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Eye Care Workforce Availability in Enugu Urban, Southeastern Nigeria: a cross-sectional survey

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Running Title: Eye care workforce availability.

ABSTRACT

BACKGROUND: Availability and distribution of appropriate eye care manpower are fundamental parameters for realization of the goals of VISION 2020. Periodic evaluation of these parameters is important in the journey towards achieving these goals.

Objectives: To determine the availability and distribution of human resources for eye care delivery in Enugu Urban, Southeastern Nigeria.

METHODS: Design: cross-sectional descriptive survey; Setting: all public and privately owned eye care facilities in Enugu Urban, Enugu State, Southeastern Nigeria; October 2006. The Health map of Enugu Urban and the Hospital register of the Public Health Department of Enugu state Ministry of Health were used to identify the eye health care facilities in Enugu Urban. A structured, pre-tested, researcher administered questionnaire was used to capture data on demography, cadre, and distribution of the eye care personnel in these facilities.

Relevant population data was obtained from the Enugu Regional Office of the National Population Commission.

Descriptive statistical analysis was used to generate percentages and proportions.

Eye care personnel to population ratios were calculated and compared with the World Health Organisation recommendations (WHO).

RESULTS: Out of Enugu State's population of 3,262,496, Enugu Urban accounts for

706,865(21.7%).The population of Enugu Urban is distributed between the three component Local Government Areas comprising Enugu-North [218,349(30.9%)], Enugu-South [210,422(29.8%)] and Enugu–East [278,094(39.3%)]. There are 45[public= 31(68.9%); private:=14(31.1%)] eye care facilities employing 252 [public: 226(89.7%); private: 26(10.3%)] eye care workers aged 18– 63 (mean =36.1years,SD =2years) comprising males [36 (14.3%)] and females [216(85.7%)] giving male to female sex ratio of 1:6. Available eye care workforce is unevenly distributed between Enugu-North [128(50.8%)], Enugu-South [65(25.9%)] and Enugu- East [59(23.4%)] Local Government Areas.

CONCLUSION: By WHO recommendations, there is excess eye care workforce in Enugu urban. However, the available eye care workforce is unevenly distributed. This mal-distribution constitutes a major barrier to uptake of eye care services. Urgent health policy modifications are needed to reverse this mal-distribution.

Keywords: Eye care, workforce, availability, Enugu, Nigeria.

BACKGROUND

Primary Eye Care (PEC) is the provision of essential, affordable, accessible, practical, and sustainable eye health care to the general population¹. PEC delivery utilises the horizontal integration matrix model proposed by World Health Organisation (WHO) to incorporate PEC programmes into the existing Primary Health Care (PHC) structure^{1,2}. Eye care workforce is the totality of individuals who are directly or indirectly involved in the promotion, protection, and improvement of eye health of the population³. Eye care manpower has been identified as the bed-rock of VISION 2020 – the right to sight – hence the need to deploy appropriate, adequate, evenly distributed, and satisfactorily motivated/remunerated eye care workforce to actualize the objectives of the programme⁴. In addition to manpower, money, mobility, facilities (fixed & mobile) and management are the other complementary requirements for effective delivery of comprehensive eye care in the spirit of VISION 2020⁵.

Eye care could be promotive, preventive, curative, or rehabilitative; the delivery could be institution based, community based or both. Three categories of eye care personnel – fulltime eye care workers, integrated eye care workers, and community based eye care workers (medical & non-medical) participate in delivery of eye care⁵.⁶ The route of delivery and the type of eye care delivered are determined by public

health need, desired health impact, available resources, and the prevailing socio-economic environment ⁶.

To achieve the set objectives of VISION 2020, WHO, in 1997, recommended that by the year 2000, the Sub-Saharan Africa should have the following eye care personnel to population ratios: 1 ophthalmologist per 500,000 people, 1 dispensing optician or optometrist per 500,000 people, 1 cataract surgeon/Diplomate ophthalmologist per 250,000 people, 1 ophthalmic medical assistant or ophthalmic nurse per 500,000, 1 primary eye care trainer per 1 million people ⁷.

During periods of economic reforms as currently obtain in Nigeria, adopted fiscal measures often cut down budget and restrict staff recruitment/development in all public sectors health sector inclusive⁸. These measures impact negatively on the health sector as quality of care is often compromised. Eye care delivery suffer most during periods of economic distress as scarce health funds are channeled into treatment of life threatening conditions at the expense of eye care delivery ^{3,5}. These adverse changes in the health care delivery occasioned by limited financial resources have necessitated the need for private sector incorporation into health care financing in both developed and developing countries ^{9, 10,11}.

Periodic audit of the available eye health care manpower against the WHO recommendation is invaluable in maintaining an unblinking focus on the realization of the goals of VISION 2020.

Consequently, this study intended to determine the availability and distribution of human resources for eye care delivery in Enugu urban, Southeastern Nigeria.

