

# A GLOBAL ANALYSIS OF THE HEALTH WORKFORCE POLICES TO ATTRACT, RECRUIT AND RETAIN HEALTH WORKERS IN RURAL AND REMOTE AREAS WITH A FOCUS ON OCCUPATIONAL HEALTH MEASURES.



Hochschule für Angewandte  
Wissenschaften Hamburg  
Hamburg University of Applied Sciences

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**Department of Health Sciences, Faculty of Life Sciences, Hamburg University  
of Applied Sciences, Germany**

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Submitted by: Chukwuemeka Onyedike



Primary supervisor: Prof. Andre Klussman

Secondary supervisor: Dr Michelle McIsaac (PhD)

## **DECLARATION**

I hereby declare that I am the author of this thesis and wrote the piece of academic work with the help of the referenced sources. All the articles used are fully cited in the section of the bibliography. This academic work is only submitted to the Hamburg University of Applied Sciences and has not been submitted to other examination authorities. I confirm that the content of the digital version corresponds completely with the printed version.

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Date:

Signature:

Chukwuemeka Onyedike

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## Abstract

**Introduction:** Inequitable geographic distribution remains a critical health workforce challenge for countries due to the difficulty attracting, recruiting and retaining health workers in rural and remote areas. Limited access to health workers in rural and remote areas is estimated to affect about 2 billion people globally and contributes to the lower health status observed in these areas. In 2010 the WHO published the global policy recommendations for improving the availability of health workers in rural and remote areas and also, together with ILO developed, *the global framework for national occupational health programmes for health workers*. The projected shortfall of 18 million health workers to achieve universal health coverage by 2030 and the hard-hitting effects of the COVID-19 pandemic on health workers make it crucial to review the; current global level of maldistribution, interventions being used by countries to counter this, and occupational health and safety in place to protect health workers.

**Methodology:** The author conducted a document analysis of all the publicly available relevant policy documents of countries. The documents were sourced from the WHO databases and the ministry of health websites. Summative content analysis was used to assess mentioned maldistribution or retention challenges and occupational health and safety measures. Deductive content analysis used to expand the framework of recruitment and retention interventions further, accommodating all interventions mentioned by the countries.

**Results:** 157 policy documents from 157 countries and territories were reviewed. 76% of them had mentioned a health workforce maldistribution or rural recruitment and retention challenges. 92% of all countries had mentioned at least one intervention to improve the rural availability of health workers, however less than a quarter stated comprehensive recruitment and retention strategies with evidence-based interventions. Only 29% of countries mentioned having a written policy on health workers' safety, health and working conditions.

**Conclusion:** The persistent maldistribution challenge requires urgent actions and more investments by countries towards developing the rural health workforce and health workforce management systems, while ensuring that occupational health and safety measures are in place to protect these health workers. Universal health coverage, health security cannot be achieved without addressing these gaps. These investments can positively impact sustainable economic development, economic diversification, poverty reduction, gender equality and reduce in inequalities.

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## List of Abbreviations

HRH	Human resources for health
HRHP	Human Resources for Health Planning
HWF	Health workforce
ILO	International Labour Organization
MoH	Ministry of Health
NHPSP	National Health Policies, Strategies and Plans
OSH	Occupational health and safety
SDG	Sustainable Development Goals
WHO	World Health Organization

# Chapter 1. Introduction

## **1.1 The Sustainable Development Goals cannot be achieved without giving due attention to rural and remote populations.**

Currently, 45% of the world's population - 3.4 billion people - live in rural and remote areas (United Nations et al., 2019). There is no standard international definition for rural areas due to national and regional subjectivity; nevertheless, these areas are characterised by the three common dimensions of "rurality" which are sparse settlements, land cover and use, and remoteness from urban areas (Food and Agricultural Organization of the United Nations, 2018). In addition, cultural dimensions to rurality also exist; more personal relationships within the communities, a clear sense of behavioural norms in line with tradition or religious practices, and a high value on self-sufficiency (Couper, 2018).

Although urbanization continues to be a global trend, the number of people in rural areas is expected to peak in 2021 and then stabilize at around 3.1 billion people by 2050 (United Nations et al., 2019), with about one-third of the global population residing in rural areas for the foreseeable future. This urbanization, which is occurring at different rates across regions, raises equity concerns for developmental policies that place urbanization as the centrepin of economic development.

International commitments to the Sustainable Development Goals (SDGs), especially that of ensuring good health and well-being (SDG 3), cannot be achieved without efforts and inclusive policies that consider the specific contexts of rural and remote areas and populations.

### **1.1.1 Rural and remote areas face unique challenges.**

Political, economic, and social progress has been slower in rural areas compared to urban areas (Dudwick, 2011). There is also more unemployment and underemployment in rural areas in comparison to urban areas. (De Luca et al., 2012). Rural literacy rates are lower than the urban rates, with the disparity being proportional to the overall level of development of the country. In some developing countries, there is a more than 50 percentage point difference in the literacy rates between urban and rural areas (Unesco, 2016). Low education levels are often associated with poor health; therefore, these gaps indicate some of the multisectoral problems that rural areas are facing (DeWalt et al., 2004; World Health Organization| Regional Office for Europe, 2015).

Extreme poverty rates, defined as living on less than \$1.25 a day, is estimated at 17% in rural areas more than three times the extreme poverty rate in urban areas (UNDESA, 2015a, 2019). Three out of four of the world's poorest people live in rural areas (UNDESA, 2019). Over 46% of the rural population is estimated to be moderately poor (using the international poverty line of \$3.2 a day), almost three times the poverty rate observed among the urban population (De La O Campus et al., 2018). The link between ill health and poverty is strong and circular (World Bank, 2014). In addition, only about 50% of rural residents have access to and can use basic sanitation compared to 80% of urban residents (World Health Organization, 2019a).

### **1.1.2 Health care needs in rural areas are not being met.**

Demographic shifts in rural populations worldwide have seen increasing older populations and declining fertility and birth rates (Keats & Wiggins, 2016). In the last two decades, there has been a 25% increase in people aged 60 years or over in rural areas (UNDESA, 2015c). This trend is caused by complex and context-specific socioeconomic factors, of which emigration to urban areas by the working population is the most notable (Heide-Ottosen, 2014; UNECE, 2017). Older populations tend to have additional health needs, resulting in additional requirements for health care services and health workers (Green et al., 2018; National Institute on Aging & World Health Organization, 2011).

Between 33%-49% of the world's population is covered by essential health services; generally, rural areas are on the lower end of this range (World Health Organization, 2019b). It is estimated that about 2 billion people living in rural and remote areas do not have adequate access to essential health services that they need within their communities (World Health Organization, 2021b). The inequalities in access to health services are a clear outcome of the widening development gaps between rural and urban areas. Using a vital indicator of access to reproductive healthcare (at least four antenatal care visits for pregnant women), women in rural areas lagged urban in completing this by a range of 21 percentage points globally, with the South-East Asian and Eastern Mediterranean countries having the most significant gaps (World Health Organization, 2021c).

Increasing needs in rural and remote areas and the pervasive inequities in the distribution of health workers have resulted in lower health outcomes and higher mortality rates in rural areas. Average life expectancy in rural areas is generally lower than that in the urban areas (Asaria et al., 2019; Liu et al., 2010; Ministre de la Santé Morocco, 2012), with some rural populations experiencing a recent decline in life expectancy (National Advisory Committee on Rural Health and Human Services, 2015). Evidence shows that even in high income countries like Australia, Canada and the United States, the rate of potentially avoidable deaths, i.e. deaths that could be prevented through diagnosis and treatment of existing conditions, increase with the remoteness of populations (Australian Institute of Health and Welfare, 2019; Centers for Disease Control and Prevention, 2019; Garcia et al., 2019; Subedi et al., 2019). Across the world, maternal mortality is 2.5 times higher on average in rural areas than in urban areas (Scheil-Adlung, 2015). In addition, in low and middle-income countries under-five mortality ratio is an average of 1.3 higher in rural areas compared to urban (World Health Organization, 2016d). Currently more than 200 million women, many of the living in rural areas lack access to voluntary family planning methods (UNFPA, 2018). In some rural areas access to these resources are three times less than in the urban areas (Republique Du Niger, Ministere de la Sante Publique, 2016).

Reducing childhood and maternal mortalities are some of the targets of SDG 3 to ensure healthy lives and promote well-being for all at all ages (UNDESA, 2015b, p. 3). The core component of this goal is universal health coverage (UHC) which means that all people and communities have access to health services without suffering financial hardship (World Health Organization, 2019c).

### **1.1.3 Limited access to health workers in rural and remote areas persists.**

Health is fundamental to human development and productivity, and the impact of the COVID-19 pandemic highlights this more than ever. At the centre of any health system is the health workforce (Anand & Bärnighausen, 2012), which is comprised of people whose job is to protect and improve the health of their communities (World Health Organization, 2006). Without health workers, there can be no delivery of health services. The availability of

sufficient numbers of adequately trained and supported health workers is critical to improving health outcomes (Dolea et al., 2009).

Central to the gaps in access between rural-urban areas is the lack of trained health workers located outside of urban areas. This is a universal challenge because countries, regardless of their economic development and health systems structures, struggle to achieve equitable access to health services to meet rural and remote populations (World Health Organization, 2010, 2021b). An ILO study estimated that only 23% of health workers in the world were located in rural areas resulting in extreme unmet needs (Scheil-Adlung, 2015). Only about a third of the total global nursing workforce serve rural and remote populations (World Health Organization, 2020b). In some African countries, medical doctors tend to cluster in capitals and major cities, with some countries having less than 25% of the total health workforce serving the rural population (Joint United Nations Programme on HIV/AIDS, 2017; Republique Du Niger, Ministere de la Sante Publique, 2016; Republique Togolaise Ministere de la Sanitare, 2016). In Tanzania, despite an increase in the production of medical doctors, the rural population which accounts for over 75% of the total population saw a decrease of medical doctors working in rural areas from 31% in 2012 to 26% in 2015 (Sirili et al., 2018). Similar trends are observed globally for the different health worker occupations (Scheil-Adlung, 2015; World Health Organization, 2021b). Estimates from India suggests very high vacancy rates in rural areas; with half of health assistant positions in some rural areas sitting vacant (Ministry of Health and Family Welfare Statistics Division, 2015), while there are only 41% of all health workers serving 72% of the total population of the country which live in rural areas (Anand & Fan, 2016). In the Americas, data from some countries indicate that the availability of medical doctors in some rural areas is as much as 80 percentage points lower than in urban areas (Pan American Health Organization, 2017). Data from the United States show that about three-quarters of the non-physician primary care workforce are concentrated in urban areas (Agency for Healthcare Research and Quality, 2018).

