comparative study design.

**Place and Duration of Study:** Public health facilities in Enugu state, Nigeria between April and May 2015.

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**Methodology:** A three stage sampling technique was used to select 376 public health workers in urban and rural areas of the state. The respondents were interviewed using a self administered questionnaire. Data entry and analysis was done using Statistical Package for Social Sciences version 20. Chi square test of statistical significance was used in the analysis and level of significance was determined by a p value of <0.05.

**Results:** Of the 376 health workers that participated in the study, 293 were from urban while 83 were from rural health facilities. All the health workers in the two study groups were aware of methods of recruitment into the public sector health service and the radio was the major source of information. Majority of the health workers, (urban, 84.3% and rural, 96.4%) were also aware that there were more health workers in the urban when compared to the rural. Lack of social amenities in the rural area was perceived by the health workers as the main reason for the imbalance in the distribution of health workers in urban and rural areas. Also, majority of the health workers, (urban, 75.4% and rural, 95.2%) were of the opinion that indigenous health workers should be trained to work in rural areas and that training centers for health workers should be located in the rural area, (urban, 77.8% and rural, 91.6%).

**Conclusion:** There was a similarity in the recruitment but a great imbalance in the distribution of the public sector health workers between the urban and rural areas of Enugu state. Efforts should be made towards attracting and retaining health workers in rural areas. Measures like use of incentives, training of indigenous health workers and location of training centers for health workers in rural areas could be adopted.

*Keywords: Recruitment; distribution; determinants; public sector; health workers; Enugu state; Nigeria.*

## 1. INTRODUCTION

Health workers have been identified as an integral part of health systems and are very relevant in improving health outcomes [1]. The World Health Organization (WHO) revealed that 57 countries of the world have a critical shortage of health workers and 36 of these countries are in sub-Saharan Africa including Nigeria [1]. The situation is further compounded by the fact that the African continent bears 24% of the global disease burden but could only account for 3% of the health workforce and a paltry 1% of world's financial resources [1]. This shortage of health workers in this region of the world adversely affected the realization of health related Millennium Development Goals [2,3].

The WHO recently made global policy recommendations on how to increase access of health workers to rural areas through improved retention [4]. This was based on the observation that health workers were not distributed according to need for health services with the result that the developed countries have more health workers than the developing countries who unfortunately bear the greater burden of disease. Also, globally within regions and countries, the urban areas have more health workers than the rural and remote areas where the health indices are poorer [5].

In Nigeria, a higher proportion of the populace live in rural area [6] which incidentally have fewer

health workers including number of doctors per population when compared with the urban areas [7,8]. The result is that the health indices are poorer in the rural areas [7]. The shortage of health workers in rural areas is however a universal problem and affects both developing and developed countries although its impact on the developing and poorer countries are more pronounced.

The imbalance in the health workforce is a major challenge for health policy-makers, since human resource for health are the most important of the health system's inputs [1]. Recruitment of public sector health workers in Enugu State, borders more on the need, and the financial capability of the state government [9]. This is because an effective health care system requires expert planning, dedicated execution and tremendous amount of capital. Also, the recruitment of public sector health workers is a result of the interplay between the forces of demand and supply of health personnel. The aim of the study was to determine the recruitment and distribution of public sector health workers in Enugu state, Nigeria and the variation in their distribution.

## 2. MATERIALS AND METHODS

### 2.1 Study Setting

The study was carried out in Enugu state in southeast geo-political zone of Nigeria. The state

consists of seventeen Local Government Areas (LGAs) of which five are designated as urban and others classified as rural. The climate is typical of the Guinea savannah with an average rainfall of one hundred and fifty millimeters during the rainy season, which lasts between the months of March and November. The months of December and January are period of harmattan, while February and March are usually dry and sunny. Ambient temperature is around twenty degrees centigrade.

The state operates the District Health System (DHS) and has a total of seven districts which include Awgu, Udi, Enugu-Ezike, Nsukka, Enugu metropolis, Isi-Uzo and Agbani. Each health district is made up of at least two to three LGAs and has a range of public health facilities including a district hospital and primary health centers. The DHS was developed in the face of poor health indicators in the state, and the need for health reform [10]. The system seeks to provide among other benefits; a pro poor focused health care service, an integration of primary and secondary health care systems, a strong partnership between the private and the public sectors and the provision of affordable, high quality health services to the people of the state [9].

## 2.2 Study Design

The study adopted a comparative cross-sectional design. It compared findings from public sector health workers in urban and rural areas of Enugu state, Nigeria.

