

FACTORS INFLUENCING HEALTH WORKFORCE RETENTION IN RURAL LIBERIA

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58th Master of Public Health/International Course in Health Development

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A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health

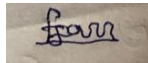
by

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ABSTRACT

BACKGROUND: Liberia, like other Sub-Saharan African Countries, has poor retention of health workers in rural areas. Most people who need care live in rural areas where few health workers are. Understanding health worker retention plays a key role in achieving universal health coverage. However, little evidence is known as to why HCWs do not retain in Liberia.

OBJECTIVES: The objective of this study is to investigate factors influencing health worker retention in rural Liberia and SSA and examine interventions from findings to make recommendations for policymakers, researchers, and practitioners to enhance health workforce placement and retention.

METHODOLOGY: This research is a literature review. The Lehmann et al. 2008 conceptual framework was used to analyze the different environmental factors such as individual, local, work, national, and international environments. Only Clinical cadres of health workers such as Nurses, Doctors, and Midwives are included in this study.

FINDINGS: The results of this study found that work-related factors, including salaries, were considered most important to HCWs, and age, marital status, and gender included among the individual elements were considered less important. However, they inter-relate with each other. Some interventions have proven effective that combine strategies to address the different environmental factors impacting retention. They are compulsory rural services and have rural background and training institutions in rural areas.

CONCLUSION: The Liberian government has attempted to improve the retention of health care workers (HCW), but its failure to respond to these factors effectively has contributed to the poor retention of health workers in rural areas.

RECOMMENDATION: Government should develop a rural retention policy with strategies to implement interventions.

KEYWORDS: Health workers, retention, rural areas, Liberia, Sub-Saharan Africa

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ABBREVIATION

BPHS	Basic package of health services
CHWs	Community Health Workers
EPHS	Essential package of health services
GOL	Government of Liberia
GP	General Practitioner
HCW	Health care worker
HIC	High Income Countries
HRH	Human Resource for Health-
LMIC	Low- and Middle-Income Countries
MMR	Maternal Mortality Rate
MOH	Ministry of Health
NGO	Non-Governmental Organization
NMR	Neonatal Mortality Rate
OIC	Officer in Charge
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa
USD	United States dollars
THE	Total health expenditure
TTM	Trained Traditional Midwives
UHC	Universal Health Coverage
WHO	World Health Organization

KEY DEFINITIONS

Employee Retention: refers to an organization's effort to support and create a conducive environment for its staff to remain in the organization and not leave (1).

Push factors: refer to factors that enable a person to leave a place or escape from a situation (2)

Pull factors: refers to factors that attract people to move to a place (2)

Hardship allowance: refers to an extra amount of money given to an employee for working in an area that is unpleasant to live and work in (3).

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INTRODUCTION

The health workforce is the backbone of the healthcare system. Therefore, adequate health care workers (HCW) must be available in all countries to achieve good health outcomes. Although there are shortages of HCWs worldwide, sub-Saharan Africa (SSA) is mainly affected. Also, health workers are primarily situated in the urban areas than the rural areas, thus leaving the rural areas disadvantaged.

Liberia is one of the worst sub-Saharan African countries that are greatly affected by the shortage of health care workers. It is because most HCWs who accept positions in the rural areas are leaving to stay in the urban areas leaving the rural population underserved and challenging to receive essential quality health services.

This thesis topic is of interest to me because I have worked in a rural health facility in Liberia as an officer in charge for five years. So I know what it's like to work under extreme circumstances with many challenges. I also worked in an urban area for three years, so I know how relaxing it can be, free from pressure. I understand well the constraints people go through in rural communities as health care providers, and if measures are not implemented, it will be challenging to retain health workers there. It gives rise to the undertaken of this research to inform policymakers about interventions to improve HCW retention in rural Liberia.

The thesis comprises six chapters. The background of Liberia, which is the area of this study, are discussed in chapter one, while chapter two describes the problem statement and justification. In contrast, chapter three discusses the methodology and the conceptual framework. The results or findings of the literature review and interventions are described in chapter four, while chapter five analyzes the discussions of the pieces of literature. Chapter six discusses the conclusions and recommendations.

CHAPTER ONE: BACKGROUND OF LIBERIA

Liberia is a low-income country on the west coast of Africa, bounded east by Cote d'Ivoire, north by Guinea, northwest by Sierra Leone, and southwest by the Atlantic Ocean (4). It is divided into fifteen counties, or 136 districts, of which 100 districts are considered rural within the country's five regions which are shown in the diagram below (5). Liberia's land surface area is 111,370 km², and the territorial water estimate is 22,000 km² (6)



Figure 1 Map of Liberia indicating the five regional divisions.(5).

1.1 Demography and Socio-Economic Situation of Liberia

In 2020, Liberia's population was estimated to be five million, with an annual growth rate of 2.4% (5). Of the total population, females have about 49.71%, with a total fertility rate of 4.83 children per female, with rural women having more children than urban women (7). An estimated 60% of Liberians live in rural areas (8). The youth comprise 44.5% below the age of 15, with a life expectancy of 64.5 years for men and women (9)(7). The population density is 127 per km²; because of this, Liberia is ranked 134th in the world. The median age is nineteen years (10). Liberia is an impoverished country despite its being rich in natural resources. Approximately fifty percent of its population live below the global poverty line (less than 1.25 USD per day (6) (10).

The literacy rate in Liberia is disproportionate, giving males (62.4%) being more educated than females (32.4%) (9). Rural women in Liberia having more children is closely associated with the high illiteracy rate of females in that region. Only forty-six percent of rural women are educated compared with seventy-eight percent of urban women (9). In addition, a study from Ghana has shown the relationship between uneducated women and bearing more children, leading to increased non-facility-based deliveries. The total fertility rate of women with no education was six children compared with women with high school education which was two (11).

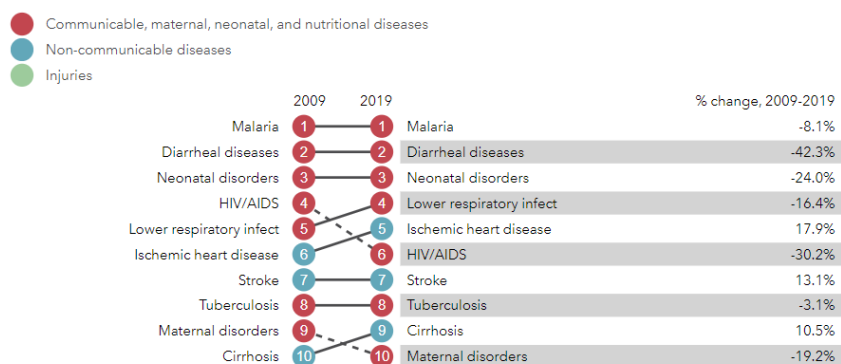
Liberia has suffered 14 long years of war crisis and two years of Ebola outbreak, which is still recovering. It has led to the country's rural population striving to meet their basic food needs leading to 54% of the population feeding on less than 1 USD per day, which is below the World Bank's estimated average of 2 USD per day (12). It is because the government is investing little in agriculture and farm products which are the primary source of livelihood for rural citizens. Only 2% of the government budget is spent on agriculture against the required 10% that should be paid. They also depend on imported commodities for survival (13). The country's gross domestic product (GDP) is one of the lowest (3.6%) as of 2021, which is thought to have increased from 3.0% in 2016 (13).

1.2 Cultural Background

Liberia is an English-speaking country with 16 different indigenous tribes. Ninety-five percent of the population speaks these native languages, and the remaining five percent are Americo-Liberians, commonly called the Congo people. Christians constitute 85% of the population, while Muslims constitute 13% (6). Liberia is a country that holds firmly to its traditional beliefs and cultural practices. Polygamy is legalized in Liberia. Thirteen percent of families are in polygamous homes (14). The ideology of producing more children, especially for the rural population, is because of the firm belief they have that these children will care for them in their old age (15)

1.3 Liberia Health Service Delivery System

Liberia's health system is still struggling with its population's high burden of communicable diseases (16). As figure two below shows, infectious diseases account for the leading causes of death: diarrheal diseases 42.3%, HIV/AIDS 30.2%, malaria 8.1%, and TB 3.1% (17). Whereas neonatal and maternal disorders are 24.0% and 19.2%, non-communicable diseases and injuries account for 16.4%,17.9%,10.5%, and 13.1%, respectively for lower respiratory tract infection, ischemic heart disease, stroke, and cirrhosis (18).