A worsening shortage of health workers in rural and remote areas will, directly and indirectly, affect rural communities and the surrounding regions. If health workers remain, their motivation and productivity will be adversely affected due to increased workload causing extra stress and increased risk of absenteeism or, worse still, more staff leaving (Dieleman & Harnmeijer, 2006). Locally, higher disease morbidity rates and avoidable loss of lives will occur. Rural residents who can afford it will seek care in accessible peri-urban or urban

facilities, leading to increased costs and overcrowding of these facilities (Buchan et al., 2013). Both an increased workload in these facilities and a reactionary expansion in staff positions among the institutions that can afford it may lead to overworking and underutilisation of skilled personnel, respectively, which contribute to emigration of the health workers (Dussault & Franceschini, 2006). An increase in workload and work-related stress is a well-known risk factor that negatively affects the health and safety of health workers (National Institute for Occupational Safety and Health, 2008).

## 1.2 Increasing access to health workers in rural and remote areas.

In 2010 the World Health Organization published *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations* (World Health Organization, 2010), in response to the requests from the Member States, global leaders and civil society. These evidence-based recommendations were on four areas that influence the career paths of rural health workers, namely:

1. Education
2. Regulations
3. Financial incentives
4. Personal & professional support.

A list of 16 policy recommendations summarized in Table 1.1 was developed for countries to choose from, for the formulation of their national rural retention strategies.

**Table 1. 1 Categories of interventions used to improve attraction, recruitment and retention of health workers in remote and rural areas (2010 guideline)**

Category of intervention	Summary of interventions	
Education	<b>A1 Admit students from rural backgrounds</b>	
	Strength of recommendation – strong	Quality of evidence – moderate
	<b>A2 Locate health professional schools outside major cities</b>	
	Strength of recommendation – conditional	Quality of evidence – low
	<b>A3 Provide clinical rotations in rural areas during studies</b>	
	Strength of recommendation – conditional	Quality of evidence – very low
	<b>A4 Develop curricula that reflect rural health issues</b>	
	Strength of recommendation – strong	Quality of evidence – low
	<b>A5 Provide continuous professional development for rural health workers</b>	
Strength of recommendation – conditional	Quality of evidence – low	

<b>Category of intervention</b>	<b>Summary of interventions</b>	
<b>Regulations</b>	<b>B1 Enhance scope of practice for rural health workers</b>	
	Strength of recommendation – conditional	Quality of evidence – very low
	<b>B2 Introduce different types of health workers</b>	
	Strength of recommendation – conditional	Quality of evidence – low
	<b>B3 Ensure compulsory service in rural areas is supported and incentivized</b>	
	Strength of recommendation – conditional	Quality of evidence – low
	<b>B4 Subsidize education for return of service</b>	
	Strength of recommendation – conditional	Quality of evidence – low
<b>Incentives</b>	<b>C1 Offer appropriate financial incentives</b>	
	Strength of recommendation – conditional	Quality of evidence – low
<b>Professional and personal support</b>	<b>D1 Improve living conditions for rural health workers</b>	
	Strength of recommendation – strong	Quality of evidence – low
	<b>D2 Provide a good, safe and supportive working environment</b>	
	Strength of recommendation – strong	Quality of evidence – low
	<b>D3 Facilitate outreach support from urban areas</b>	
	Strength of recommendation – strong	Quality of evidence – low
	<b>D4 Develop rural career development programmes</b>	
	Strength of recommendation – strong	Quality of evidence – low
	<b>D5 Support establishment of professional networks in rural areas</b>	
	Strength of recommendation – strong	Quality of evidence – low
<b>D6 Adopt public recognition measures for rural workers</b>		
	Strength of recommendation – strong	Quality of evidence – low

Source: WHO Global policy recommendations (2010)

To support countries in the selection, design and implementation of their rural retention interventions a framework of five questions were proposed by the WHO (2010), based on the following criteria:

- a. Relevance: *"which interventions best respond to national priorities and the expectations of health workers and rural communities?"*
- b. Acceptability: *"which interventions are politically acceptable and have the most stakeholder support?"*
- c. Affordability: *"which interventions are affordable"?*
- d. Effectiveness: *"have complementarities and potential unintended consequences between various interventions been considered?"*



- e. Impact: *"which indicators will be used to measure impact over time?"* (World Health Organization, 2010)

These policy recommendations also included principles to guide the formulation of retention policies such as strengthening human resources for health management, understanding the health workforce, and grounding the rural retention policies in the national health plan to provide a framework for holding partners accountable towards producing results. However, thus far, it has been unclear to what extent the rural health workforce shortage is being addressed. Hence an investigation into the policy approaches of different countries in tackling the rural health workforce deficiency is important.

### **1.3 Rationale of the study**

In 2016, WHO projected a shortfall of 18 million health workers to achieve UHC by 2030, especially in low-and middle-income countries (World Health Organization, 2016b). Evidence points to a persistent shortage of health workers in rural and remote areas, even a decade after the global policy recommendations were made (World Health Organization, 2021b). If the 18 million health worker shortfall projection is not redressed, rural and remote populations which are currently disadvantaged will be disproportionately affected. Without interventions that have been evidenced to improve the attraction, recruitment, and retention of health workers in rural and remote areas, ensuring the availability of health workers in these areas will remain a challenge.

An analysis of the adoption of rural retention strategies by countries and territories is important. There has been no study of this on a global scale. Regional and country-level assessments exist. On the regional level, in 2013, an assessment of 5 countries in Asia by the Asia-Pacific Action Alliance on Human Resources for Health and 20 countries in Europe by the Royal Tropical Institute in Amsterdam and the WHO Regional office mapped the policies being implemented by countries (Buchan et al., 2013). In 2019 a study analysed the rural attraction and retention strategies in Cambodia, China and Vietnam (Zhu et al., 2019), and in 2020 another study was conducted on rural retention policies by countries in the South-East Asia Region of the WHO (World Health Organization. Regional Office for South-East Asia, 2020). On the country level, a 2018 analysis of policies implemented for the retention of

doctors in rural areas was conducted in Bangladesh (Joarder et al., 2018). While in Guinea, a policy analysis post-Ebola was also done (van de Pas et al., 2019).

One of the 2010 recommendations is on the provision of a safe and supportive working environment, which has become increasingly important in the context of the COVID-19 pandemic and its hard-hitting effects on the health workforce. During the COVID-19 pandemic, health workers have been among those who have borne the brunt of the disease' (Shaw et al., 2020)

Over 115,000 health and care workers have been lost to the pandemic as of the end of May 2021 (World Health Organization, 2021d), and many more are still exposed to potential infection from the COVID-19 virus and other hosts of infective agents. Other occupational risks include exposure to toxins, psychological distress and chronic fatigue, stigma, discrimination, physical and psychological violence and harassment (World Health Organization, 2020d). It is recommended that occupational health services be provided to all health workers (World Health Organization, 2021a). Hence a global assessment of existing occupational health and safety (OSH) measures together with retention strategies will provide good baseline information.

## **1.5 Scope of the study**

The main focus of this study is on the stated maldistribution of health workers within countries or territories and the interventions or strategies in place to address them while giving attention to the occupational health and safety measures at the national level covering health workers.

This study does not cover the impact and effectiveness of the strategies to improve the attraction, recruitment and retention of health workers in rural and remote areas, as these have been well documented (Dolea et al., 2010; World Health Organization, 2020a; World Health Organization. Regional Office for South-East Asia, 2020)

## **1.6 Benefits of the study**

This study will help determine the self-reported level of the maldistribution of health workers in rural and remote and the challenge of retaining them there. It will generate baseline

information on the strategies being employed by countries and territories in addressing the shortages of health workers in rural and remote areas. This will be useful for future comparisons and evaluation of progress in this area. It will also give an overview of the prioritization of occupational health and safety measures in national health policies.

# **Chapter 2. Research Objectives and Theoretical Framework for Developing Health Workforce Policies**

## **2.1 Research objectives: Hypothesis, Questions, and Aims**

### **2.1.1 Research hypothesis/ statement**

Health workforce maldistribution or challenges in their attraction to, recruitment, and retention in rural and remote areas remains a persistent challenge globally.

### **2.1.2 Research questions**

- What is the level of health workforce maldistribution or attraction, recruitment, and retention challenges in rural and remote areas, stated by countries?
- What strategies, regulations and policies are outlined by countries for attracting, recruiting, and retaining health workers in rural and remote areas?
- What are occupational health and safety policies for health workers outlined by countries?

### **2.1.3 Aim**

Assessing countries' approaches to bridging the rural health workforce gap is crucial for understanding what policies countries find relevant, acceptable and feasible. This analysis aims to provide an overview of countries stated rural recruitment and retention strategies and note measures that are being implemented that require more evaluations of their impact.

### **2.1.4 Objectives**

The objectives are:

- To assess the documentation of health workforce maldistribution and or rural recruitment and retention challenges
- To compile and analyse countries' stated approaches in improving the recruitment and retention of health worker in rural areas
- To identify recurring unevaluated rural recruitment and retention interventions for further research
- To generate baseline information of countries with documented national occupational health policies covering health workers
- To identify countries with human resources for health units or departments within the ministries of health.

This study will provide a benchmark for future assessments of rural and remote health workforce challenges and the policies or strategies preferred and adopted by countries to address this maldistribution. The study is timely to assess the adoption of the 2010 WHO policy recommendations on the attraction, recruitment, and retention of health workers in rural and remote areas, which got updated in 2021.

