Original Article

Human Resources for Health and Access to Primary Health Care in Rural Areas of Cameroon : Case of Okola Health District

Les ressources humaines pour la santé dans un district de santé rural du Cameroun: Le cas du district de santé d'Okola

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RÉSUMÉ

Introduction. Notre étude visait à décrire la situation des ressources humaines pour la santé au Cameroun, et en particulier dans un district rural de la ville politique, afin de décliner les interventions visant à un meilleur accès aux soins pour la population en général. **Méthodes.** Les données de l'unité d'information sur la santé, ainsi que les rapports officiels disponibles auprès du ministère de la Santé publique, ont été examinés afin de mettre en évidence les caractéristiques des ressources humaines pour la santé dans le district sanitaire d'Okola. **Résultats.** Okola District Health compte 103 agents de santé pour une population d'environ 56 691 habitants, avec une densité estimée à 18,2 agents de santé pour 10 000 personnes. Les agents de santé sont principalement des ambulanciers, suivis des infirmières. Les sages-femmes et les dentistes sont inexistants dans tout le district sanitaire. Le déploiement d'agents de santé, notamment de dentistes, de sages-femmes et d'infirmières, reste la principale intervention pour améliorer l'accès des personnes aux soins de santé. En outre, une bonification substantielle de 75% du salaire de base et l'amélioration des conditions de travail ont été révélées comme les interventions ayant le plus d'effet sur l'attraction et le maintien en poste des agents de santé en zone rurale. **Conclusion.** les réformes des systèmes socio-économiques et de santé, y compris l'introduction d'un bonus de séparation (rural), l'amélioration de la plate-forme technique des établissements de santé, le suivi stratégique du personnel de santé et la décentralisation du recrutement d'agents de santé, semblent être des interventions cela peut avoir des effets positifs sur le recrutement et la rétention d'agents de santé dans les zones rurales et isolées, ce qui est fondamental pour améliorer l'accès aux soins de santé. Ces interventions doivent être prises en compte dans l'approche "la santé dans toutes les politiques".

ABSTRACT

Introduction. Our study aimed to describe the situation of human resources for health in Cameroon, and especially in a rural district of the political town in order to decline interventions for better access to care for the general population. **Methods.** The data of the health information unit, as well as the official reports available from the Ministry of Public Health, were examined in order to highlight the characteristics of human resources for health in Okola Health District. **Results.** Okola District Health account 103 health workers for a population covered about 56 691 inhabitants, with an estimated density of 18.2 health workers for 10 000 people. Health workers are mainly paramedics, followed by nurses. Midwives and Dentists are nonexistent in the whole Health District. Deployment of health workers including dentists, midwives and nurses, remains the primary intervention to improve people's access to healthcare. In addition, a substantial bonus of 75% of the base salary, and the improvement of working conditions had been revealed as the interventions having the most effect on the attraction and retention of health workers in rural area. **Conclusion.** Socio-economic and health system reforms, including the introduction of a separation (rural) bonus, the improvement of the technical platform of health facilities , the strategic monitoring of health workforce and the decentralization of recruitment of health workers, appear to be interventions that can have positive effects on attracting and retaining health workers in rural and remote areas, which is fundamental to improving access to healthcare. These interventions must be considered in the " health in all policies " approach.

INTRODUCTION

Improving the health coverage of a population depends on the presence, accessibility, acceptability and quality of health workers [1]. Human Resources for Health (HRH) has thus been identified as the pillar and essential link in the health system, for the implementation of health services interventions [2]. The World Health Organization (WHO), in its report on global health in

2006, highlighted the magnitude and urgency of the shortage of HRH [3]. Thus, out of the 57 countries identified in HRH crisis in the world, 36 countries were in African Region.

In Africa, although most of the population resides in rural areas, only 38% of health workers serve rural areas [4]. WHO has estimated the global need for HRH by 2030 to 54 million health workers, of which 51% only for the African Region [2]. As a result, without the implementation of specific interventions, many low-and middle-income countries facing a shortage of HRH could jeopardize the actions already taken to achieve the Sustainable Development Goals (SDG) and Universal Health Coverage (UHC) by 2030 [4].