## 2.3 Study Instrument

The study instrument was a pretested semi structured questionnaire which was developed by the researchers and comprised of open and close ended questions. The aim of the pretesting which was done outside the study area was to detect deficiencies or ambiguities of the study instrument which when detected were corrected. The questionnaire was self administered. Information was obtained on the socio-demographic characteristics of the health workers, their awareness of recruitment into the public sector health service, their source of information and method of recruitment. Also, information was obtained on whether there is an imbalance in the distribution of health workers in urban and rural areas, and the factors contributing to such imbalance.

## 2.4 Study Population

These were health workers in Enugu state, Nigeria working in public health facilities selected for the study.

### 2.4.1 Sample size determination

This was a total population study of health workers in public health facilities in the local government areas selected for the study.

### 2.4.2 Sampling technique

A three stage sampling technique was used for the study. In the first stage, two health districts were purposively selected from the seven health districts of the state so that one will represent the urban area and the other the rural. In the second stage, one local government area each was randomly selected from the two health districts by the simple random sampling technique of balloting. In the third stage, five health facilities were selected from each of the selected LGA by a simple random sampling technique of balloting. All the health workers in the selected government health facilities who were willing to participate were included in the study.

## 2.5 Data Analysis

Data analysis was done using Statistical Package for Social Sciences, (SPSS) statistical package version 20. Frequencies and cross tabulations were generated. Chi square test of statistical significance was used in the analysis and level of significance was based on a p value of less than 0.05.

## 3. RESULTS

A total of 376 health workers participated in the study of which 293 were from urban while 83 were from rural health facilities. The overall response rate was 91%.

Table 1 shows the socio-demographic characteristics of health workers. The mean age of the health workers in the rural area was  $42.2 \pm 10.4$  years and this was higher than that of the urban, ( $34.0 \pm 10.4$  years) and the difference in mean was found to be statistically significant, ( $p < 0.001$ ). The highest proportion of health workers in urban (46.1%) were in the age group, 20-29 years while in the rural (45.8%) were in the age group 40-49 years. Majority of the health workers in the urban, (51.2%) were female while in the rural, the majority, (57.8%) were male. A

significantly higher proportion of the health workers in the rural area, (95.2%) were married when compared with those in the urban, 53.6% ( $p < 0.001$ ).

Table 2 shows the distribution of the health workers. All the health workers in the two study groups were aware of recruitment of health workers into the public sector and the radio was the major source of information on recruitment for majority of health workers in the two study groups, (urban 63.2% and rural 69.9%). A significantly higher proportion of the health workers in the rural (96.4%) were of the opinion that there are more health workers in the urban when compared with those in the rural, 84.3% ( $p = 0.004$ ). Also, majority of the health workers, (urban 65.9% and rural 84.3%) perceive the Government to being a contributor to the imbalance in distribution of health workers in the urban and rural areas and this difference in proportion was found to be statistically significant, ( $p = 0.001$ ).

Table 3 shows the effects of imbalance in the distribution of health workers. Comparable proportions of the health workers in the two study

groups, (urban 88.7% and rural 91.6%) were of the opinion that the imbalance in the distribution of health workers affect the quality of healthcare delivery in the rural area, ( $p = 0.460$ ). Majority of the health workers in the two study groups were of the view that there are solutions to the imbalance in the distribution of health workers and the major solution by the health workers was provision of social amenities, (urban 45% and rural 50%) A significantly higher proportion of the health workers in the urban were of the opinion that indigenous health workers should be trained to work in their areas of origin after graduation, ( $p < 0.001$ ) and that centers for training of health workers should be located in the rural areas, ( $p = 0.005$ ).

#### 4. DISCUSSION

The study revealed that there were more male health workers in rural area than their female counterparts suggesting that female health workers may not be willing to live and work in the rural area probably due to convenience as regards to their lifestyle and family commitments. It has been observed that female professional workers have specific needs to be able to work,

**Table 1. Socio-demographic characteristics of health workers**

Variable	Urban (n=293) N (%)	Rural (n=83) N (%)	$\chi^2$	p value
<b>Age in years</b>				
Mean $\pm$ (SD)	34.0 $\pm$ 10.4	42.2 $\pm$ 8.0	7.660**	<0.001
<b>Age groups in years</b>				
20-29 years	135 (46.1)	4 (4.8)	50.274	<0.001
30-39 years	67 (22.9)	26 (31.3)		
40-49 years	61 (20.8)	38 (45.8)		
$\geq$ 50 years	30 (10.2)	15 (18.1)		
<b>Gender</b>				
Male	143 (48.8)	48 (57.8)	2.113	0.147
Female	150 (51.2)	35 (42.2)		
<b>Marital status</b>				
Never married	136 (46.4)	4 (4.8)	47.890	<0.001
Married	157 (53.6)	79 (95.2)		
<b>Highest professional attainment</b>				
Medical doctor	72 (24.6)	7 (8.4)	26.804	<0.001
First degree in allied medical course	88 (30.0)	12 (14.5)		
Community Health Officer/Community Health Extension Worker	58 (19.8)	25 (30.1)		
Nurse/Midwife	75 (25.6)	39 (47.0)		
<b>Type of health facility</b>				
Primary health care	62 (21.2)	12 (14.5)	FT	<0.001
Secondary health care	99 (33.8)	71 (85.5)		
Tertiary health care	132 (45.1)	0 (0.0)		