## **2.2 A theoretical framework for the development of rural health workforce policies**

In 2009, a conceptual framework was proposed by the WHO, which presented that the final result of having health workers in rural and remote areas was dependent on two interlinked aspects:

- a. The factors that influence the decision of health workers to come to, stay in or leave those areas
- b. The extent to which health system policies and interventions respond to these factors (Dolea et al., 2009)

This framework was formed from the evolution of different theories used to explain the reasons for the maldistribution of health workers both internationally and within countries. The framework was the foundation for developing the 2010 WHO global policy recommendations through an extensive literature search of potential or proposed interventions being carried out in countries, which were evaluated for impact on health workers' decision to work in rural areas or otherwise.

### **2.2.1 Factors that influence the decision of health workers to come to, stay in or leave rural and remote areas.**

Several theories and models have been used to try to explain the factors involved with the availability of health workers. Behavioural theories like the Maslow's Hierarchy of Needs Model (Benson & Dundis, 2003) and Herzberg two-factor theory (Dieleman et al., 2006) have been used in some studies. Maslow's hierarchy of needs is depicted as a pyramid. From the bottom to the top, the needs are: physiological (food and clothing), safety (job security), love and belonging needs (friendship), esteem and self-actualization (McLeod, 2020). The theory is that needs lower down the hierarchy must be satisfied before the higher ones. Herzberg two-factor theory states that in the workplace, while certain factors cause job

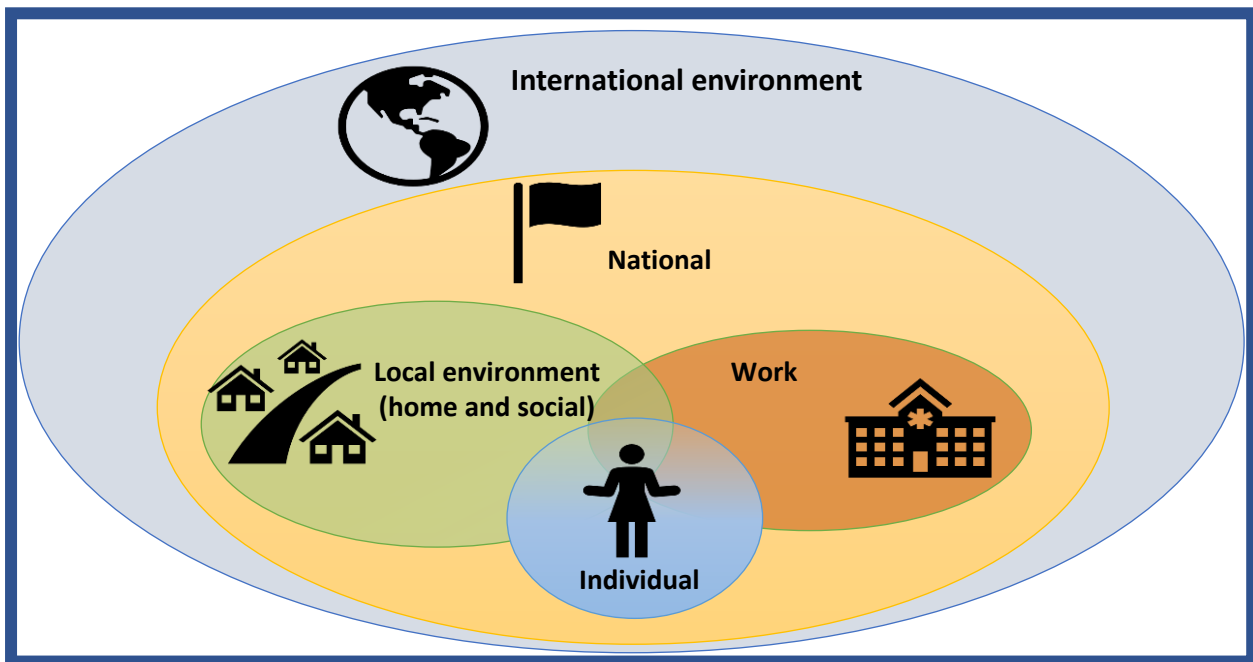
satisfaction (advancement, recognition, achievement), others cause dissatisfaction (working conditions, administrative policies, salary) (Syptak et al., 1999). The link between job satisfaction and retention has been clearly shown by studies (Lu et al., 2005).

Some authors have applied the economic lens to this. Using the Neoclassic Wage Theory, it is suggested that the decision of health workers are largely driven by both financial motives and the probability of finding employment (Lehmann et al., 2008; Todaro, 1987). Research by Hongoro and Normand (2006) on motivating the health workforce further supports this by stating that *a health worker will accept a job if the benefits of doing so outweigh the opportunity cost* (which is the foregone benefits of taking a job in another location) (Hongoro & Normand, 2006).

Economics, however, is just one of the factors affecting a health worker's decision of where to practice; personal, professional, educational and social/ lifestyle-related factors are shown to influence this decision (Dussault & Franceschini, 2006; Thommasen, 2000). These factors have been classified as 'push' and 'pull' factors by research on internal and international mobility and migration of health workers (Awases et al., 2004; Zurn et al., 2004). "Pull" factors are those that attract or draw health workers to the new destination. They include better living conditions, a more stimulating environment, improved employment opportunities, career prospects, and higher income (Dolea et al., 2009). "Push" factors, on the contrary, are factors that repel health workers from a location, and they include loss of employment opportunity, poor living conditions, lack of training for children, low wages, poor career prospects (Lehmann et al., 2008).

Lehmann et al. (2008) proposed a framework to group the different types of influencers by the types of environments surrounding the individual health worker, from the immediate environment to the international environment.

**Figure 2. 1 Different environments impacting attraction and retention**



Source: Lehmann et al., 2008

Each of these environmental levels has different push and pull factors that interact with each other and exert influence on the individual health worker in deciding on the location of practice. The push and pull factors of the environmental levels are outlined in Table 2.1

**Table 2. 1 Different environment influencing health workers and their push and pull factors**

**International environment**

Pull factors

- Higher salaries
- Better working conditions
- Safer working environment
- Better career opportunities
- Better educational opportunities
- Higher quality of life

**National environment**

Push and pull factors

- Degree of social stability
- Degree of political stability
- Salary levels
- General labour relations
- The situation of public service



**Table 2. 1 Different environment influencing health workers and their push and pull factors**

<ul style="list-style-type: none"> <li>• Career opportunities</li> </ul>
<b>Local environment</b>
Push and pull factors <ul style="list-style-type: none"> <li>• General living conditions</li> <li>• Social environment</li> </ul>
<b>Work environment</b>
Push and pull factors <ul style="list-style-type: none"> <li>• Local labour relations</li> <li>• Management styles</li> <li>• Existence or lack of leadership</li> <li>• Opportunities for continuing education</li> <li>• Availability of infrastructure</li> <li>• Availability of equipment</li> <li>• Availability of support</li> </ul>
<b>Individual factors</b>
Personal characteristics that influence an individual's decision making <ul style="list-style-type: none"> <li>• Gender</li> <li>• Age</li> <li>• Marital status</li> <li>• Career goals</li> <li>• Preferences</li> </ul>

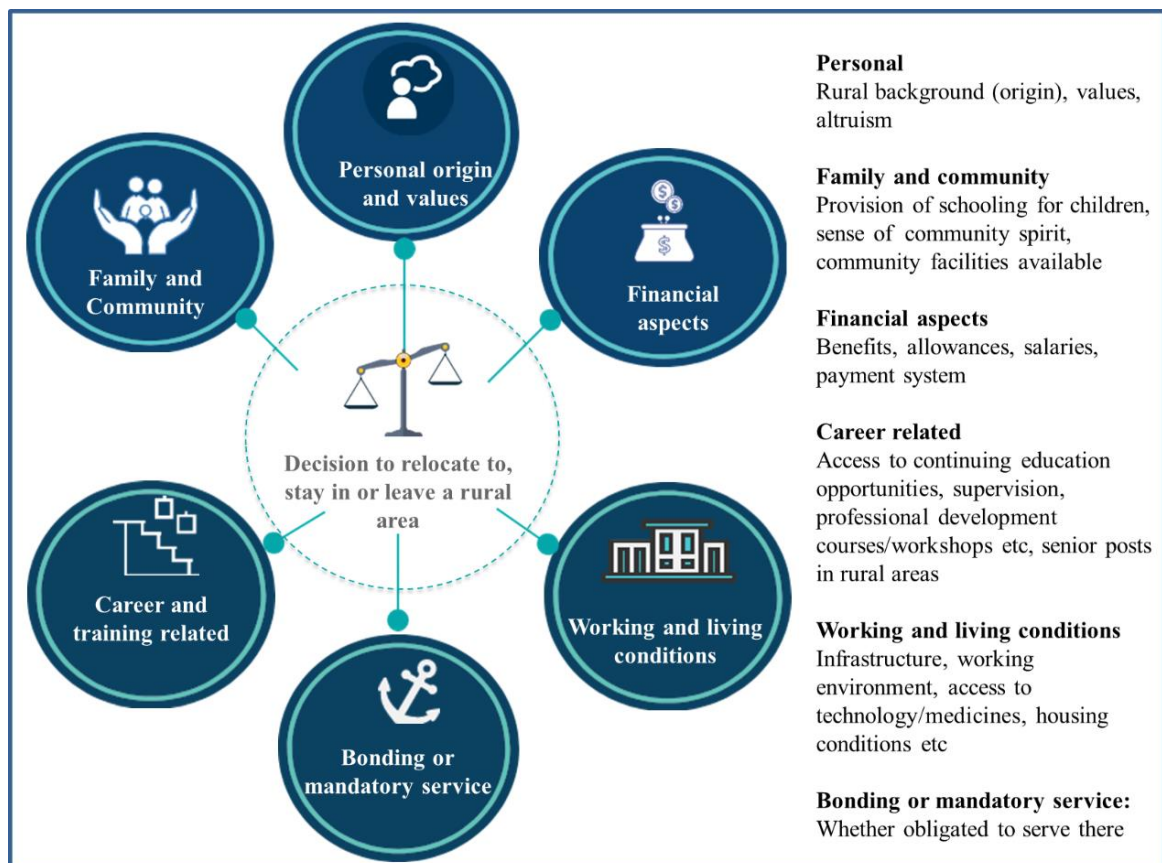
Source: adapted from Lehmann et al., 2008

Dieleman and Harnmeijer (2006) summed up the main elements influencing the retention of health workers within the wider political, socioeconomic, and cultural context as follows:

- **Personal and lifestyle-related factors and living circumstances** such as personal background, living in conflict areas and areas with poor infrastructure, gender-related factors, values, and beliefs.
- **Work-related factors:**
  - *Relating to preparation for work during pre-service education, such as medical education for rural areas*
  - *Relating to health systems, such as human resources policy and planning*
  - *Job satisfaction, influenced by health facility factors, such as financial considerations, working conditions, management capacity and styles, professional advancement and safety at work (Dieleman & Harnmeijer, 2006)*

The unique realities of rural and remote practice, such as the higher probability of increased workload, professional isolation, limited opportunities for dual practice, interplays with the above pull and push factors to influence the underlying motivation of the individual health worker. This interplay is best captured by the factors related to the decision to relocate to, stay in or leave rural and remote areas shown in Figure 2.2.