Cameroon is no exception to this shortage of HRH [5]. In addition to the difficulties faced by the Cameroonian health system, there is a shortage of qualified HRH and their unequal geographical distribution. The case of Cameroon reinforces the need for evidence-based policies to reverse the HRH crisis. Thus, in this article, we briefly described the context of the country and data from Okola Health District (HD), and used official data from the National Health Information System (NHIS) available to analyze various elements of the context. and the health system, which may explain this shortage of HRH and their uneven geographic distribution in Okola HD.

METHODS

General context

Cameroon is a country located in Central Africa with an area of 475,650 km² of which 466,050 km² are of continental area and 9600 km² of maritime area. Its population is estimated at 24,348,251 inhabitants according to the latest statistics of the Central Bureau of Censuses and Population Studies (BUCREP, 2010). [6]. The country has 10 regions, divided into 58 departments, 360 municipalities and 14 urban communities. The country is the 1st economy of Central Africa, with a growth rate of 3.8% [7]. The two capitals alone are home to almost 20% of the country's population [8], and 37.5% live below the monetary poverty line, mainly in rural areas and in the northern regions [9].

The current orientations of the Ministry of Public Health (MoPH) are set out in the Health Sectoral Strategy (HSS 2016-2027) [10]. It is a dashboard which sets national health priorities. Recognition of the shortage of HRH as a priority stems from the estimate made during the 2011 general census of health sector staff (RGPS) in Cameroon, which placed the ratio of staff to population at 10.7 (doctor, nurse and midwife) per 10000 inhabitants, well below the WHO standard of 23 staff per 10000 population [11]. This ratio means that health services work with less than half of the health personnel needed to provide essential care.

In Cameroon, there are 3 levels in the health pyramid : the central level, the intermediate level and the peripheral level [11]. At each level, there are healthcare structures, administrative structures, dialogue structures. The peripheral level, which includes the Health District, is the operational level of the Cameroonian health system with, on the one hand, as care structures : the District Hospital (HD), the Subdivision Medical Center (CMA) and the Integrated Health Center (CSI) for the public sub-sector ; and clinics and health centers for the private sub-sector [11]. The health map of Cameroon currently has 201 health districts and 2387 hospital training for the public sub-sector, including : 07 general hospitals of the 1st category, 08 central hospitals of the 2nd category, and 14 regional hospitals of the 3rd category [12].

At the peripheral level, CSIs are planned to cover the needs of rural populations, currently estimated at 5650 inhabitants / integrated health center [12]. In 2018, there were 1981 integrated health centers of 6th category throughout the country. They offer basic care contained in the minimum package of activities. When it is impossible to provide a healthcare to a patient, he is referred to the higher-level structure which is the CMA. In 2018, there were 234 CMAs of the 5th category throughout the country, including urban and rural areas [12]. HD is the highest structure of the peripheral level; it is also the reference structure of the CMAs. There are currently 189 HD 4th category throughout the territory. Thus, in this article, we are interested in the distribution of HRH in the Okola HD [12].

Presentation of the Okola HD

Okola HD, is located 20 km from the political capital Yaounde. This is a rural health district which has eleven (11) HA of which three HA peri-urban namely: Ngoya HA, Lobo HA and Okola HA. It also has eight (08) rural HA. According to official statistics, Okola HD has 56,691 inhabitants (Table 1) and about 40 public and private health facilities .

Table I : Distribution of key populations in the Okola HD, Okola, Cameroon : 2019.

HD	Health areas	Population	Children 0-59 months	Expected Pregnant women
Okola	Ebougsi	6,869	1,056	251
	Ekekam III	4,904	754	179
	Elig yen	2,038	313	75
	Lobo	3,910	601	143
	Mva'a	5,195	798	190
	Mvoua	4,730	727	173
	Ngoya	8,638	1,328	316
	Nkolpoblo	3,604	554	132
	Nlong	1,937	298	71
	Okola	11,034	1,696	404
	Voua ii	3,832	589	140
Total		56 691	8,712	2,074

This study was a descriptive cross-sectional study, carried out as part of a scientific research Thesis on Human Resources for Health conducted at the University of Yaoundé 1, in Cameroon. The data were obtained from monthly reports of health facilities, aggregated at the Okola Health District (HD) Services by Focal point of the National Health Information Sanitarian (NHIS) in Okola HD. Data

collected have been analyzed by Microsoft Excel 2016. Beforehand, we obtained an ethical clearance **N ° 150 / UYI / FMSB / VDRC / CSD** of the Committee of Ethics and Research in Human Health of the Faculty of Medicine and Biomedical Sciences. Then, we obtained the authorization of Okola District Health Chief for the collection and analysis of the data. Finally, the results obtained have been explained in the light of the available literature and the results of another study conducted in Cameroon [**13**].