Top 10 causes of total number of deaths in 2019 and percent change 2009-2019, all ages combined

Figure 2 Top ten causes of death in 2009 and 2019 in Liberia (17).

The Ministry of Health (MOH) oversees and governs the country's health service delivery and policy reform. Along with other partners, it formulates the "national health and social welfare policy 2011-2021" (19), which introduces the use of a multi-sectorial approach in delivering equitable and efficient health services to its population (19). The two methods used to provide health services in the country are a "Basic package of health services (BPHS)" and an "Essential package of health services (EPHS)", which includes the social determinants of health like diet, lifestyle, etc. as the difference between the two (20) (21). It has contribute to improve the health of the citizens after the war. The country has also made progress in increasing the number of functional health facilities by 25% from 2008 to 2015 (22). Despite all these improvements, a weakened health system and deficient capabilities have led to inadequate utilization of resources (23). Liberia delivers health care through three-tier levels: primary, secondary, and tertiary. There

are two tertiary hospitals in the country and 85 health centers and county hospitals, and 605 government clinics, as shown in figure three.

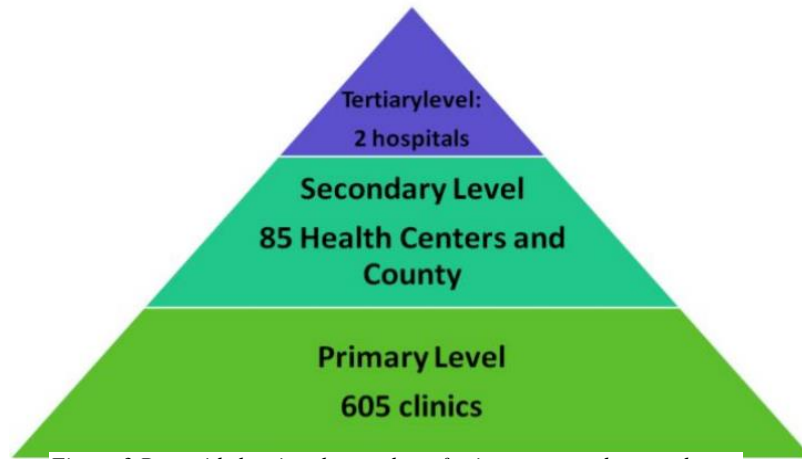


Figure 3 Pyramid showing the number of primary, secondary, and tertiary level public health facilities in Liberia (20)

Most government health facilities are free of charge, and the primary care level comprises the community health system and the clinics. Liberia uses a pool fund system in which MOH through nongovernmental organizations (NGOs) provide services to the public in government health facilities through a public-private partnership approach. Furthermore, in 2016, the country's private-for-profit health facilities offered 32% of the total health services compared to the private-not-for-profit, which contributed 48%, as shown in figure four (22).

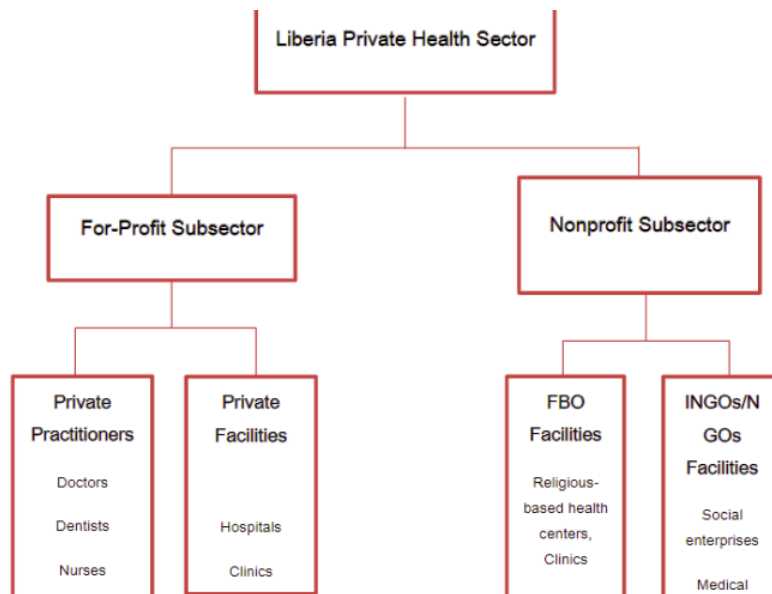


Figure four: organogram showing the private health actors in Liberia (20)

Liberia uses a health management information system known as the DHIS2 to collect data on all services delivered at health facilities although sometimes, feedback can be delayed from health workers (24). Due to the War, Ebola, and Covid-19 outbreaks, Liberia's economy has worsened, and the health system has weakened more. There are not much investment carry out in the health system, and it depends entirely on donors for support which is not sustainable. It has made it challenging for the country to meet its universal health coverage (25). Liberia's total health spending in 2019 was 3billion US\$ rising from 128 million in 2012 and USD 70 million for the national health account budget in 2010. The entire health expenditure (THE) Per capita increased from 32.5 in 2012 to 46.2 in 2020. The total health spending for the government is 12.3% below the 15% target set by Abuja, as seen in the table below (26).

Table 1 Summary of general health expenditure findings from 2007 to 2019

Indicator	2007/2008	2009/2010	2018/2019
Population	3.6 million	3.9 million	5 million 2020
Total real GDP	US \$ 670,000,000	US\$ 932,833,104	US\$ 3.071billion 2019
Total Government Health Expenditure	US\$15,470,944	US\$18,856,0291	219million 2019
Total Institutional Health Expenditure per capital (TIHE)	18.68	32.35	US\$45.42 2018
TIHE as % of normal GDP	9.7	13.6	US\$ 6.7% 2018
Government Health Expenditure as % of Government expenditure	7.73	6.79	US\$ 6.7%
Out of pocket expenditure as a share of current health expenditure	49.8	51.1	US\$ 41.8% 2018
Voluntary Health insurance as a share of current health expenditure			US\$ 6.9% 2018
Private expenditure on health as a share of total health expenditure	60.6	54.4	US\$ 49.6% 2018

1.4 Human Resources for Health

The health workforce forms a significant component of the health system to engage in activities enhancing health. The main health care workers at the primary level are community health workers (CHWs) and trained traditional midwives (TTMs) (27). They mainly serve communities more than five kilometers away from a health facility. Nurses or Physician assistants are the ones that head clinics in Liberia, often known as Officers in Charge (OIC). There are two skilled providers in a clinic (28). The CHWs and the clinics provide services for people between 3,000 to 12,500 per community. They also give health education, promotion, and conduct outreach. The clinics and

health centers treat minor cases and refer major and obstetric emergencies to secondary hospitals (16). County hospitals provide further management from cases referred from these primary levels, serving a population of about 20,000 to 50,000 people. General practitioners (GP) are the ones who head these hospitals, known as medical directors. They also refer to tertiary hospitals for further management if they cannot handle cases (28). The focus of this research is on the clinical cadres of health workers, especially Nurses and midwives, to improve the number of health workers in rural Liberia and move towards achieving universal health coverage (UHC) and sustainable development goals (SDGs) (29). The main issues in the health workforce have been a shortage of health workers, equitable distribution, and no motivation and retention of health workers in rural areas. The uneven distribution of health workers is a problem across the country but is more evident in the rural areas in Liberia. And retaining them is the main problem for MOH (30).

CHAPTER TWO: PROBLEM STATEMENT

The health workforce is a crucial component within the health system because it relies on the force to function and develop well due to their efforts, skills, and availability in carrying out their tasks (31). However, many countries do not have the adequate human resources to deliver essential health care services due to low production, maldistribution, and migration of health workers (31). The health workforce comprises about 59 million fully paid employees globally (32). Nevertheless, there have been many gaps in equitable healthcare workers (HCWs) distribution across and within countries. For this reason, almost half of the people living in rural areas face difficulty accessing quality health services (33). “According to the World Health Organization (WHO), universal health coverage (UHC) cannot be achieved because of the shortage of eighteen million health workers by 2030” (34).