**Figure 2.2 Factors related to decision to relocate to, stay in or leave rural and remote areas**



Source: adapted from (WHO,2010)

### 2.2.2 The extent to which health system policies and interventions respond to these factors.

A successful response to the factors that affect the decisions of health worker availability requires political will and coordination of the health sector with key stakeholders to ensure that the availability of resources and management skills within the socio-economic, political, institutional context and the health labour market (Lehmann et al., 2008).

Health systems that are weakened or under-resourced face the challenges of not producing sufficient numbers and required skill mix of health workers; and not having the capacity to recruit or retain health workers at all levels especially, in rural and remote areas (Lehmann et al., 2008). The under-investments in health systems result in non-competitive wages, non-availability of decent health jobs, especially in disadvantaged areas, poor health infrastructure, lack of equipment and supplies, and inadequate supportive supervision.

It is well noted that these factors that influence the decision of health workers on rural practice are complex, diverse, context-specific and interact with each other, which make them difficult to tackle with single solutions or interventions (Buchan, 2002). Hence, Buchan (2004) stressed the need for so-called 'bundles' of linked and coordinated human resources for health interventions to achieve more sustained improvements in health workforce policies (Buchan, 2004).

Based on the research by the Joint Learning Initiative (2004), Dussault and Franceschini (2006). Lehmann et al., (2006), a basal analytical framework for the retention of strategies of health systems in response to the factors influencing the location of health workers, was developed by Dieleman and Harnmeijer (2006) and presented in Figure 2.3 (Dieleman & Harnmeijer, 2006; Dussault & Franceschini, 2006; Joint Learning Initiative, 2004; Lehmann et al., 2006). Interventions were observed to have been used by policymakers to improve retention across the world. They were grouped into different interventional levels, with the highest being the health system, followed by the health facility and finally at the health worker's level, as outlined below in Table 2.2.

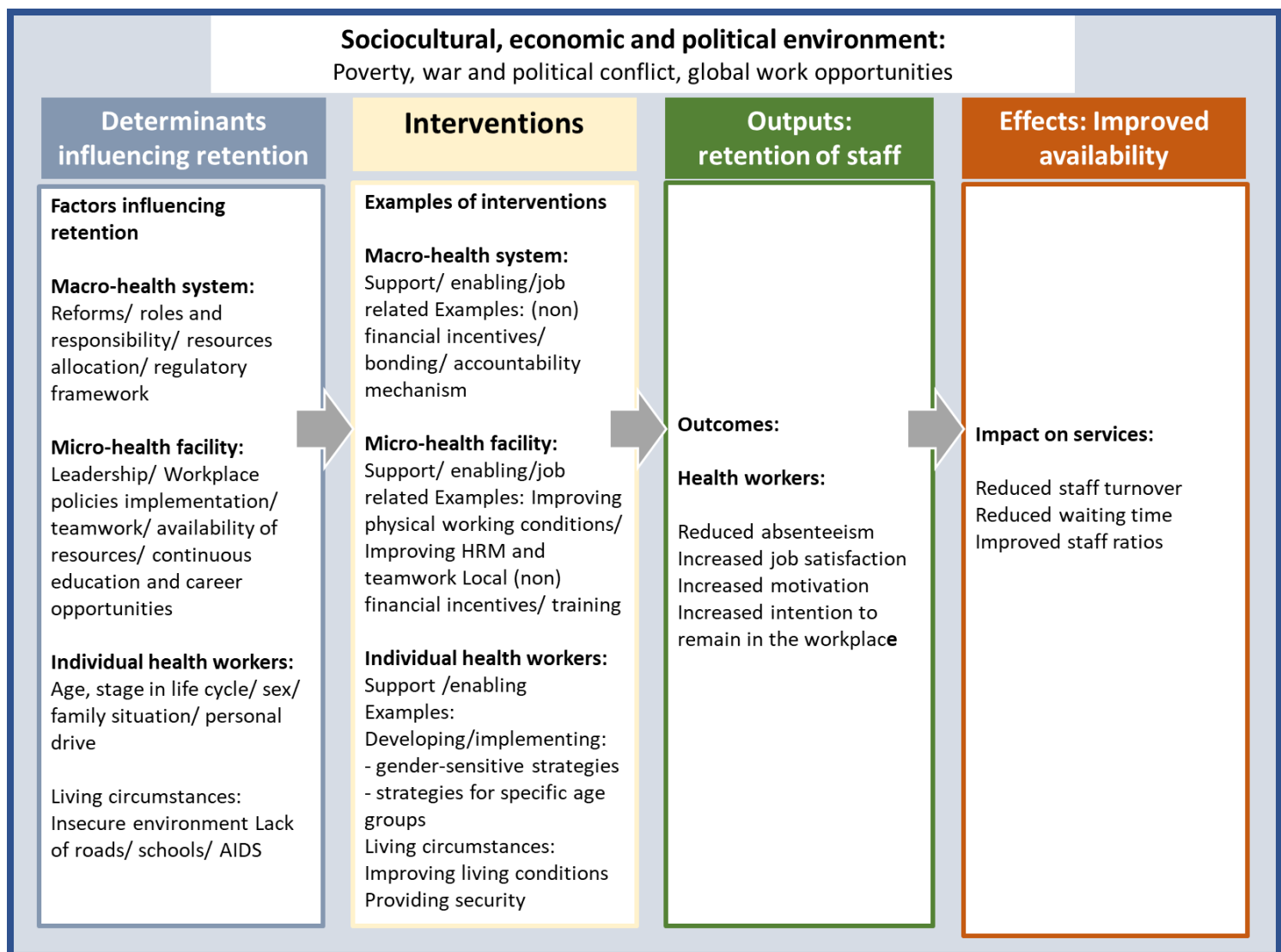
**Table 2. 2 Interventions to improve retention**

<b>Level</b>	<b>Interventions</b>
<b>Macro-level: Health system</b>	<b>Support system/enabling/job-related</b>
	Planning, deployment and use of skills mix Recruitment from rural areas Adapting curricula and training to rural areas Non-financial and financial incentives/ bonding system
<b>Micro-level: Health facility</b>	<b>Support system/enabling/job related</b>
	Improving job satisfaction: Improving physical working conditions Improving HRM and teamwork Providing local financial and non-financial incentives Offering opportunities for professional advancement

Level	Interventions
<b>Individual-level: Health workers</b>	<b>Support system/ enabling</b>
	Improving living conditions Providing security Developing/implementing: Gender-sensitive strategies Strategies aimed at specific age groups

Source: Dielemann and Harnmmeijer (2006)

**Figure 2. 3 Basal Analytical Framework for Retention**



Source: Dielemann and Harnmmeijer (2006)

## 2.3 Mapping the policy interventions.

In 2009 in preparation for developing the WHO global policy recommendations on the attraction, recruitment and retention of health workers in rural and remote areas, an extensive literature review was conducted and based on the preceding foundational research studies and their findings mentioned above. A preliminary categorization of the interventions was developed, with the following three categories

- a. Education and regulatory interventions
- b. Monetary compensations (direct and indirect financial incentives), and
- c. Management, environmental and social support

Table 2.3 outlines the categories of interventions and specific examples of them being used to improve retention.

**Table 2. 3 Categories of interventions used to improve retention of health workers in rural and remote areas**

Category of intervention	Examples
<b>A. Education and regulatory interventions</b>	<ul style="list-style-type: none"> <li>• Targeted admission of students from a rural background</li> <li>• Recruitment from and training in rural areas</li> <li>• Changes/improvements in medical curricula</li> <li>• Early and increased exposure to rural practice during undergraduate studies (diversification of location of training sites)</li> <li>• Educational outreach programmes</li> <li>• Community involvement in the selection of students</li> <li>• Compulsory service requirements (bonding schemes)</li> <li>• Conditional licensing (license to practice in exchange of location in rural areas for foreign doctors)</li> <li>• Loan repayment schemes (paid studies in exchange of services in rural areas for 4-6 years)</li> <li>• Producing different types of health workers (mid-level cadres, substitution, task shifting)</li> <li>• Recognize overseas qualifications</li> </ul>
<b>B. Monetary compensation (direct and indirect financial compensation)</b>	<ul style="list-style-type: none"> <li>• Higher salaries for rural practice</li> <li>• Rural allowances, including installation kit</li> <li>• Pay for performance</li> <li>• Different remuneration methods (fee for service, capitation etc.)</li> <li>• Loans (housing, vehicle)</li> <li>• Grants for family education</li> <li>• Other non-wage benefits</li> </ul>

Category of intervention	Examples
<b>C. Management, environment and social support</b>	<ul style="list-style-type: none"> <li>• General improvement in rural infrastructure (housing, roads, phones, water supplies, radio communication etc)</li> <li>• Improved working and living conditions, including opportunities for child schooling and spouse employment ensured adequate supplies of technologies and drugs</li> <li>• Supportive supervision</li> <li>• Support for continuous professional development, career paths</li> <li>• Special awards, civic movement, and social recognition</li> <li>• Flexible contract opportunities for part-time work</li> <li>• Measures to reduce the feeling of isolation of health workers (professional/specialist networks, remote contact through telemedicine and telehealth)</li> <li>• Increased opportunities for recruitment to civil service</li> </ul>

Source: Dolea et al., 2009

Following further development of this categorization of the interventions based on the increased literature findings and evaluation of the impact of interventions on the availability of health workers in rural and remote areas and the effects on health system outcomes, the interventions were regrouped under the categories of (i) education, (ii) regulation (iii) financial incentives, and (iv) personal and professional support (see Table 1.1).