RESULTS

Distribution of HRH in the Okola DS

The overall effective HHR was estimated at 103 health workers in Okola HD. In the public sub-sector, the number of health workers was 49 (47.6 %) of the Okola HD total health workforce. The health workforce of the private sub-sector was estimated about 54 health workers in which private religious sector accounted for 37 % of all this workforce. Staff / population ratio was 18.2 Health workers for 10 000 inhabitants. The highest numbers of health workers were seen respectively in the Ngoya health area (HA), Okola health area and Lobo health area (Figure 2). In addition, these HA are closest to the city of Yaoundé, the political capital, and had more than 75% of health workforce working in the HD.
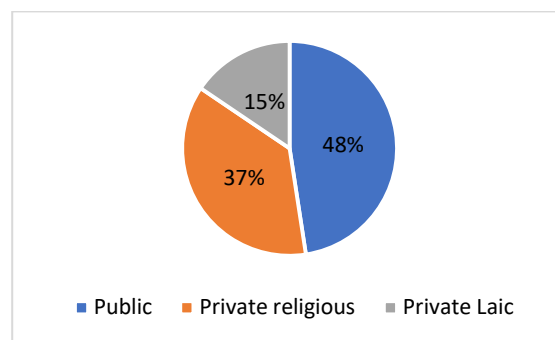

Figure 1 : Distribution of health workforce by type of health facility in Okola DS, Okola, Cameroon : 2019.
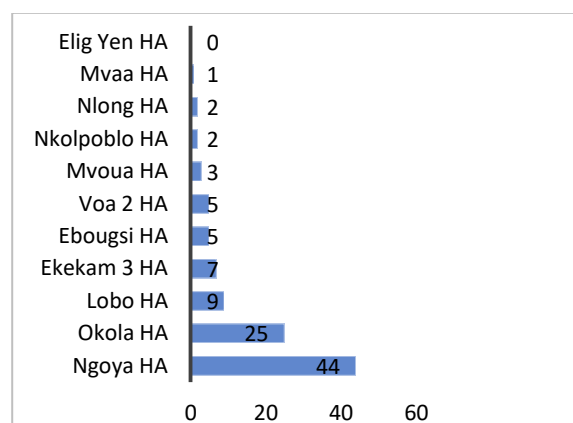

Figure 2 : Distribution of health personnel by health areas of Okola DS, Okola, Cameroon : 2019.

Medical density in the Okola HD

HRH across the Okola HD has been estimated at 103 health workers, for a population covered of 56 691 inhabitants or 18.2 health workers per 10 000 inhabitants. The paramedical staff (laboratory technicians) constitute over two-thirds of the health workforce Okola HD, followed by Nurses accounting for almost 19% (Table II) . The midwives and dental diseases specialists were almost inexistent in all Okola Health facilities. The proportion of physicians, estimated at 1.4 doctors per 10,000 inhabitants, was also very low in the Okola HD as a whole (Table II) .

Thus, the distribution of HRH qualifications by health area, showed a critical shortage of HRH regardless of qualification, accentuated by a preponderance of paramedical personnel and an absence of midwives as well as dentists or oral specialists in the whole Okola HD. Moreover, this shortage is more pronounced in the rural health areas, rather than those bordering the political capital, Yaoundé.

Table II : Distribution of HRH of the public sub-sector in Okola DS , Okola, Cameroon, 201 9						
Health area	**Density of HRH**	**Physician Density**	**Dentist Density**	**Nurses density**	**Density mi dwives**	**Paramedical density**
Ebougsi HA	7.3	0	0	1.5	0	5.8
Ekekam 3 HA	14.3	0	0	2	0	12.2
Elig yen HA	0	0	0	0	0	0
Lobo HA	23	5.1	0	5.1	0.0	12.8
Mvaa HA	1.9	0	0	0	0	1.9
Mvoua HA	6.3	0	0	0	0	6.3
Ngoya HA	50.9	3.5	0	10.4	1.2	35.9
Nkolpoblo HA	5.5	2.8	0	0	0	2.8
Nlong HA	10.3	0	0	0	0	10.3
Okola HA	22.7	1.8	0	4.5	1.8	14.5
Voa 2 HA	13	0	0	2.6	0	10.4
Okola HD	18.2	1.4	0	3.4	0.5	12.9
HA: health area						

Distribution of HRH by level of the health pyramid

Regarding to their distribution by level of the health pyramid, the health workers of the public health facilities of the peripheral level (Health District) were distributed as presented in Table III.