\*\*Student t test; FT: Fishers exact test

Table 2. Distribution of health workers

Variable	Urban (n=293) N (%)	Rural (n=83) N (%)	$\chi^2$	p value
<b>Aware of method of recruitment into public sector</b>				
Aware	293 (100)	83 (100)	FT	1.0
Not aware	0 (0.0)	0 (0.0)		
<b>Source of information on health worker recruitment</b>				
Radio	185 (63.1)	58 (69.9)	15.018	0.002
Television	67 (22.9)	6 (7.2)		
Friends/Relatives	29 (9.9)	17 (20.5)		
Newspaper	12 (4.1)	2 (2.4)		
<b>Method of employment for respondent</b>				
Written interview	125 (42.7)	40 (48.2)	1.611	0.447
Oral interview	148 (50.5)	40 (48.2)		
Through friends/Relatives	20 (6.8)	3 (3.6)		
<b>Health workers are more in urban area</b>				
Yes	247 (84.3)	80 (96.4)	8.331	0.004
No	46 (15.7)	3 (3.6)		
<b>Imbalance of health workers peculiar to Enugu state alone</b>				
Yes	76 (25.9)	17 (20.5)	1.084	0.309
No	217 (74.1)	66 (79.5)		
<b>Government has a contribution to imbalance in health worker distribution</b>				
Yes	193 (65.9)	70 (84.3)	10.493	0.001
No	100 (34.1)	13 (15.7)		
<b>Attitude of health workers as cause of imbalance in distribution of health workers</b>				
Yes	124 (42.3)	58 (69.9)	19.675	<0.001
No	169 (57.7)	25 (30.1)		
<b>Attitude of rural dwellers to modern health care as cause of imbalance</b>				
Yes	115 (39.2)	42 (50.6)	3.436	0.064
No	178 (60.8)	41 (49.4)		
<b>Factors that cause imbalance in health worker distribution</b>				
Lack of social amenities in rural area	229 (78.2)	68 (81.9)	1.554	0.460
Marital status of health workers	33 (11.3)	10 (12.0)		
Place of origin of health workers	31 (10.6)	5 (6.0)		

FT: Fishers exact test

particularly due to their traditional role as family caretaker and their reproductive role [11,12]. Based on the fact that women form a large part of the workforce in most countries, their needs should be understood and translated into workplace policies in order to address staffing

needs in rural areas particularly in those places where women are not allowed to consult male providers on their health needs [13].

The highest proportion of health workers in rural area (45.8%), were in the age range 40-49 years

while in the urban, a similar proportion (46.1%), were in the age range 20-29 years. The implication of this finding is that more middle-aged health workers serve in rural area unlike the situation in the urban. This may be as a result of having tertiary institutions and other institutions with training programmes in the urban areas where opportunities for furthering of studies and starting life appear brighter, hence most young health workers were not willing to

stay in the rural area. Family reasons including children and spouse also influence decisions on workplace location and this applies more to women than men. There has also been a suggestion for a variety of interventions in attracting health workers to rural areas with focus on living environment, working conditions and opportunities for development of the health worker [14].

**Table 3. Effects of imbalance in the distribution of health workers**

<b>Variable</b>	<b>Urban (n=293) N (%)</b>	<b>Rural (n=83) N (%)</b>	<b>χ<sup>2</sup></b>	<b>p value</b>
<b>Does imbalance affect quality of healthcare delivery in rural area</b>				
Yes	260 (88.7)	76 (91.6)	0.547	0.460
No	33 (11.3)	7 (8.4)		
<b>Does imbalance in distribution affect family of health worker</b>				
Yes	137 (46.8)	55 (66.3)	9.852	0.002
No	156 (53.2)	28 (33.7)		
<b>Effect of imbalance in distribution on health workers</b>				
Problem of distance	285 (97.2)	67 (80.7)	29.634	<0.001
Family issues	8 (2.8)	16 (19.3)		
<b>Rural-urban migration can contribute to imbalance in distribution of public sector workforce</b>				
Yes	226 (77.2)	78 (94.0)	11.855	0.001
No	67 (22.8)	5 (6.0)		
<b>Satisfaction on job posting area</b>				
Very Satisfied	272 (38.9)	74 (27.7)	1.196	0.275
Not Satisfied	21 (7.2)	9 (19.8)		
<b>Whether there are solutions to the imbalance</b>				
Yes	242 (82.6)	80 (96.4)	10.003	0.002
No	51 (17.4)	3 (3/6)		
<b>Opinion on solution to imbalance</b>				
Provision of social amenities	139 (47.4)	40 (48.2)	0.028	0.986
Provision of incentives	106 (36.2)	30 (38.1)		
Employment of indigenous workers	48 (16.4)	13 (15.7)		
<b>Need to train local indigenous health workers to work in place of origin</b>				
Yes	221 (75.4)	79 (95.2)	15.657	<0.001
No	72 (24.6)	4 (4.8)		
<b>Need for training centers to be located in rural areas</b>				
Yes	228 (77.8)	76 (91.6)	7.904	0.005
No	65 (22.2)	7 (8.4)		