The global demand for skilled HCWs is much higher in Sub-Saharan Africa than in other regions. As per region, high-income countries (HIC) like Canada and the USA have 10% of the global disease burden but have 37% of total HCWs and spend 50% of international funds on health (35). Although Africa contains 18% of the world's population, only 3% of the global health workforce served this population in 2018 (35). Notwithstanding, Sub-Saharan Africa (SSA) accounts for 24% of the worldwide disease burden and remains at risk of frequent epidemics (36). Sub-Saharan Africa has high morbidity and mortality rates of diseases due to the shortage of health workers, and it is anticipated to have more scarcity in the year 2030 (17). Because of this, only 6 out of 46 countries in SSA have met the WHO target of 2.5 HCWs to 1,000 populations (37). Most other countries in the region have a doctor ratio of 0.8 to 1,000 people (37). These figures are far below the WHO recommendation of 1 doctor and 2.5 nurses and midwives per 1,000 populations to achieve universal health coverage and achieve Sustainable Development Goals (38).

Liberia has the lowest HCW to population ratio of 0.5 doctors and 1.8 nurses and midwives per 1,000 populations in the SSA region (39) because the country has suffered severe financial, economic, and social hardship as a post-war country and a post-Ebola endemic country (40). Even the COVID-19 pandemic has affected the health system. Because of this, there is an urgent call for action on the health system and the health workforce (41). Due to the Ebola crisis, 189 HCWs died out of the 375 that got infected, while others retired, and some migrated to the urban areas and

abroad, leaving the rural areas understaffed (42). About three hundred doctors and twenty obstetricians serve five million populations in Liberia (43). Liberia's maternal and newborn mortality rates are (Maternal 661/100,000 live births and Neonatal 58/1,000 live births) (44) compared with Ghana, which has an MMR of 308/100,000 live births and NMR of 28/1,000 live births. With these statistics, Liberia cannot achieve its SDG target of 70/100,000 live births for MMR and 12/1,000 for NMR (45). As shown in the table below, health workers were unevenly distributed by county and occupation type in 2015-2016, as no recent data is available. There is

Table 2 Liberia MOH clinical health workers by county (20)

County	Certified Midwife	Registered Midwife	Nurse Aide	Licensed Practical Nurse	Nurse (BSc and RN)	Physician Assistant	Medical Doctor	EHT	Lab Tech	Dispenser	Pharmacist
Bomi	30	7	54	7	123	10	5	5	7	29	3
Bong	75	22	68	24	225	11	14	6	20	29	6
Cape Mount	24	5	47	2	88	28	4	4	5	38	4
Gbarpolu	14	9	33	4	45	12	2	9	3	18	2
Grand Bassa	21	4	94	3	137	15	3	12	8	12	3
Grand Gedeh	21	22	78	5	74	29	1	9	7	30	1
Grand Kru	14	3	57	7	42	19	2	4	3	11	2
Lofa	78	24	119	12	178	36	15	9	10	21	2
Margibi	33	5	53	7	74	21	9	6	13	26	4
Maryland	19	16	60	4	85	19	3	5	8	33	2
Montserrado	208	23	424	47	567	149	66	36	58	70	33
Nimba	40	12	77	13	194	39	21	23	12	14	5
River Gee	16	5	58	4	66	23	2	5	4	26	1
River Cess	22	19	24	9	65	21	3	6	5	24	1
Sinoe	12	8	55	1	80	16	2	5	1	37	1
Total	627	184	1301	149	2043	448	152	144	164	418	70

Source: Adapted from MOH Health Sector Assessment Report Final 2015-2016

not much change in the number of health workers because the government has not been recruiting but replacing HCWs on the payroll. Health worker to population density differs by county (46). Grand Bassa, Nimba, and Margibi counties have a low population density of HCW in all occupational types. In contrast, Grand Gedeh, Sinoe, Rivercess, and Bomi have a higher density of general services staff than the country's average HCW (46). There are approximately 6,340 clinical skilled HCWs in Liberia, out of which about 50% are in the capital county Montserrado (22).

As a result of this mal-distribution and shortage, there is little access to healthcare and poor-quality services rendered, leading to the high burden of diseases and mortality rates (47). Due to weak human resources for health management capacity at the central Ministry of Health, many departing HCWs remain on the government of Liberia (GOL) Payroll (48). The government of Liberia has tried numerous interventions to address the rural health workforce (HWF) shortage, such as

providing free-of-charge first-level nursing and midwifery schools in most counties and setting a target to employ 15 thousand health personnel by 2021 (49). (20). However, these interventions achieved little success because of a lack of financial resources to employ workers and pay teachers (20). Furthermore, the main issue is maintaining the number of HCWs already employed and retaining them in rural areas. This study aims to investigate the determinants of HCW retention in rural Liberia.

2.2 Justification

The HCW crisis is a public health problem. Therefore, many studies have been done on the factors influencing the retention of HCWs in rural areas in low and middle-income countries (LMIC) like Ghana, Niger, Tanzania, and Kenya (50)(51)(52)(3). These studies attributed the high HCW attrition rate to low incentives, lack of opportunity for promotion, lack of career development opportunities, and absence of a conducive working environment (53)(50). Qualitative research of health professionals in these countries also found the lack of social support and job satisfaction as contributory factors (51)(52)(3).

To achieve universal health coverage and for a health system to function well, adequate numbers of motivated, skilled HCWs must be available, accessible, equitably distributed, and accepted by the population to deliver quality health care services (34). Although 60% of Liberia's population resides in rural areas, the country faces numerous challenges in deploying HCWs and retaining them in rural areas (19)

World bank did a study in Monrovia called the discrete choice experiment in 2010 to characterize nurses' perceptions of rural service in Liberia, which is qualitative research. It found that 75% of the health workers who have not worked in rural areas preferred to only work in rural areas if they are given transport allowance, accommodation and financial incentives (54). However, this thesis aims to review the literature, investigate additional factors contributing to the lack of retention of health workers in rural Liberia, and fill the knowledge gap to inform policymakers about strategies to address the problem.

2.3 General objective

To investigate factors influencing health worker retention in rural Liberia and to inform policymakers, stakeholders, researchers, and the Human resource department about strategies and policies to enhance health workforce placement and retention.

Specific objectives

1. To describe how individual factors impact retention of HCW in rural Liberia
2. To discuss how work-related factor influence retention
3. To examine local environment factors affecting retention of HCW in rural Liberia
4. To identify national environment factors influencing retention of HCW in rural Liberia
5. To make recommendations to inform policymakers, practitioners, and researchers about interventions to follow that will help retain health workers in rural Liberia

CHAPTER THREE: METHODOLOGY

3.1 Research Methods

The method of this research study is a literature review.

3.2 Conceptual Frameworks

Different conceptual frameworks were used to study health workers' retention in remote areas. For example, Henderson and Tulloch's 2008 and Willis Shattuck et al. 2008 frameworks fall short as they only look at one dimension: financial incentives or motivation to influence retention, while Lehmann et al 2008 framework is more holistic (55). This research seeks to draw from evidence and analyze factors affecting the retention of HCW in rural areas in SSA. This thesis will explore interventions as indicated by WHO in areas such as education, regulations, financial incentives, and personal and professional support (56).

This research uses a conceptual framework adopted by Lehmann, Dilemma & Martineau 2008 which discusses influencing factors that attract and retain health workers in remote areas. This framework was chosen because it deals with LMICs and examines the different factors influencing rural health workforce retention. The framework has five divisions: international, national, local, work, and individual. Each component comprises various elements that allow a person to stay or leave the rural areas. It will be done through a literature review to identify these environmental factors interlinked with each other.