1. **Education:** production and training of competent health workers fit for service in rural and remote areas
2. **Regulations:** government policies and regulations that determine the availability and distribution of health workers
3. **Incentives:** financial and non-financial incentives that influence the decision of health workers to go to or remain in rural and remote areas
4. **Personal & professional support:** strategies that support and assist health workers in their personal and professional lives while working in rural and remote settings.

The 16 recommendations that the WHO made as interventions for the attraction, recruitment, and retention of health workers in rural areas were the interventions that had been evaluated and shown to positively influence the availability of health workers in rural areas. Other interventions being implemented across countries such as those that improved planning and deployment of health workers to rural and remote areas, conditional licensing (Dieleman & Harnmeijer, 2006), which could fall into the category of regulations did not have evaluated studies to show their effects on the outcomes. In addition, countries continue to implement their own retention strategies, hence a need to collate them, which is one of the objectives of this study.

## 2.4 Occupational health and safety framework

The personal and professional support category involves providing a good and safe working environment, including appropriate equipment and supplies, supportive supervision, which are components of occupational health measures. These are aligned with the ILO Promotional Framework for Occupational Safety and Health Convention, 2006 (No 187) (International Labour Office, 2006) and the WHO-ILO Global Framework for National Occupational health Programmes for Health Workers developed in 2010. They ensure that all countries put measures in place to protect health workers at the front line of the daily battle to save lives and contain diseases (WHO & ILO, 2020).

The framework offers strategic guidance to countries on how to develop their national programmes for health workers, which according to WHO and ILO (2020), should aim at:

- *providing decent working conditions and a healthy, safe and favourable working environment in the health sector;*
- *preventing occupational diseases and injuries; and*
- *ensuring the regulatory compliance of health services with national occupational safety and health standards.*

Table 2.4 outlines the building blocks of the Global Framework for National Occupational health Programmes for Health Workers, which are policies to be adopted by countries.

**Table 2. 4 Building blocks of the Global Framework for National Occupational health Programmes for Health Workers**

<b>Building blocks of national occupational health programmes for health workers according to the WHO–ILO Global Framework</b>	
1	Identify a responsible person with authority for occupational health at both the national and workplace levels.
2	Develop a written policy on safety, health and working conditions for health workforce protection at the national and workplace levels.
3	Ensure access to Occupational Health Services by strengthening existing or establishing new occupational health programme, and allocate sufficient resources/budget to the programme, occupational health professional services, and the procurement of necessary personal protective equipment and supplies.
4	Create joint labour-management health and safety committees with appropriate worker and management representation.
5	Provide ongoing (or periodic) education and training that is appropriate to all parties, including occupational health practitioners, senior executives, front-line managers, health and safety committees, front-line workers and their representatives, and the general public.
6	Identify hazards and hazardous working conditions in order to prevent and control them and manage risks by applying the occupational health hierarchy of controls, which prioritizes elimination or control at the source.
7	Provide pre-service and ongoing immunization against hepatitis B and other vaccine-preventable diseases in the workplace at no cost to the employee and ensure all three doses of the hepatitis B immunization have been received by all workers at risk of blood exposure (including cleaners and waste handlers).
8	Promote exposure and incident reporting, eliminating barriers to reporting and providing a blame-free environment.
9	Promote and ensure health worker access to diagnosis, treatment, care and support for HIV/AIDS, tuberculosis and viral hepatitis B and C.
10	Utilize appropriate information systems to assist in the collection, tracking, analysing, reporting and acting upon data to promote health and safety of the healthcare workplace and health workforce.
11	Ensure that health workers are provided with entitlement for compensation for work-related disability in accordance with national laws.
12	Promote research on occupational health and safety issues of concern to health workers and translation of research into practice, particularly with respect to combined exposures and applied intervention effectiveness research.
13	Promote and implement greening health sector initiatives that incorporate occupational health, green and safe jobs while reducing greenhouse gas emissions with a preference for: use of renewable energy; providing safe drinking water; promoting hand hygiene; active transport; environmentally preferable management of hazardous health care waste; and environmentally preferable selection and disposal of chemicals such as pesticides, disinfectants, and sterilants.

Source: WHO and ILO (2020)



## **2.5 Conceptual framework for this study**

The WHO global policy recommendations called for the inclusion of strategies to attract, recruit and retain health workers in rural and remote areas in the national health plans by countries, as a means to hold partners accountable for actions in reducing the inequities in access to health workers (World Health Organization, 2010). Good human resources for health management system are associated with better coordination of recruitment and retention interventions (James Buchan, 2004; World Health Organization. Regional Office for South-East Asia, 2020.) The Global strategy for Human Resources for Health: Workforce 2030 encouraged countries to develop a human resources for health unit or department within the ministry of health (World Health Organization, 2016a).

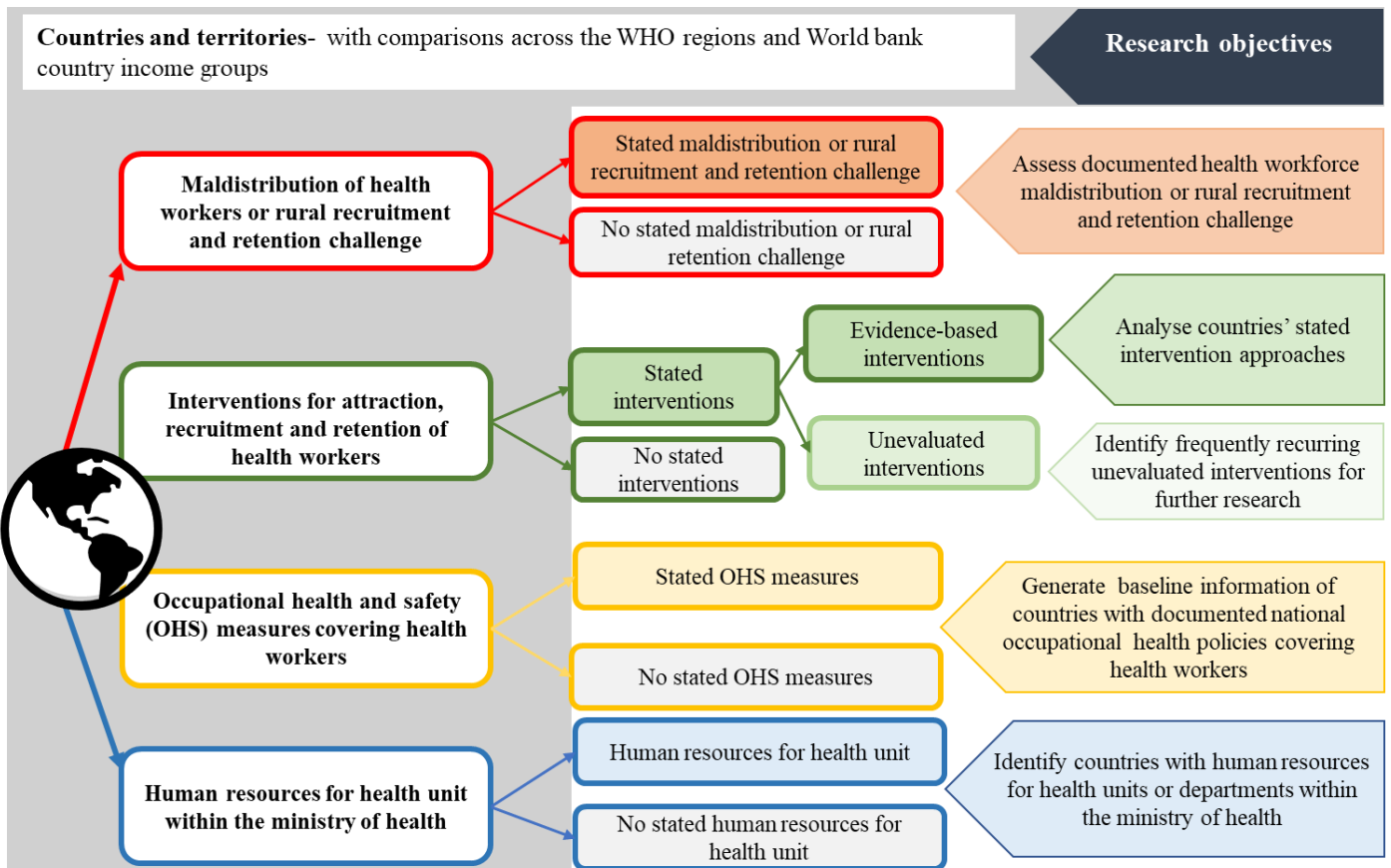
The first and fundamental step of the ILO Guidelines on Occupational Safety and Health Management System (OSHMS) is to (i) adopt a policy before the next steps of (ii) organizing, (iii) planning and implementation, (iv) evaluation and (v) action for improvement (International Labour Organization, 2011). On the national level, a national policy instrument is employed to protect the health and safety of workers in the health sector. This policy instrument is diverse and includes plans and actions, regulations and ministerial orders, national policy guidelines and standards, and others (WHO & ILO, 2020) that may be included in the national health plans of countries.

This study will review the policy documents of countries and territories globally from 2010-2020 to determine the following:

- Health workforce maldistribution or challenges in rural and remote recruitment and retention of health workers
- The interventions being used by countries to counter the inequity in access to health workers
- The countries with stated occupational health and safety measures covering health workers
- Countries with human resources for health departments or units within their ministries of health.