The urban area had a higher proportion of medical doctors and also health workers who had a first-degree in allied medical courses. In a service industry like healthcare, there is evidence that the quality of service delivered is directly proportional to the quality and number of human resource available to perform the work hence there is a relationship between quality of care and healthcare outcomes on the one hand and the availability of healthcare personnel on the other [15]. The health facility level of care also differed among the respondents in the two groups. Majority of the health workers in rural, 85.5% worked in secondary health facilities in the rural area, while most of the health workers in the urban, 45.1% work in tertiary health facilities. These findings point to the fact that there may be better health care quality being provided in the urban when compared with the rural area. There is indeed a positive relationship between the availability of health workers and better health outcomes, as well as increased coverage of essential health interventions. These associations have been demonstrated in a number of cross-country ecological analysis [5,16,17].

The study revealed that awareness on mode of recruitment for public sector health workers were the same in urban and rural areas. Also the radio was identified as the most important source of information on recruitment among respondents in the two study groups. Similarly, majority of the respondents in the two study groups were employed through written examinations and oral interviews. This similarity in pattern of recruitment suggests that the imbalance in distribution of health workers between urban and rural areas does not originate from recruitment stage but may be due to distribution and retention problems.

Most of the respondents attributed the causes of imbalance in the distribution of the health workers between urban and rural areas to government health sector policies; the poor attitude of the public health workers to work, lack of social amenities in the rural areas and the attitude of the rural dwellers toward modern health care. Some studies have also collaborated by these findings [15,18]. The implication of the imbalance in the distribution of public sector health workers between the urban and rural areas is that health care delivery in the rural area is put at a disadvantaged position.

Suggestions by the workers on how to resolve the imbalance in distribution of health workers in

the urban and rural areas included the provision of social amenities and provision of incentive. Similar results were obtained from studies that involved student doctors in different regions of the world. [19,20,21] it is important to note that the WHO Policy recommendations on how to attract and retain health workers in the rural area included amongst others the improvement in living conditions and use of financial incentives [4]. Majority of the health workers in the two study groups were of the opinion that indigenous health workers should be trained to work in the rural area and also training centers for health workers should be located in rural areas.

Locating training centers for health workers in rural areas is also one of the WHO policy recommendations for the attraction and retention of health workers in rural areas [4]. The success of the rural clinical schools for the training of medical doctors that is well conditioned for practice in the rural areas becomes a ready example [22,23]. Even in Nigeria where there are no officially acknowledged rural medical school there had been a call for the designation of one university in each of the geo-political zones in the country as a rural medical school for the purpose of emphasizing rural medical practice [19].

The need for the training of indigenes for the purpose of health service delivery in Nigeria was first recognized by the missionaries mainly because of their exposure to tropical diseases and the attendant consequences [24]. The experiences of the First World War also enabled the colonial government to embrace and implement this idea [24]. Training of indigenes to work as health workers in rural areas in present day Nigeria will be of good effect and this may enhance retention since it will involve the community, thus encouraging their participation and ownership of the health facilities and the services rendered. Community participation had been identified as one of the principles of primary health care system which is the foundation of the national health system in Nigeria [25].

## 5. CONCLUSION

There is a disparity in distribution of public health workers between the rural and the urban areas in favour of the urban. Since the recruitment pattern of health workers is similar in the study area it indicates that the possibility of reducing this imbalance is high. Measures like provision of incentives to rural health workers and provision of social amenities in the rural area will be of

good effect. Also there is need to employ indigenes to work in rural health facilities and the possibility of locating training centers for health workers in the rural area should be considered.

### ETHICAL APPROVAL

Ethical approval for the study was obtained from the Health Research and Ethics Committee of University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu. The health workers were required to sign on a written informed consent form before the interview and the nature of the study and their level of participation were well explained to them. Participation in the study was voluntary and participants were informed that there will be no victimization of anyone who refused to participate in the study or who wished to discontinue after providing consent.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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