Individual factors include age, sex, marital status, and originality. The local environment describes the overall living conditions such as electricity, housing, schools, Internet, transportation, and the level at which one is socially isolated. The work environment discusses the working condition like the infrastructure, career development opportunities, timely medical supplies and equipment, job satisfaction, and supervision. The national environment factor is the governmental factor that enables health workers to work in rural areas and the constraints they face such as war, conflict, social and political conditions, career development, and salary structure. The international environment aspect of the conceptual framework deals with the migration of health workers for better job opportunities in other countries (57).

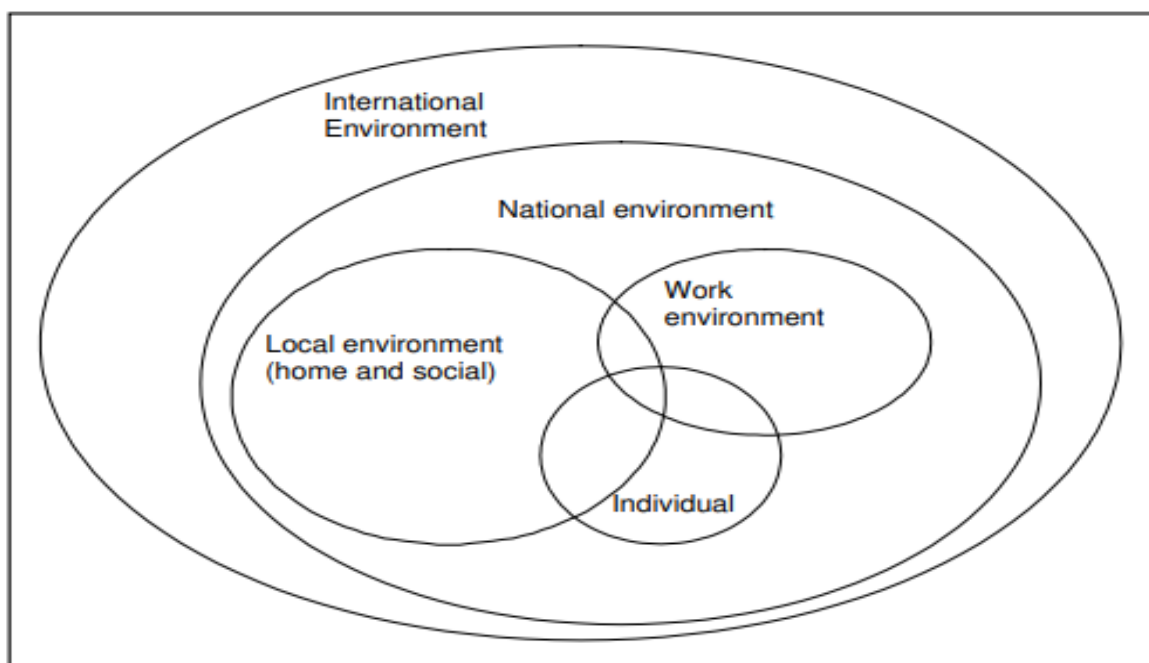


Figure 4 conceptual framework on different environments impact attraction and retention: Lehmann et al. 2008 (57)

3.3 Search Strategy

The search engines used in this research were the VU library, Cochrane library, and its databases, PubMed, Medline, google scholar, and google. Grey literature, MOH reports HMIS, WHO, and peer review literature. The initial search term used was "Retention", "health workers", and "rural areas". Other search terms used to facilitate the search were the attraction, availability, accessibility, and MESH terms, as shown in the search table in Annex 1. The search was also narrowed to Nurses, midwives, physicians, doctors, remote communities, poor settings, Liberia, and Sub-Saharan Africa. Titles of articles were screened to know how relevant they were to the study. The abstracts were examined thoroughly to know if the study was about the retention of health workers in rural areas, especially in SSA countries. After removing duplications from the various search engines, 98 articles were selected for this study.

3.4 Inclusion and Exclusion Criteria

In this research, the analysis included articles published in English only from 2006 upwards. The main report for WHO on human resources for health (HRH) was released in 2006, emphasizing HRH and the increase in publications. In addition, articles were used from 2006 upwards due to the scarcity of published articles in Liberia. This research will only include clinical cadres of health workers such as Doctors, Nurses, and Midwives because they are the focus of scarcity in achieving universal health coverage (UHC). Primary care facilities will also be prioritized in this research, and hospitals will be excluded to reach the underserved populations.

3.5 Limitations of The Study

Liberia has little context-specific evidence on health worker retention in rural areas. Therefore, the findings of this thesis are based mainly on evidence from other countries like Liberia. Excluding literature published in languages other than English using an online search could create an information bias. There is a possibility that unpublished studies are not used that could enrich the research. Using various search engines and carefully examining the methodologies of the articles found reduced the limitation of this study. Furthermore, few studies have been found in Liberia to examine the interventions used for health worker retention in rural areas.

CHAPTER FOUR: RESULTS/FINDINGS

This chapter presents the findings according to the categories of the conceptual framework. It starts with individual or personal factors, local environment or living conditions, work-related factors, and national and international environment. This chapter also includes evidence-based interventions from WHO, sub-Saharan Africa, and Liberia.

4.2 Individual Factors:

(Individual factors include age, sex, marital status, background or origin, and educational level)

As indicated in the literature reviewed, there is no clear association between age and retention in rural areas. However, age can be linked to the ability or willingness to move to another place, and older health workers are less likely to move than younger adults.

According to the Liberia 2011 human resources for health case study report, 75% of young doctors left the country for better job opportunities during its unstable political period and social-economic crisis. Although this evidence seems old, it is still relevant because the socio-economic situation has not improved, and there is no recent evidence on the subject matter (30). Similarly, in Ghana, doctors and nurses between the ages of 20-30 left the country to seek better job opportunities (58). In Malawi, older HCWs are more willing to stay in rural areas than younger HCWs because most aged doctors, nurses, or midwives do not want to forgo their years of building their career, experience, and family to move to an urban area (59).

A study in four rural districts in Tanzania showed that older HCWs 35 years and above were retained more at their post and less willing to leave their jobs than young workers. It is because they were guaranteed job security, pension benefits, and training opportunities in their current positions in rural areas. (60). In South Africa, a study showed that the value of stable jobs enables older HCWs to remain in their jobs and not leave (2). Although there are no age distribution data available for Liberia, the socio-economic, political, and cultural situation for health workers is similar to Tanzania and Ghana. Therefore, it seems that young health workers are leaving rural areas in Liberia.

4.2.1 Gender

Liberia nurses and midwives are mainly dominated by females 70% and 95%, respectively, while doctors (75%), physician assistants (80%), and lab technicians (85%) have more males than females in their professions (61). A 2019 study shows that females in Liberia are unwilling to work in rural areas because of uncondusive living and working conditions, no excellent jobs for their spouses, and no suitable school for their children (62).

Studies in Africa's 2013 HCW labor market state that most females are unwilling to work in rural areas compared to men due to thoughts about safety issues. Family is reluctant to move with them or support their decision due to the social-economic situation in the rural communities (63). Even though women are more in the health sector than men, a Zambian research study found nurses and midwives to be 85 percent of the health workforce but were 25% in the rural areas. Another study in Kenya shows that female health workers form only 30 percent of the health workforce in rural areas (64).

4.2.2 Marital Status

In Liberia, a study showed that female health workers are separated from their spouses to serve in rural posts because there is no better job for them there. So they are not retained in their assigned position but leave to join their spouses in the urban areas (65).

Marriage negatively affects the retention of health workers in rural areas in sub-Saharan African countries. The findings for Liberia are similar to those of the SSA countries. A study done in Niger found that culture cannot permit a husband to follow his wife assigned at a rural post, so most female health workers were not leaving their spouses to go and serve in the rural areas (52). Another study in Sierra Leone shows that separation from family, especially spouses make it difficult for HCWs to retain in rural areas (66). In Burkina Faso, single HCWs had frequent turnovers to getting married and settling with their spouse in the urban areas. On the other hand, female health workers married in rural areas and living with their spouses are more retained (67).

4.2.3 Origin/Background

A study in Liberia shows that nurses working in rural southeastern Liberia mainly originate from that area because of the university. At the same time, the other regions have mixed backgrounds or origins, thus limiting retention (68).