These analyses will be tied to the objectives of the study, as shown in Figure 2.4 below.

**Figure 2. 4 Conceptual framework for the study**



### 2.5.1 Document analysis

A systematic review of the policy documents requires the adoption of a document analysis methodology. Document analysis is a systematic procedure for reviewing or evaluating documents to lay out context, generate questions, track changes over time and supplement or support other types of research data or methods (Bowen, 2009; Dalglish et al., 2020). Document analysis is one of the most commonly used health policy research methods, frequently conducted to describe contents or categorize approaches to health problems where there are existing policies (Dalglish et al., 2020).

One of the approaches of document analysis is content analysis. Content analysis is used in either quantitative or qualitative research for the systematic reduction and interpretation of data (Hsieh & Shanon, 2018). When research or theory exists already as it does for health workforce attraction, recruit and retention interventions, a *deductive approach* or *directed qualitative content analysis* is recommended (Hsieh & Shanon, 2018). This approach is

useful for the confirmation, expansion or refinement of the existing understanding on the subject matter.

# Chapter 3. Methodology

### **3.1 Study design**

For this study's design a document analysis (also called document review) was used. The study adopted *the most straightforward approach of document analysis* (Given, 2008) which is content analysis. This study design was appropriate for the research topic and answering the research questions.

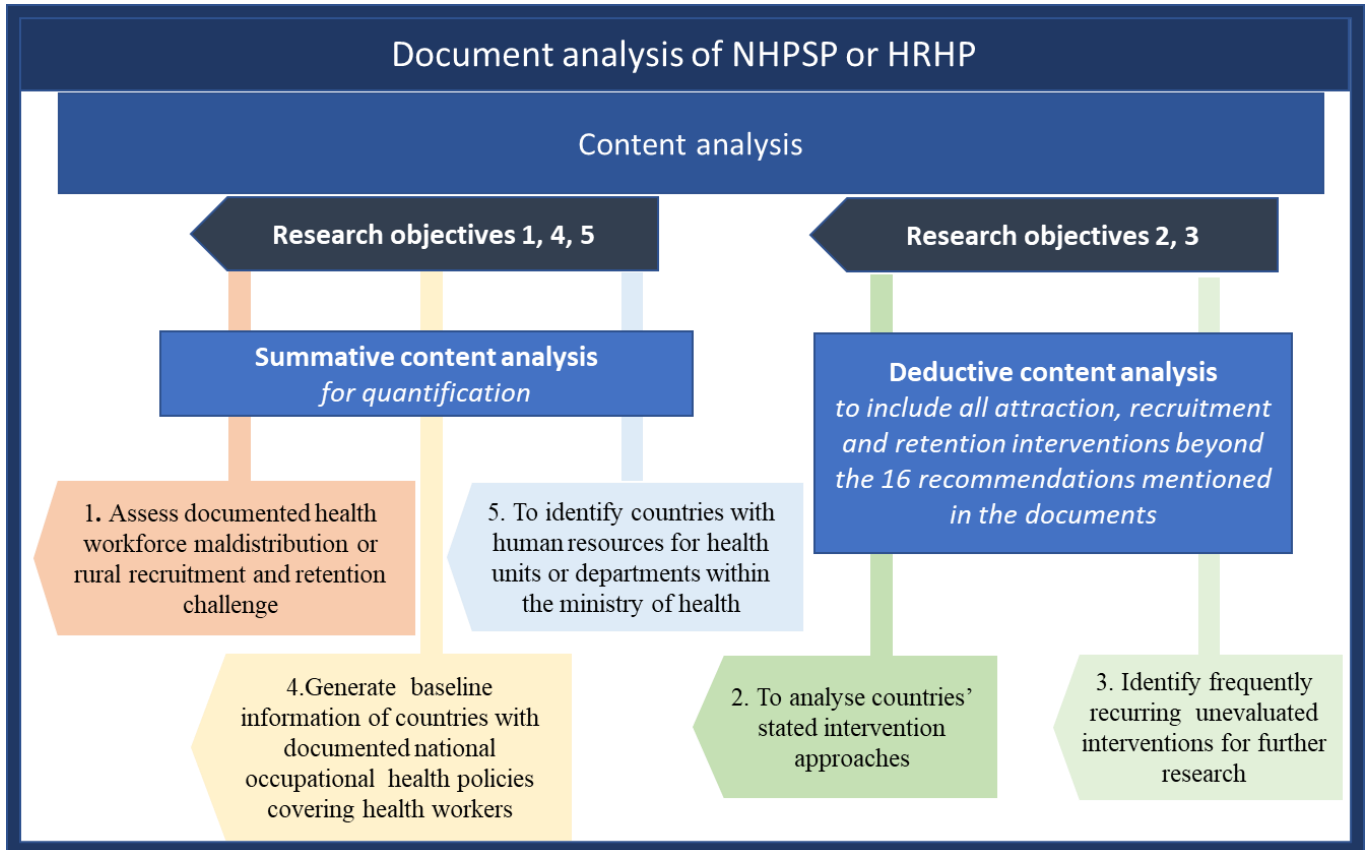
### **3.2 Rationale for the chosen study method**

Summative content analysis is used to identify and tally keywords and concepts, quantifying these specific contents (Hsieh & Shanon, 2018). It was used to assess the extent of stated health workforce maldistribution or rural retention challenge, the existence of occupational health and safety policies, and human resources for health units or departments within ministries of health. A deductive content analysis was also done for identifying the attraction, recruitment and retention interventions stated to be implemented by countries. The existing categories with 16 interventions from the WHO global policy recommendations of 2010 were used as the base and expanded upon as more strategies were encountered within the policy documents.

According to Dalglish et al., (2020), a strength of document analysis is that it can inform new policies. Gross (2018) supports this research method due to some of the advantages like cost-effectiveness and efficiency. These advantages align with the study because the documents were readily available, nonreactive, and stable. However, while document analysis is often used in combination with other research methods, Bowen (2009) and Gross (2018) argue that it can be used as a standalone method in studies where documents are simply the only viable source of information, such as policy, historical, cross-cultural or organizational research (Bowen, 2009; Gross, 2018). Dalgish et al., (2020) pointed out the need to ensure validity, reliability, authenticity, and representativity of the analysis. In compliance with these standards, the inclusion criteria were as broad as possible, peer debriefing was also conducted, and the documents were read and reviewed multiple times.

A framework plan for the document analysis methodology used for this research and how they were used to address the research objectives is presented in Figure 3.1 below.

**Figure 3. 1 Framework for research document analysis**



### 3.3 Document Sources and Eligibility

#### 3.3.1 Types of Documents

Publicly available National Health Policies, Strategies and Plans (NHPSP) or Human Resources for Health Planning (HRHP) documents (i.e., policy/ strategy documents) were used for this study. These documents play an essential role in defining a country's vision, policy directions and strategies for ensuring the health of its populations (World Health Organization, 2020c). Furthermore, according to the World Health Assembly resolution 64.8, they should be regularly reviewed, monitored and adjusted based on evidence-based recommendations to respond to evolving challenges (World Health Organization, 2011).

### 3.3.2 Document Sources

Documents were retrieved from the WHO Country Planning Cycle Database, the WHO MiNDbank (More Inclusiveness Needed in Disability and Development) database and the Ministry of Health websites of countries or territories.

### 3.3.3 Document Retrieval

A systematic approach was adopted. A search of the WHO Country Planning Cycle and WHO MiNDbank databases was first conducted to retrieve documents, followed by a search on the Ministry of Health websites. The searches were conducted between December 2020 and February 2021.

### 3.3.4 Eligibility criteria

As a global analysis, the target was to analyse the policy documents of all countries and territories with a publicly available NHSP or HRHP. The inclusion and exclusion criteria are outlined in Tables 3.1 and 3.2.

**Table 3. 1 Inclusion criteria**

Inclusion criteria	Details
1. Type of documents	Official National Health Policies, Strategies and Plans or Human Resources for Health Planning documents
2. Year of documents	Documents published between <b>2010-2020</b> after the publication of the WHO Global policy recommendations and the WHO-ILO Global Framework for National Occupational health Programmes for Health Workers.
3. Preference Document	In cases of the existence of the two documents NHPSP and HRHP for a single country, preference was given to the HRHP as this is more specific for health workforce strategies.
Period	The most recent NHPSP or HRHP documents published between 2010-2020 were included
5. Language	No language restriction was applied

**Table 3. 2 Exclusion criteria**

Exclusion criteria	Details
1. Type of documents	Documents that were not official National Health Policies, Strategies and Plans or Human Resources for Health Planning documents
2. Year of documents	Documents not published between 2010-2020
3. Preference Period	Older versions or editions of the NHPSP or HRHP documents published between 2010-2020 were excluded

### **3.4 Data Collection and Management**

The document collection and management was tracked on an Excel spreadsheet. The following information were tracked:

- (i) name of the country
- (ii) WHO region
- (iii) type of document
- (iv) year of publication
- (v) World Bank country income classification.

#### **3.4.1 Language Interpretation**

The documents not written in the English language were first translated to English using Google translate.

### **3.5 Data Analysis (Content Analysis)**

#### **3.5.1 Coding and Categorizing**

The MAXQDA Analytics Pro 2020 Students software was used for the coding and categorizing process of this research. The codes represent the study variables, such as stated maldistribution or rural recruitment or retention challenges, human resources for health units within the ministry of health, and occupational health and safety measures.



The WHO-ILO Global Framework for National Occupational health Programmes for Health Workers building blocks were used as a coding scheme. There was no need to expand this framework because more measures were not being mentioned by countries.

For the interventions being used by countries to attract, recruit, retain and health workers, an initial coding scheme was first developed using the 4 categories and 16 recommendations of the WHO 2010 global policy recommendations. The codes were then modified and expanded through an iterative process of reviewing and re-coding when new interventions were encountered in the documents till the final coding list was generated (see Tables 4.2-4.5). This approach was in line with the methodology suggested by Bowen (2009), Gross (2018) and Dalgish et al., (2020).