The findings of this study, it is hoped, will assist the government and health policy formulators in monitoring, and planning for further interventions in their existing prevention of blindness programmes^{9,12}.

MATERIALS AND METHODS

Enugu urban is the administrative capital territory of Enugu State, one of the thirty six states of the Federal Republic of Nigeria. Administratively, Enugu state is divided into seventeen Local Government Areas (LGAs). Of these, three Local Government Areas comprising Enugu-North, Enugu-South and Enugu- East make up Enugu urban. Enugu-East LGA has a comparatively significant rural component as it was only recently carved out from the periphery of Enugu-North LGA.

Geographically, Enugu State lies approximately between longitudes 6.30⁰E and 30⁰E and between latitudes 5.30⁰N and 6.50⁰S. Enugu State has a population of 3,262,469 and Enugu urban 706,865. The urban population is distributed between the three component Local Government Areas thus: Enugu-North –218,349, Enugu-South – 210,422 and Enugu-East –278,094¹³.

Enugu State is located in the tropical rainforest climatic region with patches of derived savannah. There are two seasons in the year (rainy and dry seasons) with annual rainfall of 150-203cm¹⁴. The urban population is predominantly ethnic Ibos

although immigrants from other parts of the country also reside in the state. The urban population is made up of mainly civil servants, traders, artisans and students/pupils of the various educational institutions in the state capital.

This is a descriptive cross-sectional survey of public and private eye health care facilities in Enugu urban conducted between January and June 2006.

The Health map of the three urban Local Government Areas of Enugu- North, Enugu-South and Enugu- East obtained from their respective health departments provided information on the location of available eye health care facilities.

Data on private facilities was obtained from the Registry of private hospitals in the Public Health Department of Enugu State Ministry of Health.

The State's Public Health Department also provided further information on cadre disposition of eye care personnel working in public or private eye care centres in Enugu State outside Enugu urban.

Relevant population figures based on projections from the 1991 census were obtained from the Enugu Zonal Office of the National Population Commission.

Each eye care facility was visited. Data on age, sex and cadre of eye care personnel in each facility was captured using a structured, pre-tested, researcher administered questionnaire.

Ancillary staffs like drivers, laboratory workers, security men and non-permanent staffs including interns and those doing their mandatory post graduation one year

National Youth Service were excluded from the study.

Data management: Data was analyzed using the Statistical Package for Social Sciences (SPSS) software programme to generate percentage and proportions.

Eye care personnel to population ratios were calculated and compared with WHO recommendations for VISION 2020.

Ethics: Prior to commencement of this study, ethical clearance was sought and obtained from the Public Health Department of Enugu State Ministry of Health and the Enugu Zonal Office of the National Population Commission.

RESULTS

The population of Enugu State is 3,262,496. Of this, Enugu urban has a population of 706,865 (21.8%). The urban population is distributed among the three component Local Government Areas as follows: - Enugu-North LGA [218,394(30.9%)], Enugu-South [210,422(29.8%)] and Enugu-East [278,094(39.3%)]

There are 45 eye health care facilities consisting of 31 (68.9%) public, and 14 (31.1%) private facilities. Of the 31 public centres, 2 (6.4%) are tertiary, 4(12.9%) are secondary and 25 (80.7%) are primary level eye care centres.

Facility distribution by LGAs showed Enugu -South- 20(44.4%), Enugu-North -17 (37.8%) and Enugu -East- 8(17.8%). The only two available tertiary eye care centres are located in Enugu- North LGA.

There were 252 eye care workers consisting of 26(10.3%) privately employed and 226 (89.7%) public employees. Of these, 36 (14.3%) were males and 216 (85.7%) females giving a male to female ratio of 1:6; their age range was 18-63 (mean=36.1,SD= 2.0years). The Age and sex distribution of workers is shown in Table 1.

The distribution of staff by cadre and LGA is shown in Table 2.

The eye care personnel to population ratios compared with WHO recommendations is shown in Table 3.

No ophthalmologist (fellow or diplomate), cataract surgeon or ophthalmic nurse works either in public or private sector in Enugu State outside Enugu urban while 4 optometrists are in private practice outside Enugu urban.

DISCUSSION

By WHO recommendations for Sub-Saharan Africa, Enugu urban and Enugu State have excess supply of eye care workforce ⁷. However, the existing gross mal-distribution of the available eye care personnel amongst the three component LGAs in Enugu urban, and between Enugu urban and her rural population is a cause for serious public eye health concern. Unfortunately, this mal-distribution also affects the private health sector. This runs contrary to the fundamental principle of fair and even distribution of available human resources for eye care delivery ³.