Like Liberia, having a rural background positively affects health workforce retention in SSA countries. A study done in Ethiopia shows that people with a rural background were retained more in rural areas because they were close to their families and had family support (69). Also, a study from Uganda shows that HCWs who originated from rural areas tend to be retained because of social support from their families and be involved in family issues (70).

4.2.4 Educational Background

In Liberia, HCWs with low educational levels are more retained in the rural areas. A study shows that 75% of health workers serving rural clinics have only associate degrees, while 90% of resident doctors only obtained their first degrees as general practitioners (71).

Like the Liberia context, higher educational background contributes to lesser retention of health workers in rural areas of Sub-Saharan African countries. It is evident in the vast shortage of specialists and doctors in rural areas rather than urban areas because of the excellent career opportunities in the city to earn extra income (63). A study done in Tanzania shows that HCWs with low educational backgrounds stay longer in rural places than those who are more highly educated (60). Research done in Nigeria shows that Primary care nurses must give up certain services above their level because no doctor was present (72). A study from Zambia indicates that there are few doctors and specialists in the rural areas because of low financial perception in the rural places and fear of being isolated socially (64).

Summary

The individual factors discussed in this section showed that females are less willing to stay in rural areas than males. Although there is limited evidence seen for age distribution in Liberia, young health workers are the ones that leave the rural areas more to seek better opportunities. Studies from Liberia and other SSA countries have also shown that married HCWs are less retained in the

rural areas because of their spouses. In addition, health workers with rural backgrounds/origins are more contained in the rural areas than others without those backgrounds. At the same time, HCWs with low educational experiences stayed longer in the rural areas than those with high academic levels.

4.3 Local Environment

The local environment describes living conditions such as accommodation, electricity and good drinking water, schools and qualified teachers, Internet, roads and transportation, and the level at which one is socially isolated.

4.3.1 Accommodation

In Liberia, a qualitative study on health workers' perception of rural postings stated that government providing good accommodation was one prerequisite to health workers' willingness to be retained in rural settings (54). Most of the houses in the rural villages were made of mud; the floors were without cement, and the roof was made from tart, which was unsafe for the health workers (73).

In SSA countries like Liberia, studies have shown that suitable accommodation significantly hinders health workers staying in rural areas. In Kenya, a study showed that adequate accommodation not being available in rural areas makes it difficult for doctors and nurses to reside there and stay (74). A Burkina Faso study found that suitable accommodation was a reason for staying in the rural districts (67). A study in Sierra Leone showed that lack of proper housing led to health workers not being retained in rural areas (66).

4.3.2 Electricity/Internet and Good Drinking Water

In Liberia, studies showed that the electricity rate is (2 per cents) the lowest in the world. Internet connection and safe drinking water are limiting more health workers from being retained in rural areas. Some HCWs admitted to high social isolation from families due to this (54)(75).

Similarly, in Malawi, a study indicates that a lack of electricity supply and good drinking water prevented health workers from staying in the rural areas (76). In Ghana, limited accessibility to current and water supply discourages health workers from being retained in the rural areas (77). In Zambia, poor access to the internet connection in some health facilities in rural settings limits health workers' willingness to work there and the electricity supply (64).

4.3.4 Schools and Qualified Teachers

In Liberia, the educational system is indigent in the rural areas, as well as the quality of teachers and the resources used to teach. It makes it difficult for doctors and Nurses with children to accept postings and be retained in rural Liberia (78).

Schools in rural areas are considered low quality by health workers in SSA countries in similarity with the Liberia context. HCWs are discouraged from staying in rural areas because of their children (55). A study in South Africa showed that the lack of good schools in remote regions prevented nurses and doctors from being retained there (33). In Kenya, a study showed that low-quality schools and a lack of qualified teachers discouraged HCWs from being willing to serve in rural areas (74).

4.3.5 Roads and Transportation

In Liberia, bad road conditions and the high cost of transportation to travel to and from remote areas affect the retention of health workers, especially during the rainy season (54).

Compared with the Liberia context, studies in Kenya and South Africa show that high transportation costs in the Turkana district made nurses and doctors unhappy to stay in the rural areas. They found it difficult to commute to and from work, thus negatively affecting their

retention (3)(79). A Ghana study found that poor road conditions and inadequate transportation demotivate health workers in rural areas (80).

4.3.6 Social Isolation and Community Support

Like the Liberia context, a study in Uganda showed that the community's lack of support and appreciation for rural health workers' negatively influenced their decision to stay in the rural areas (70). In Nigeria, a study found that community members highly patronizing health workers' services and supporting them socially and financially will help make them enthusiastic about staying and improving their retention (72).

Summary

The local environmental factors in this section showed from findings that good housing could positively affect retention, which is lacking in rural Liberia. Low access to electricity, good drinking water, and the Internet are found in the literature to influence health workers' retention in rural Liberia negatively. Due to the poor educational system in Liberia, health workers are less willing to stay because of their children. Also, the bad road condition and high cost of transportation to travel to the rural areas in Liberia have prevented health workers from being retained there, especially during the rainy season. It leads to the social isolation of HCWs working in rural areas. Although no evidence was seen for social Isolation in Liberia for health workers, Findings from Uganda and Nigeria are similar to Liberia. They showed that a lack of support and appreciation from the community for the services rendered by health workers makes them socially isolated and affects their decision to stay.

4.4 Working Environment

The work environment consists of factors in the working place that influence the health worker's decision to be retained in the rural areas. It includes salaries, financial and non-financial incentives,

conditions of service such as training and career development, criteria for promotion, bonding, and mandatory service, working conditions like management support, organizational arrangement, timely medical supplies and equipment, job satisfaction, and supervision.

4.4.1 Salaries, Financial and Non-Financial Incentives

In Liberia, evidence has shown that health workers have low salaries, which are given across the board according to cadre type and not location. The payment system is fragmented into wages and financial incentives; some HCWs only receive one segment (30). The salaries are delayed, and no non-financial incentives are given to HCWs in the public sector. It discourages health workers from staying in rural areas where there is no opportunity for extra income through a side job (22).

Studies in Kenya showed that low salary income drove HCWs from rural areas to generate extra income from other jobs in the urban areas, which is limited in the rural areas (3)(74). A study in Botswana found that financial incentives compensated for the opportunities lost in the urban areas and helped HCWs to retain in the rural areas (81). In Tanzania, the delays in paying salaries, benefits, and allowances in the rural areas contributed to poor retention (60). In Nigeria and Sierra Leone, salaries being irregular, incentives being unavailable or poorly administered, unfairly allocated, and inadequate were all listed as setbacks to retention (72)(66).

4.4.2 Training and Career Development

In Liberia, studies have shown that career advancement has been a contributing factor to negatively affecting the retention of Doctors and Nurses in remote areas. It leads to their request for transfers to urban areas (82). However, periodic workshops are conducted for Officers in charge (OIC) heading clinics and other health providers to enhance their development in practice (49). A Ghanaian study stated that Doctors who work in rural areas are exempted from being mentored by experienced specialists, unlike the urban areas (77). In South Africa, a study showed that nurses with low educational status were mainly dissatisfied with the period they stayed in rural areas before having the opportunity to advance themselves (33).

4.4.3 Criteria for Promotion

In Liberia, evidence shows that it is easier to get promoted in rural areas than in urban areas for nurses and doctors because of less competition (30). In Uganda, a study showed that HCWs taking up higher positions in the rural areas served as motivation for them (70). In contrast, Ghanaian research showed that doctors viewed criteria for promotion in rural areas as unfair and slow compared to hospitals in urban areas (50).

4.4.4 Bonding and Mandatory Service

Like Liberia, In Tanzania and Sierra Leone, studies showed that regulations guiding HCWs' service to remote areas were not fulfilled (66). Some staff were left at one post for years without being rotated, which was demotivating; others complained that "once the government assigned you, they forget about you" (83).

4.4.5 Working Condition: Management Support

In Liberia, a study showed that staff at rural posts are left with minimal supervision and work overload. Instead of every month supervision, it's every three months. This result in a high turnover of staff and their unwillingness to stay (40). In comparison, studies in Kenya and Malawi showed that managerial support is crucial in retaining HCWs at rural posts. Infrequent supervision visits were considered as not meeting the staff's needs, discouraging them from staying (76) (3). In Sierra Leone, Uganda, and Tanzania, studies showed that lack of managerial communication, failure to recognize achievements, partial treatment of staff, and management not being polite to staff are issues listed in the studies that affect retention (84)(70)(66).