Summative content analysis was used for counting:

- i. the number of countries with stated health workforce maldistribution or rural recruitment and retention challenge (Research objective 1)
- ii. the number of countries with stated national occupational health measures and policies covering health workers (Research objective 4)
- iii. the countries with stated human resources for health units or departments within their ministries of health (Research objective 5)

Deductive analysis was used in developing and completing the coding list and analysing the interventions being implemented by countries, including those within WHO evidence-based recommendations and those that were not (Research objectives 2 and 3).

### **3.5.2 Interpretation**

The documents had differences in vocabulary, writing styles and original languages (for those not written in the English language), which were translated to English. Due to multiple readings, exposure and familiarity with the documents, the author engaged in interpreting the different intervention descriptions and concepts before coding them to the proper categories.

### **3.6 Limitations of the methodological approach**

Although multiple peer debriefing was done for this research, the coding was conducted solely by the author. This is a limitation for the methodology used because an intercoder

assessment improves the reliability and credibility of the analytical process and findings (Hsieh & Shanon, 2018). Other limitations for this study were that a single document might not contain all the required information on the health workforce distribution, plans for retention and occupational health and safety elements. Basing the analysis for a country on a non-comprehensive document would affect the results of the study.

Language translations of health policy documents using Google Translate may not always give the most nuanced interpretation.

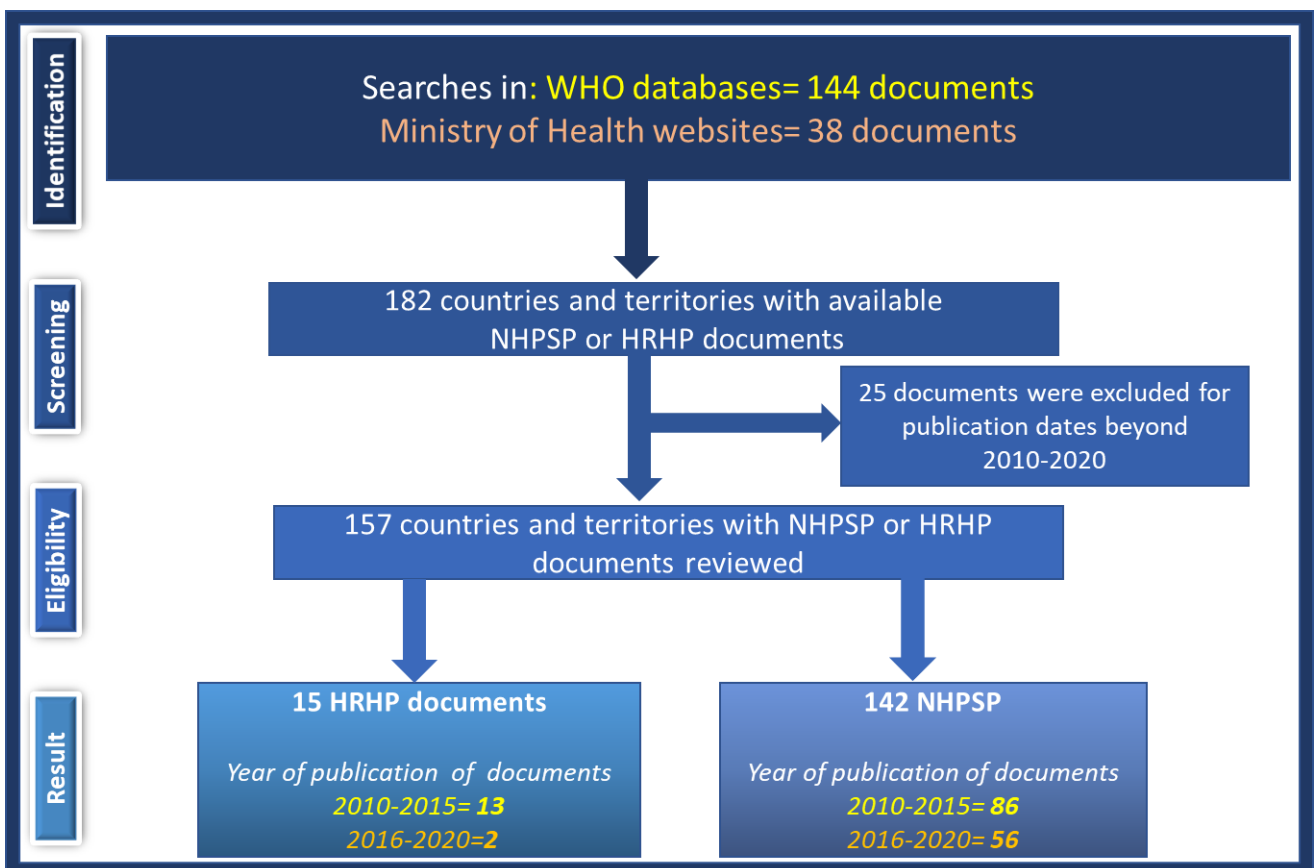
A criticism of content analysis using software lies in "*coding*" judgements, i.e. the assignment of categories to text is required by the software system at an *initial stage of review of information which can raise the problems of premature typification and premature closure in the analysis process* (Denzin & Lincoln, 2018). This was avoided by first reading the documents to get an overview, then reading again to identify relevant categories for analysis as recommended by Bowen (2009), then reading over again each time modifying the coding list accordingly.

# Chapter 4. Results

## 4.1 Study Selection

Documents from 182 countries and territories were publicly available. The search of the WHO databases resulted in the latest documents for 144 countries, complemented by documents for an additional 38 countries and territories sourced from the Ministry of Health websites. 25 of these documents were excluded because they were not published between 2010-2020. Figure 4.1 shows the detailed search of reviewed policy documents.

**Figure 4. 1 Policy documents included in the study**



Source: Adapted from flow diagram for reporting systematic reviews(Moher et al., 2009)

63% of all the documents reviewed were published between 2010 and 2015, during the era of the Millenium Development Goals. Less than 1 in every 10 of the documents reviewed were HRHP documents. They were all from low- and middle-income countries, and most were published before 2016. 56% of the documents were in the English language, while the rest were in other national languages and were translated to English using Google translate before analysis.

The regions of the WHO were well covered by the review, with at least 70% of the countries or territories of each region included. The highest coverage rates was in the South-East Region, where documents for all the MS were reviewed, followed by nearly complete reviews of the African and Western Pacific regions. Table 4.1 shows the regional coverage of this review in details. The list of the included countries is provided in Annex 1.

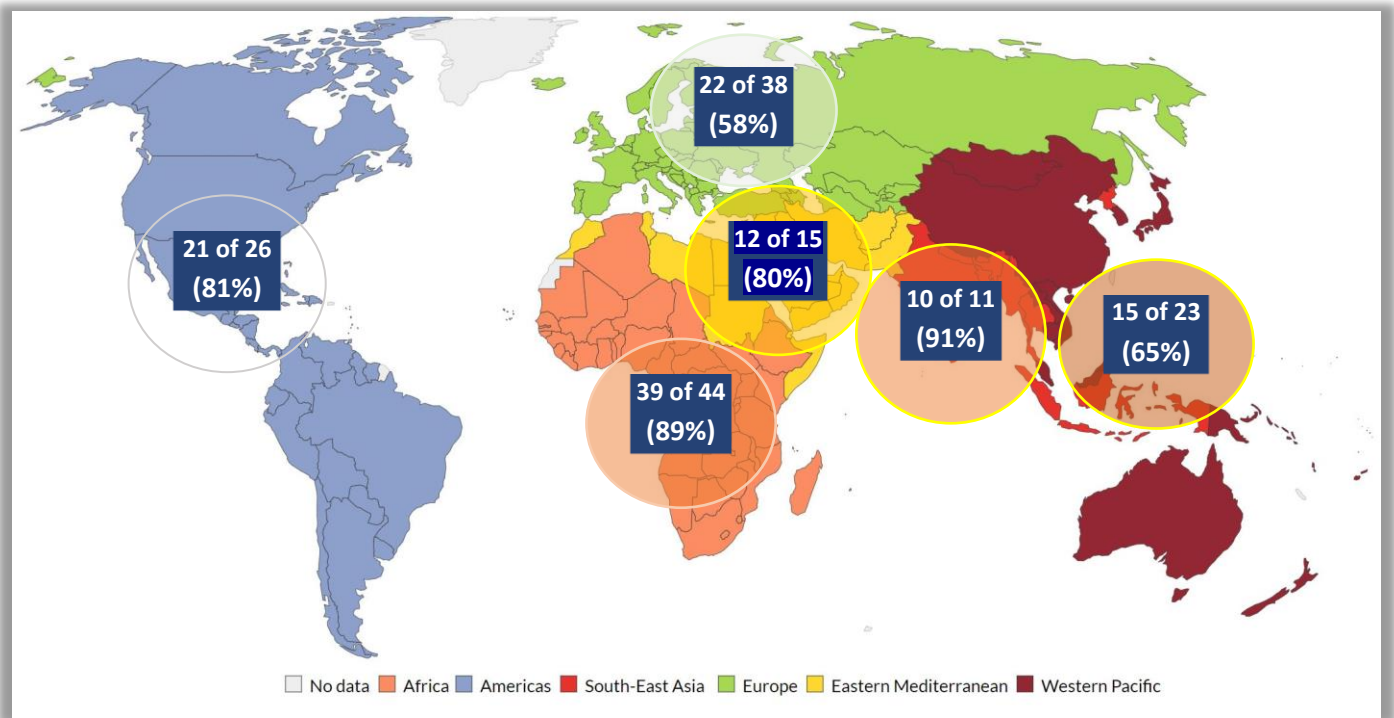
**Table 4. 1 Table showing the total number of countries and territories within the WHO regions and the numbers reviewed in the study**

No.	Region	Total number of countries within the region	Number of countries with strategy documents reviewed
1	African Region	47	44 <b>(94%)</b>
2	Region of the Americas	35	26 <b>(74%)</b>
3	Eastern Mediterranean Region	21	15 <b>(71%)</b>
4	European Region	53	38 <b>(72%)</b>
5	South-East Asia Region	11	11 <b>(100%)</b>
6	Western Pacific Region	27	23 <b>(85%)</b>

## **4.2 Health workforce maldistribution or recruitment and retention challenges in rural and remote areas.**

119 MS (76%) of the 157 reviewed specifically stated either in the section for health systems challenges or in the section on the health workforce, that the attraction recruitment or retention of health workers in rural and remote areas was a key policy challenge or that the maldistribution of the health workforce affected these areas more. This challenge was more frequently highlighted in the South-East Asia, African, Eastern Mediterranean and American regions. Figure 4.2 shows the number of countries covered per region and those with stated challenges.