Table III : Distribution of health workers in the public sector by sub-structures of the National health pyramid, Okola, Cameroon, 2019.

Level of the sanitary pyramid	Structure types	Number N = 49	Percentage (%)
	District Hospital	18	(36.7)
Peripheral level	Subdivision Medical Center	4	(8.2)
	Integrated Health Center	27	(55.1)

DISCUSSION

The results of this research show that the HRH are largely deficient in   Okola HD   and that this major shortage is even   more pronounced, with   an irregular distribution throughout   the HD. It   emerged that rural and remote areas, are those which are the most deprived of health workers, which preclude equitable access to Primary healthcare and increase health inequalities in Okola HD. Yet equitable access to primary health care (PHC) is a fundamental step towards Universal Health Coverage (UHC), to which the Cameroonian   health   system   is   firmly focused . Moreover, health professionals such as midwives and nurses which are the largest health workforce in the world [**14**] are virtually nonexistent for years   many   health   areas and health facilities, compromising the chances of survival for mothers, newborns and children in these rural areas. Yet the impact of good coverage of nurses and midwives   in   terms   of   adequate   numbers and geographical distribution is well established, indeed, association has been found between the maternal mortality newborn and child, and the ratio of nurses [**15**]. The analysis of the factors related to this shortage and the unequal distribution of HRH in the Okola HD should be the target of future interventions or HHR management policies to address this issue.

Understanding the shortage of HRH

The Cameroonian health system has fluctuated markedly by the economic crisis of the 80s and 90s, which led to a quantitative deficit of HRH in the long term and increased by the constant demographic evolution during this period until 2011 [**11**]. This economic crisis has led to a decline in the salaries of civil servants, the freeze on recruitment, the closing of certain training cycles for health personnel and the demotivation or even the emigration of many health personnel [**11**]. professional emigration, a study conducted in 2008 had already highlighted a ratio of more than 0.4% of Cameroonian doctors who emigrated abroad with main destinations : France, Belgium and the United States of America [**16**]. To date, this professional emigration of health personnel persists, which contributes to further impoverishing the human capital available at the national level. In addition, recruitment in the public sub-sector does not depend on the MoPH but is rather the exclusive

prerogative of the Ministry of Public Service and Administrative Reform. In this logic, it should be noted that the number of health personnel recruited in the public service is more dependent on budgetary availability than on the expression of the needs formulated by the beneficiary structures.

Understand the unequal distribution of HRH

In the results, there was a preponderance of health workers in peri-urban health areas in the capital, while rural and remote areas lacked HRH. Indeed, the assignments of health workers in Cameroon are made according to the needs expressed by the user structures, according to the wishes of mobility formulated by the staff, but also for the purposes of family groupings [**11**]. Thus, to analyze this unequal distribution of HRH at the national level, it is important to evaluate the contextual factors.

The management of HRH in Cameroon

A hyper centralization of the management of human resources   and   a   lack   of   transparency   at the institutional level are factors contributing to the bad distribution of HRH as highlighted in a study conducted in 2013 [**17**]. Indeed, most doctors in Cameroon practice in urban areas and more than half of the health staff operates in the three regions where are located the largest cities   of   Cameroon   (Yaoundé,   Douala   and Bafoussam). For only 18% of the population, the Central region (including Yaoundé) hosts nearly 40% of doctors. Indeed, most health workers for financial reasons and infrastructural commodities, would seek mainly to be affected in these major urban and administrative cities, which are more developed.

The feminization of HRH

According to official data available, women represent 56% of health workforce in Cameroon, against 44% for the male gender [**11**]. It is therefore common to note that many of these health workers make assignments for family grouping purposes by choosing large metropolises. These allocations could easily help to depopulate health facilities in rural and remote areas [**11**].