4.4.6 Organizational Arrangements

In Liberia, studies found that the lack of decentralization of the human resource (HR) management system when it comes to adding staff to the GOL payroll and asking for transfers to urban areas has led to HCWs in rural facilities discourage from staying (22). Also, poor information systems like good referral chain and staff shortage, work overload, and annual leave deprivation are all factors found in the literature that negatively affect retention at rural posts (82). Likewise, Sierra Leone and Botswana studies showed that an unorganized health service delivery system, lack of electricity, clean water, and essential medications hinder health workers' willingness to stay in rural areas (66)(81).

4.4.7 Equipment and Infrastructure

In Liberia, the health facilities in the rural areas have poor infrastructures and lack basic essential equipment to work with that can improve access to healthcare. It made it difficult for health workers to retain in remote areas (85)(86). Similarly, a study done in Uganda showed that poor access to the Internet and telecommunication in rural areas were considered essential factors contributing to retention among health workers (87). Other studies done in Ghana and Sierra Leone show that no current water supply in health facilities made it hard for health workers to be motivated to stay in remote areas (50). Besides the poor infrastructures, rural facilities lack essential equipment and ambulances to deliver adequate patient care, discouraging health workers from continuing to stay (66).

Summary

Evidence from the work environment domain showed that delayed and low salaries and lack of non-financial incentives discourage health workers from staying because there is no way to earn extra income through a side job in the rural areas in Liberia. Health workers always ask for transfers to leave the rural areas to advance their careers which prevents them from staying longer in the rural areas in Liberia. Getting promoted early due to less competition has motivated health workers to remain in rural areas. Although there is no study on bonding and mandatory service in Liberia, similar situations in Sierra Leone and Tanzania showed that government could not fulfil

the Bonding contract for health workers in rural areas. They are left at one post for years without rotation. Studies from Liberia and other SSA countries showed that deplorable working conditions, such as a lack of management support and a decentralized HR system, hinder retention. Also, delayed medical supplies and no essential equipment are all negative factors hindering retention in rural areas.

4.5 National Environment

This environment factor includes government factors influencing retention, such as political instability, conflict, social unrest, economic situation, funding sources, salary structure, decentralization, human resource policies, and private sectors.

4.5.1 Political Instability: Conflict and Socio-Economic Crisis

Evidence showed a link between conflict, social unrest, and poor retention of health workers. Liberia, having been a post-conflict country for over a decade, has dramatically crumbled the health system and the health workforce due to its financial, economic, and social situation (88). Of 293 public health facilities, 242 were destroyed during the war, leading to 9 out of 10 doctors fleeing the country, and only 160 physicians were in Liberia's capital city. The severe shortage of health workers worsened the availability and retention in rural areas till the present (49). Similarly, in South Africa, a study showed that the safety of health workers was obstructed by conflict, leading to poor retention in rural areas (33). Another study in Kenya showed that the socio-economic situation led to health worker migration from rural to urban areas due to higher salaries earned in urban areas than in rural areas (3).

4.5.2 Sources of Funding and Salary Structure

Liberia mainly depends on foreign aid and grants to fund the health system, including the health workforce, which is not sustainable. The salary structure varies between cadres, but not on years of experience or rural to urban differences, which does not encourage health workers to reside in

rural areas (65). Likewise, other SSA countries like Zambia and Kenya, dependent on donor funds, used it to increase salaries and allowances for HCWs in remote areas, which attracted HCWs to the rural areas. The rural-urban disparity in their salary structure helped motivate health workers (96)(3).

4.5.3 Decentralization and Human Resource Policies

The Liberia DHIS2, which serves as the electronic HRH registry system, is currently down. Therefore, data is collected through a paper-based system which affects the development of a new HRH policy (24). In addition, the lack of a decentralized system of the government and poor HR management systems to place staff on GOL payrolls have led to HCWs' unwillingness to stay in rural areas. (22). "The national HR policy and plan for 2011-2021" developed some rural retention strategies to retain health workers, such as they would make HCWs already on GOL payrolls re-assigned from urban to rural areas (89). To implement a one-year, rural mandatory service for graduates from government-owned schools. Provide an allowance for HCWs moving to work in rural areas. However, this policy had issues with implementation due to the new government regime and a drop in the health budget allotment. The evidence showed that it reduced health workers' salaries in 2019 (90).

Like the Liberia context, a study in Uganda showed that a well-defined term of service for a specified period attracted doctors to rural service (87). A study in Nigeria showed that a proper decentralized health system improves health workers' retention in rural areas by providing their salaries on time and providing other financial and non-financial incentives for them (72). In Ghana, evidence showed that the health ministry failed to provide a good incentive package, and the rural practice contract's vague terms hindered the retention of health workers in the rural areas (50).

4.5.4 Private Sectors

In Liberia, a 2020 qualitative study showed that some HCWs admitted to staying in the public sector because of the security and other benefits than working in the private sector on contract.

Despite this, some HCWs still get attracted to the private sector because of high wages and better working conditions (90). Similarly, a study done in Ghana showed that most HCWs leave rural to urban areas to work in private sectors, especially NGOs, for high salaries and better working conditions (50). In Sierra Leone, a study also showed that those working for NGOs in the rural areas are provided suitable housing, high salaries and incentives, car, and other benefits (63).

Summary

Findings from the national environment show that a country's political and economic crisis enables both rural and urban HCWs to leave the country. The lack of a decentralized HR management system to dispense timely salaries and payrolls discourage HCWs from staying in rural areas. Also, pastoral salaries being higher than urban HCWs' salaries encourage them to retain. In contrast, high wages and good working conditions in the private sector attract HCWs to work for them.

4.6 International Environment

This section of the environment domain discusses how health workers migrate to other countries to seek better job opportunities, attractive salaries, good working and living conditions, and better career advancement opportunities.

Due to Liberia's Civil unrest, 80% of Liberian Nurses and 60% of Physicians left the country from urban and rural areas to seek better job opportunities and security (91). Although there is no migration policy in Liberia concerning agreements with other countries to limit health workers from leaving the country (49), some bonding contract agreements are signed by students wanting to study abroad to return to their country (92).

Like Liberia, studies from Zambia, Malawi, and Botswana showed a high migration rate of health workers to UK, USA, and Canada before 2010 (64). The reasons behind these were the push and pull factors impacting migration stated in the literature as contributory to the shortage of health workers in these countries (81). Push factors refer to things enabling a person to leave their home country: low salary, lack of opportunity for career advancement, political instability, lack of job satisfaction, lack of equipment and supplies, and working under pressure (76). Pull factors such as

things attracting a person to another country are high salaries, good working and living conditions, and a good opportunity for career advancement (64). These countries lost about 50% of health workers till 2010, when WHO developed a willing code of practice for international recruitment of HCWs in agreement with its partners. It helps protect and strengthen SSA countries' health systems and regulates the receiving countries' international recruitment process despite still existing (56).

In summary, the international environment impacts poor retention of HCWs. Because health workers migrate from rural and urban areas to other countries in search of high-paying jobs, better career advancement, and working conditions, as literature from Liberia and other SSA countries showed.

4.7 Interventions to Improve Retention in Rural Areas

This section discusses evidence-based interventions recommended by WHO and those implemented in Liberia and other SSA countries. It has proven effective in contributing to the retention of health workers in rural areas.

4.7.1 World Health Organization (WHO) recommended Interventions to Improve Health Workers' Retention In Rural Areas

The 2010 global policy for WHO recommendations for health worker retention in rural areas states that having rural origin and educational training has improved retention. Also, providing continuous career advancement, developing policy on compulsory regulatory service, and providing financial incentives and management support to health workers serving in rural areas have improved retention over the years (56), as shown in the table below.