The reasons for the observed mal-distribution could be social, economic or political. Similar mal-distribution pattern of available eye care manpower have been reported elsewhere from other developing countries like Nigeria^{3, 8,15-19}. Nwosu²⁰, Quarcopome²¹, Katung²², Abiose²³ and Eze et al²⁴ had earlier spotlighted similar trends in the distribution of available eye care workforce and highlighted the resultant problems of economic and geographic barriers to uptake of eye care if not urgently addressed. The observed cadre distribution of the eye care workforce conforms with the WHO recommended health pyramid structure where low cadre workers are more numerous and occupy the base while high cadre workers are fewer and located at the apex of the pyramid^{1,7}. This observation agrees with various ophthalmic manpower survey results previously reported^{13,19,23}.

Consistent with the trend worldwide, the sex distribution of available eye care workforce shows a preponderance of females over males (85.7% Vs14.3%), with male to female ratio of 1:6. This is in keeping with WHO report that majority (70-80%) of the world's health workers are females¹⁸. This has negative implications for workforce mobility since married females, in Africa, are less mobile than their male counterparts due to their gender-related domestic functions.

The age distribution shows that majority (62.3%) of the workers are 40 years or less implying a long term temporal stability of the available eye care workforce since a

large proportion of eye care personnel still have many productive working years ahead of the mandatory retirement age of 60 years.

CONCLUSIONS AND RECOMMENDATIONS: Enugu urban has adequate eye care manpower necessary for delivery of essential eye care. Unfortunately, there exists a worrisome mal-distribution of the available eye care manpower resource in Enugu urban, and between Enugu urban and the rural population of Enugu state .This is a fundamental departure from the principle of equal/universal access to eye care as enshrined in the VISION 2020 charter.

A case is hereby made for immediate commencement of periodic staff audit of all eye care workers in Enugu urban to redistribute the available human resources for eye care delivery.

This audit should extend to the state and national levels to establish the fairness or otherwise of the distribution of the available eye care manpower resource in Nigeria. Furthermore, the training of middle level ophthalmic manpower i.e. cataract surgeons and diplomate ophthalmologists should be initiated and sustained. This, it is hoped, will further bridge the observed mal-distribution gap. Finally, fair and even distribution of available eye care manpower resource should have overriding influence over other factors during considerations for job postings in the public health sector.

AUTHORSHIP: BIE conceptualised the research, designed the study protocol, participated in data collection, analysis /interpretation, and wrote the initial draft of the manuscript. FCMO participated in data collection, analysis /interpretation, made substantial intellectual input into the manuscript, and approved the final version.

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LIST OF TABLES

TABLE 1: Age and sex distribution of eye care Workers

Age (Years)	Sex		Total
	M	F	
10 – 20	1	15	16
21 - 30	1	55	56
31 – 40	11	74	85
41 – 50	10	34	44
51 – 60	11	34	45
61- 70	2	4	6
Total	36	216	252(100)

TABLE 2: Cadre and distribution of eye care workers by LGA

Cadre of Personnel	Enugu North n(%)	Enugu South n(%)	Enugu East n(%)	Total (Enugu urban) n(%)
Ophthalmologist				
-Fellow	13(76.5)	4(23.5)	0(0.0)	17(100)
-Diplomate	0(0.0)	0(0.0)	0(0.0)	0(100)
Cataract Surgeon	0(0.0)	0(0.0)	0(0.0)	0(100)
Optometrist	9(50)	8(44.4)	1(5.6)	18(100)
Ophthalmic nurse	25(100.0)	0(0.0)	0(0.0)	25(100)
Medical Officer	6 (50)	4(33.3)	2(16.7)	12(100)
Staff nurse/midwife	26(50)	13(25)	13(25)	52(100)
Community Health Officer (CHO)	7(36.8)	6(31.6)	6(31.6)	19(100)
Community Health Extension worker	36(34)	30(28.3)	37(34.9)	106(100)
Primary eye care Trainer	6(100)	0(0.0)	0(0.0)	6(100)
Total (%)	128(50.8)	65(25.8)	59(23.4)	252(100)

TABLE 3: Eye care personnel to population ratios by LGA compared with WHO recommended ratios.

	Enugu North	Enugu South	Enugu East	Total (Enugu Urban)	WHO Recommended Ratio
Population	218,349	210,422	278,094	706,865	-
Ophthalmologist	1:16,796	1:52,605	0:278,094	1:41,580	1:500,000
Optometrist	1:24,261	1:26,302	1:278,094	1:39,270	1:500,000
Ophthalmic Nurse	1:8,733	0: 210,422	0: 278,094	1:28,274	1:400,000
Primary Eye Care Trainer	1:36,391	0: 210,422	0:278,094	1:117,810	1:1,000,000
Community Health Extension worker	1:6,065	1:7,014	1:7,516	1:6,862	1:1,000,000

ACKNOWLEDGEMENT

We acknowledge the assistance of the staffs of all eye care centres in Enugu urban, National Population Commission Enugu, Enugu state Ministry of Health and Health Departments of Enugu-North, Enugu-South and Enugu-East Local Government Areas during the course of this study.