Moreover, the feminization of HRH could contribute to worsening the supply shortage due to differences in preferences (choice of medical specialty, choice of job sites, career choices) and thus affect their productivity. Several studies have also reported on this trend towards the feminization of health workforce [**18,**

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19]. This trend towards the feminization of medical professions now requires better planning of HRH.

Health Policies for Health Workforce

Health policies to improve HRH vary from country to country, and from one context to another. In general, there is no single policy or intervention to address the shortage of HRH, it is most often combined, and targets identified contributing factors.

For example, in some Asian countries such as Cambodia, Vietnam, and China, rural placement bonuses and continuing education opportunities have proven to be the most effective HHR retention interventions [**20**]. In China, the government set up a special medical education program that offered 5,000 scholarships to eligible candidates. The latter benefited for 5 years from a free medical education grant and a monthly allowance in return for 6 years of compulsory service in rural areas [**21**]. After evaluating this program, the results revealed that 90.7% of graduates had joined the contract and worked in rural centers after graduation [**21**]. Similarly, in Kenya, a study of motivational factors and retention of health workers revealed that a strategy including wage compensation, associated with training and career opportunities for rural staff was the one considered most appropriate to promote retention [**22**].

In Cameroon, according to a study by Robyn et al, on HRH retention strategies in rural areas, the doctors and nurses surveyed stated that they could make their choice of assignment in a rural and/or remote area : in case substantial bonuses of 75% of their base salary, and in case of improvement of hospital infrastructures [**13**]. Indeed, the health worker surveyed, want to receive a premium of removal to practice in rural and / or remote areas. This policy has already had to bear fruit in several other countries, but without it being implemented in a singular way. Indeed, it was almost always a set of interventions including on the one hand, financial incentives and on the other hand, non-financial incentives.

Regarding infrastructural conditions, rural hospitals, which are often depopulated and not well visited by the population, sometimes fall into a state of disrepair and lack essential materials as revealed in some reports [**12**]. Ultimately, these results suggest that the technical platform through an adequate, functional framework and the guarantee of uninterrupted supplies are fundamental elements for the choice of the place of practice of a health staff.

Areas of intervention

Resolving this shortage in HRH will require a combination of proven effective interventions and evidence from systematic reviews. We thus dwelt on three (3) main interventions, considering results from our documentary research :

a) Postdoctoral Fellowship Program

This postdoctoral fellowship, which has been successful in China, has helped 90% of doctors stay in rural areas for 5 years after completion of their training. With the strong propensity for specialization leading to the non-compliance with the prescription of the two years of compulsory exercise, the granting of specialization scholarships for general practitioners who have lasted at least three years in a rural area, could to retain physicians in these underserved areas.

(b) Recruitment of rural health workers to the public service

It might be possible to consider facilitating the granting of the status of staff member for nurses and midwives who work in rural areas for several years. This would, on the one hand, keep them in these underserved areas and, on the other hand, further motivate health workers to practice in rural areas.

c) Infrastructure development (technical, housing, water, and electricity)

Improved infrastructure base for health personnel, and the technical facilities were selected in many studies such as interventions to attract and retain health workers in rural areas [**13, 23**].

CONCLUSION

Okola HD is suffering from a major shortage in terms of HRH. Beyond this shortage, low HRH is only available in peri-urban areas to the detriment of rural areas, thereby precluding equitable access to care for rural populations. Factors such as : the socio-economic crisis, the centralization of recruitment, as well as the feminization of the medical professions, are partly dependent on the current situation. On the other hand, policies based on the addition of separation bonuses and the improvement of the technical plateau have been identified to be the most likely to have positive effects on the attraction and retention of rural areas.

Availability of data and material

Data from this study are available from the corresponding author upon reasonable request.

Contribution of the authors

MMRH : preparation of the literature review, data collection **,** analysis and interpretation, writing the first version of the manuscript **; MMJE** : coordination of research, analysis and interpretation, participation in the final revision of the manuscript **; MNT, MMRH** : proofreading and approval of the final version of the manuscript **.**

Ethical considerations

This study was approved by the Institutional Ethics and Research Committee of the Faculty of Medicine and Biomedical Sciences resulting in the issue of Ethical Clearance **No. 150/UYI/FMSB/VDRC/CSD** . Our research decor includes a t been approved by Okola of district health services on behalf of the Ministry of Public Health.

Conflicts of interest

The authors state that there is no conflict of interest.

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