Table 3 Categories of interventions used to improve attraction and retention of health workers in remote and rural areas

Category of intervention	Examples
A. Education	A1 Students from rural backgrounds
	A2 Health professional schools outside of major cities
	A3 Clinical rotations in rural areas during studies
	A4 Curricula that reflect rural health issues
	A5 Continuous professional development for rural health workers
B. Regulatory	B1 Enhanced scope of practice
	B2 Different types of health workers
	B3 Compulsory service
	B4 Subsidized education for return of service
C. Financial incentives	C1 Appropriate financial incentives
D. Professional and personal support	D1 Better living conditions
	D2 Safe and supportive working environment
	D3 Outreach support
	D4 Career development programmes
	D5 Professional networks
	D6 Public recognition measures

Source: WHO 2010 (56)

The WHO 2010 guidelines were based on evidence from 1995-2009. However, WHO has updated a new guideline on the same recommendations in 2021, based on their evidence from 2010-2019. They are about evidence gaps found in countries that have or have not followed the regulations. The list of interventions did not change, only the evidence-based change between those periods.

Countries' interventions on retention should be aligned with WHO recommendations and the conceptual framework. Liberia and other SSA countries' interventions based on evidence are discussed below. Although some interventions are not clearly explained in terms of implementations in the literature.

4.7.2 Interventions to Improve Retention of Health Workers in Rural Areas in Liberia

In Liberia, most of the interventions carried out to improve retention are not clearly stated in the literature; some are even referred to as "would" and had issues with implementation. The only most effective intervention that is clearly stated is educational intervention.

4.7.2.1 Education

Selecting health workers with a rural background and having training institutions in rural areas with clinical rotations for students improve retention (30). However, only one university in the southeast produces rural nurses and midwives with bachelor's degrees; the rest are community colleges in most counties. The government also set up the Physician and Surgeons specialist program in Maryland and Monrovia to expose doctors to rural life, which is rotational and enhances retention (71).

4.7.2.2 Regulatory Interventions

Liberia has implemented an intervention on compulsory service for its post-graduate programs to rotate in rural areas. After graduation, the beneficiaries of such programs must serve in the rural areas for three years before issuing their documents. However, the bonding agreement is not always regulated in the health workers' favor concerning the contract requirements in terms of salary increment based on their educational status (93).

4.7.2.3 Financial and Non-Financial Incentives

A 2011 study describes how the government would provide recurrent financial incentives of a \$50.00 bonus to Nurses and Midwives who accept postings in rural areas to serve as a motivation for them to stay. Still, it was not sustained (49). Instead of increasing allowances, in 2019, The government cut HCW's salaries due to harmonization for its financial constraints (90). Providing improved equipment in rural health facilities and accommodation were other factors that would improve retention. However, the government only provided housing for all doctors. Accommodations for the other cadres are not clearly stated in the literature (49). Lastly, the intervention to give nurses transportation also had an issue. Only officers in Charge (OIC) heading

clinics were given motorbikes to transport themselves in hard-to-reach clinics. All the other HCWs were not given a stipend for transportation (30).

4.7.2.4 Professional and Personal Support

In 2017, the government of Liberia implemented a career development program for health workers. The program intends to certify and strengthen health managers and other HCWs' capacity to deliver good health outcomes to the people of Liberia. However, the program was limited to only Monrovia's urban area, in the two largest hospitals. (40). In 2017, MOH, through the Liberian board for nursing and midwifery, implemented a career advancement program. It enables training for all nurses and midwives through digital health or in person before renewing their licenses. However, due to the poor internet situation in the rural areas, HCWs couldn't benefit more from this. In addition, it takes three months for rural HCWs to be supervised instead of one month (94).

4.7.3 Interventions to Improve Retention of Health Workers in Sub-Saharan Africa

In other SSA countries, some interventions recommended by WHO have already been implemented to improve health workers' retention, which is discussed in this section.

4.7.3.1 Education

Educational interventions refer to governments opening schools in rural areas, incorporating pastoral curricula, and recruiting students from rural backgrounds. Upon graduation, they will be exposed to rural practice by working in remote areas through rotations. Some countries in SSA have implemented this.

Like Liberia, a South African study showed that implementing training institutions in rural areas and enrolling students from rural backgrounds increased willingness to stay in rural areas. Thirty-

four percent of graduates with rural origin were working in rural areas than twelve percent of health workers with urban backgrounds (33). A 2014 study in Zambia found that continuous career advancement improves retention because HCWs who serve in rural areas are prioritized to advance themselves on a grant (95).

4.7.3.2 Regulatory Interventions

Compulsory service has been one strategy of retention that has proven effective for the licenses of health workers to be held until they can serve in the rural areas for a specified period. It was applicable in South Africa, where health workers were mandated to do compulsory service in rural areas for a year. It started with doctors in 1998, and other cadres joined from 2008 to 2010. As a result of this strategy, 150 doctors were stationed all over the rural communities and 4600 nurses (95) (79).

4.7.3.3 Financial Incentives Interventions

Financial incentives interventions refer to all the different allowances, salaries, benefits, and bonuses that enable a health worker to stay in rural areas. These interventions have improved retention optimally in some countries.

In 2007, South Africa developed an occupation-specific policy to enhance retention in rural areas. This scheme set a better salary per occupation for HCWs, considering their job experience and educational level (30). They were given basic salaries, pension benefits, overtime, high performance, and hardship allowance. Wages of HCWs increased based on their years of experience and career advancement, and this serves as motivation for them to stay in rural areas (2).

A study in Zambia showed that Health workers were expected to serve in the rural areas for three years, as required by the “Zambia Health Worker Retention Scheme (ZHWRs)” (94). Under this scheme, health workers were provided financial and non-financial incentives, which included hardship allowance, education allowance for their children below 12 years, transport allowance,

housing allowance, and post-graduate study assistance. The Zambian government used donors' funds to support this scheme, and it helped improve retention in the rural areas, though they aimed to increase the number of HCWs, which was not fully achieved (96).

2010 and 2014 studies done in Kenya and Senegal found that providing hardship allowance to health workers in remote areas by adding 30% to their salaries had effectively retained health workers in those hardship areas. Also, selecting health workers in rural areas to be trained as specialized nurses in a policy enhances the retention of nurses by 12% and 7.8 times, respectively, in these countries (74) (97).

4.7.3.4 Professional and Personal Support Interventions

Interventions in this domain deal with professional networks, career development programs, good living and working conditions, and community support. Social isolation in rural areas has dramatically affected the retention of HCWs. However, some countries have implemented regulations to improve retention in this regard. Studies done in Malawi and South Africa found that their interventions to improve staff housing and working conditions and expand training programs in the rural areas helped reduce the number of nurses leaving the rural areas from 100 to 10 for five years (33)(76).

Summary

The different categories of interventions recommended by WHO implemented in Liberia and other countries are educational and regulatory interventions. Liberia can learn from other SSA countries about gaps in the other interventions such as financial incentives and professional and personal support interventions. Countries like Zambia and South Africa used donor funds to increase HCW salaries and pay them based on their occupation, years of experience and educational level. It also contributes to the retention of HCWs in rural areas.

CHAPTER FIVE: DISCUSSION

5.1 The Link Between Retention Factors and the Interventions to Address Them

This research discusses different factors contributing to poor retention in remote areas in Liberia. The study results show that some elements overlapped, especially personal factors, living conditions, and work-related factors. They don't work independently. For example, a young married HCW (individual) may intend to leave the rural areas because her spouse is not finding a job there. She will also leave because there is no quality school for her children to attend (local environment). In addition, she may again intend to go because the salary cannot take care of her family (work environment). For HCW to retain, interventions that respond to these factors must be implemented. Evidence has shown that some interventions from Liberia and Sub-Saharan African countries have improved retention in rural areas, which will be examined in this chapter.

5.1.1 Individual Factors

The factors discussed in this environment that affect health worker retention in rural areas were age, gender, marital status, origin, and educational background. Evidence shows that young people, female married health workers with high educational backgrounds, and those not having rural origin are less willing to retain. However, the two primary interventions found in studies from Liberia were recruiting students with rural backgrounds and having schools in rural areas. These enabled health workers to be willing to work and stay in rural areas, which addresses educational background and origin. In Liberia, this intervention is feasible because most training institutions are government properties and agree with government regulations. Other SSA countries show the same interventions.

However, no interventions were found for Liberia and other SSA that address age, gender, and marital status issues as factors implemented to improve retention.

5.1.2 Local Environment

The factors in this domain that influence rural retention of HCWs are also known as the overall living conditions such as suitable accommodation, transportation, access to electricity, internet, good drinking water, and quality schools for children. The study findings show a lack of suitable accommodation with necessities, electricity, Internet, and good drinking water. Lack of quality schools for children and, most notably, social isolation discourages HCWs from staying in rural areas. The interventions mentioned for Liberia on transportation and good accommodation were not generalized for all HCWs. However, Liberia can learn from other SSA countries that implemented transport, housing and stipend measures for HCWs with children. The feasibility depends on the government's financial capability to do that. If the government can implement such an implementation, it will benefit the whole country, not HCWs alone. Furthermore, the other living conditions (Internet, good drinking water, and electricity) linked to retention were not seen in the interventions in Liberia or other SSA countries.

5.1.3 Work Environment

The work environment factors have more value for health workers in Liberia and Sub-Saharan Africa. These factors are salaries, salary structures, incentives, and benefits. The other factors in the work environment that influence retention in Liberia are training and career advancement for HCWs in rural areas, promotion criteria, professional support, primary and essential equipment, and infrastructures. Most of the interventions in Liberia addressed salaries, benefits, and allowance. However, they were not appropriate and sustainable due to the financial problems governments face in Sub-Saharan Africa. For example, the economic issues faced by the Liberia government led to the cutting of HCW's salaries in 2019. Another intervention applied to Liberia was continuous career advancement for nurses and doctors in Maryland county and Montserrado, which serve as motivation for HCWs. Liberia can also learn from South Africa, Kenya and Zambia how they implemented interventions. Other factors that could be considered in the Liberian context are personal and professional support interventions by expanding training programs in the rural areas and regular monthly supervision of HCWs.

5.1.4 National Environment

The national environment factors were examined in this study as conflict and social unrest, socio-economic situation, decentralization, private sector, salary structure, sources of funding, and human resource policies. The factors found for Liberia and other SSA countries to influence retention are the country's political instability, socio-economic situation, poor HR systems, and lack of decentralization. Other factors that could affect retention are competition with the private sector, which offers better salaries and moves HCWs to be attracted to work for them.

The intervention mentioned in the Literature for Liberia and SSA that has been effective in maintaining retention of HCWs is compulsory rural service which should be regulated within the HR policies of a country. No interventions were found to address decentralization issues, socio-economic factors, and the private sectors. Other interventions that could apply to Liberia based on WHO recommendations are enhancing the scope of practice and providing education for HCWs returning from compulsory service.

5.1.5 International Environment

The factors discussed under this environment related to Liberia were the migration of health workers from rural and urban areas to other countries for higher salaries and better career opportunities offered in the global health workers labor market. The other factors in other SSA countries were better living and working conditions that drive health workers to advanced countries. For instance, evidence shows that South Africa signed a bilateral agreement between governments to ensure health workers returned to their home country and retained. The country has also improved HCWs working conditions and salaries to help them stay. Other countries have also improved on the push factors of their country for health workers to be proud to work there, and it encourages those overseas to return. Liberia can learn from these countries, and WHO's

implementation of their evidence-based interventions for health worker retention could be helpful for Liberia as well.

5.2 Strengths and Limitations of the Study

Several factors impact the retention of health workers in rural Liberia. The primary study limitations are evidence gaps from Liberia on age distribution, social isolation, bonding, and mandatory service, which were not found in the literature. The factors on work, national and international environment were easy to analyze in the literature. In contrast, individual and local environmental factors were a bit difficult to interpret because of limited findings. Some interventions are generic and not clearly defined in rural areas, like personal and professional support interventions. Because the health worker retention issue is a significant problem in Africa, it was not challenging to get literature from other SSA countries. However, it may not be externally valid for future research reference based on the study design used. Due to limited literature published in Liberia on this topic, most of the articles used came from neighboring countries, where some information did not apply to Liberia's current situation. Also, the findings cannot be applied to all the counties as this paper focuses only on rural/underserved areas.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The shortage, uneven distribution, and retention of health workers in rural areas remain a global issue, but Sub-Saharan Africa is mainly affected, especially Liberia. The study findings from Liberia showed that several factors influence the retention of health workers in rural areas. They range from individual characteristics, such as young married female health workers, with higher educational backgrounds who mostly leave the rural areas. In contrast, HCWs with pastoral training and backgrounds are mostly retained. The local environment factors have shown from the evidence that good living conditions such as housing provision, current Internet, good drinking water, transportation, and quality school for children help improve retention. At the same time, social isolation without community support makes HCWs less willing to stay.

The work-related factors have much importance to health workers because it deals with how low salaries, no allowances or benefits, and no training opportunity for advancement and promotion discourage health workers from staying in the rural areas. In contrast, compulsory and rotational services in rural areas improve retention. The national and international environmental factors are the push and pull factors that enable HCWs to leave their country, such as socio-economic crisis and seeking better living conditions, salaries and career opportunities in other countries.

The research gap in the findings from Liberia is age distribution, social isolation, bonding, and mandatory service. However, results from other SSA countries with similar characteristics were used and applicable to Liberia. The Liberian government has implemented some interventions, such as having rural community colleges and training people with rural backgrounds willing to work in rural areas. Therefore, the work and local environment interventions are lacking at the moment and most needed in Liberia, given the factors in Liberia that cause poor retention. They need to be examined thoroughly regarding implementation as there is no evidence base yet for these interventions. To inform policymakers and multi-sectorial bodies to help find ways and improve health workforce retention in rural areas to achieve good health outcomes for the country.

6.2 Recommendations

Using the factors from the Liberia context that influence retention of health workers, and the lessons learned from other SSA countries, as well as the evidence presented by WHO, the recommendations for this study, are as follows:

6.2.1 Recommendations for Government actors, Stakeholders, and donors

- Liberia's ministry of health (MOH) should coordinate with multi-sectorial stakeholders to set up a national retention policy that mainly focuses on rural and remote areas and a specific implementation target. These stakeholders include civil society organizations, government authorities, NGOs, the private sector, donors, health workforce representatives and students of health workers. They should have interventions such as continuous professional and personal support in the policy.
- The MOH planning unit for policy, monitoring, and evaluation should coordinate with other essential stakeholders to examine the various retention strategies implemented in the country to resolve the issues.
- The MOH should have a strategy that will include gender as part of the retention policy because most females do not retain in rural areas.
- Liberia's MOH should coordinate with the ministry of education to ensure that advanced health training institutions in all counties prioritize students from rural areas to be admitted into the training schools to enhance retention.

6.2.2 Recommendations for Scientific Researchers and the HR Unit

- The government of Liberia should strengthen the capacity of the MOH for HRH planning and interventions and improve the health workforce registry in Liberia.
- The research department of MOH should conduct qualitative research in the rural areas on the evidence gaps in Liberia. About the retention factors such as social isolation, age distribution, bonding, and mandatory service to compare findings with other countries in Sub-Saharan Africa with a similar context.

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APPENDIX TABLE: SEARCH TABLE SHOWING KEYWORDS AND THEIR SYNONYMS

Keywords	Health workers "AND"	Retention Availability Distribution "AND"	Age Gender Marital status origin Educational background "AND"	Rural areas "AND"	Liberia Sub Saharan Africa "AND"	Interventions "AND"
Other related terms	Doctors "OR" Nurses "OR" Midwives "OR"	Attraction "OR" Stay "OR" Maintaining "OR" Determining "OR" Accessibility "OR" Provision	Accommodation Living condition Quality schools transportation "AND" Work-related factors "AND"	Remote areas "OR" Poor settings "OR" Poor communities "OR"	LMIC "OR" Developing countries "OR" Resource-poor settings "OR"	Strategies "OR" Approaches "OR"

	Human resources for health "OR" Health workforce "OR" Health professional	"OR" Deployment "OR"	National environment factors "AND" International environment factors	Countryside "OR" Villages "OR"		
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