**Figure 4. 2 Map showing the WHO regions, the number and percentage of countries that stated a health workforce maldistribution or a rural recruitment and retention challenges.**



Almost 9 in every 10 of the low- and middle-income countries reviewed stated this challenge, while just about 1 in 2 high-income countries mentioned it (see Figure 4.4.). There was no change in stating this challenge chronologically. For documents published between 2010-2015, 76% mentioned it, while 75.9% of those published between 2016-2020 also mentioned it.

### **4.3 Interventions for attraction, recruitment, and retention of health workers**

The repeated review of the policy documents and simultaneous deductive extraction and coding of the intervention strategies mentioned by the countries for the attraction, recruitment and retention of health workers, especially in areas where they are mostly needed like the rural and remote areas led to the development of the final intervention lists shown in the tables below. 145 countries had mentioned at least one intervention. Besides the WHO recommendations (see Table 1.1) countries also mentioned the following extra interventions under the following categories

1. Education- 6 more interventions were mentioned.
2. Regulation- 18 more interventions were mentioned.
3. Incentives- 8 interventions were stated under this category with no specific recommendations.
4. Personal and professional support- 3 more interventions were mentioned.

**Table 4. 2 Interventions under the education category (with the evidence-based recommendations highlighted)**

<b>Education</b>		<b>Number of countries</b>	<b>% of countries</b>
1	Continuing professional development/ In-service training	99	<b>68</b>
2	Improve training opportunities/ capacity	53	<b>37</b>
3	Standardised in-service training	51	<b>35</b>
4	Curricula reflects local needs	37	<b>26</b>
5	Management skills training to managers at rural level	23	<b>16</b>
6	Training needs assessment	15	<b>10</b>
7	Rural health workers training facilities	14	<b>10</b>
8	Rural background students	13	<b>9</b>
9	Attract more students to local health care training	9	<b>6</b>
10	Induction/ orientation programme for all new local health workers	8	<b>6</b>
11	Rural postings for students in health worker education training programmes	6	<b>4</b>

**Table 4. 3 Interventions under the regulation category (with the evidence-based recommendations highlighted)**

<b>Regulation</b>		<b>Number of countries</b>	<b>% of countries</b>
1	Decentralisation of human resources for health function and management	70	<b>48</b>
2	HRH planning and forecasting	69	<b>48</b>
3	Strengthen or develop human resources for health database	69	<b>48</b>
4	Building capacity for and improving human resources for health management	54	<b>37</b>
5	Task sharing/shifting and enhanced scope of practice	49	<b>34</b>
6	Develop health workforce deployment policies	40	<b>28</b>
7	Introduce different types of health workers	33	<b>23</b>
8	Develop and adopt human resources for health strategies	30	<b>21</b>
9	Develop and implement retention strategies	30	<b>21</b>
10	Improve production of health workers	23	<b>16</b>
11	Monitoring and evaluation, review of rural health worker levels	17	<b>12</b>
12	Deploy and rotate staff to rural	16	<b>11</b>
13	Formalising the CHWs occupation into the national health system	15	<b>10</b>
14	Post scholarship bonding	14	<b>10</b>
15	Boost workforce with retirees, volunteers or foreigners	11	<b>8</b>

16	Compulsory service in rural areas	11	8
17	Improve staffing at all levels	7	5
18	Creating new categories of health workers	7	5
19	Innovative attraction of health workers	6	4
20	Private/ multiple practice for workers	5	3
21	Advocate for more rural health workers	4	3
22	Limited period for rural deployment service	1	1

**Table 4. 4 Interventions under the incentives category (all interventions within this category are accepted as evidence-based)**

Incentives		Number of countries	% of countries
1	Remuneration/ incentive package for rural health workers	55	38
2	Performance based incentives	10	7
3	Housing/ accommodation allowance/provision	6	4
4	Allocate fellowships/Post-graduate training in favour of rural health workers	4	3
5	Relocation allowance	4	3
6	Medical allowance	2	1
7	Transportation allowance/provision	2	1
8	Extended leave	1	1

**Table 4. 5 Interventions under the personal and professional support category (with the evidence-based recommendations highlighted)**

Personal and professional support		Number of countries	% of countries
1	Safe and supportive work environment	87	60
2	Outreach support/ mobile/ telemedicine	66	46
3	Performance evaluation monitoring, supervision appraisal	47	32
4	Career development programmes	38	26
5	Better living conditions	20	14
6	Public recognition measures	7	5
7	Professional networks	6	4
8	Prompt promotion	3	2
9	Community support structure	1	1

92% of all the countries reviewed had stated at least one intervention aimed at improving the attraction, recruitment or retention of health workers in rural and remote areas. The regional breakdown of this is shown in Table 4.6. All the countries reviewed in the Eastern Mediterranean and Western Pacific region had at least one intervention, followed closely by almost all countries in the African, American and South-East Asia regions.



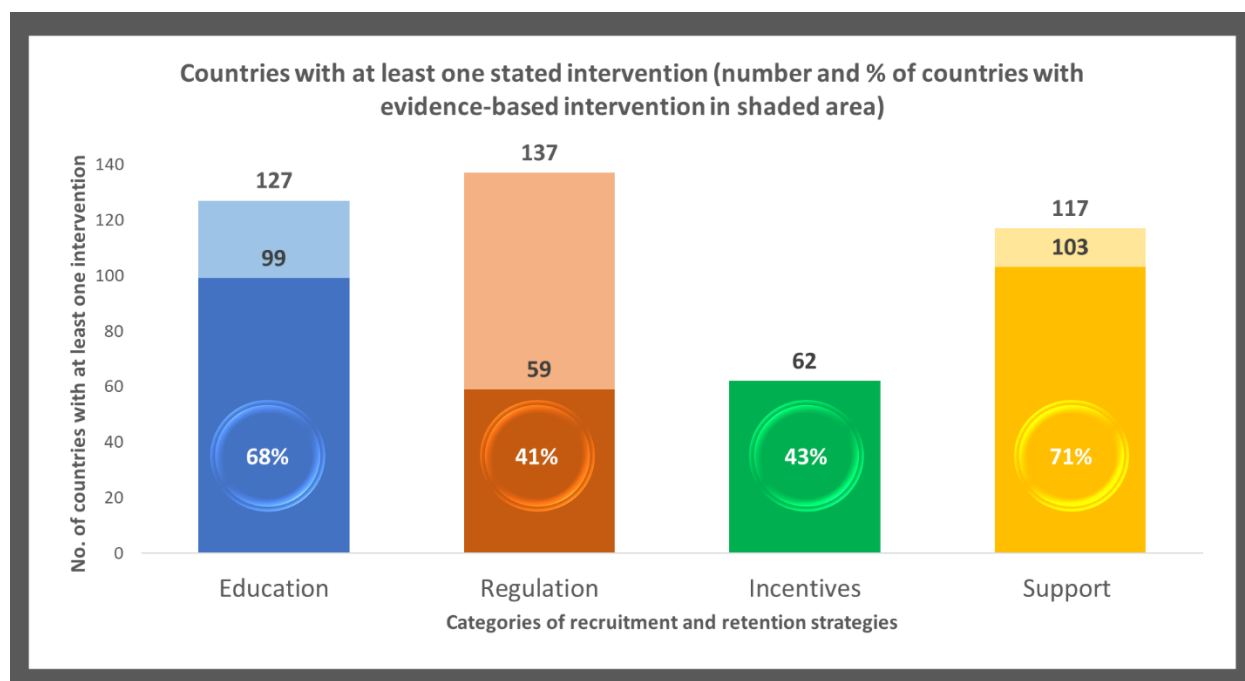
The leading category mentioned by almost all countries reviewed is regulation, followed by education and support (personal and professional). The use of incentives is the least popular category, with less than half of countries with strategies mentioning it. Only 56 (39%) of the countries with interventions had at least one intervention across all the categories.

**Table 4. 6 Showing the total number and percentage of countries and categories of the 145 countries with at least one stated intervention**

Region	Countries that stated at least one intervention		Among countries that stated at least one intervention							
	<i>No. of countries</i>	<i>% of countries</i>	Education		Regulation		Incentives		Support	
			<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
African Region	43	<b>98</b>	40	<b>93</b>	43	<b>100</b>	21	<b>49</b>	39	<b>91</b>
Region of the Americas	25	<b>96</b>	19	<b>76</b>	24	<b>96</b>	7	<b>28</b>	18	<b>72</b>
Eastern Mediterranean Region	15	<b>100</b>	12	<b>80</b>	15	<b>100</b>	10	<b>67</b>	12	<b>80</b>
European Region	29	<b>76</b>	28	<b>97</b>	24	<b>83</b>	10	<b>34</b>	19	<b>66</b>
South-East Asia Region	10	<b>91</b>	9	<b>90</b>	10	<b>100</b>	8	<b>80</b>	9	<b>90</b>
Western Pacific Region	23	<b>100</b>	19	<b>83</b>	21	<b>91</b>	5	<b>22</b>	20	<b>87</b>
<b>Total and global averages</b>	<b>145</b>	<b>92%</b>	127	<b>87%</b>	137	<b>94%</b>	62	<b>43%</b>	117	<b>81%</b>

Figure 4.3 shows how many countries of the 145 countries with stated strategies had at least one evidence-based intervention from the WHO recommendations within each category against those with unevaluated interventions, to compare the mention of different interventions categories across countries. The darker shaded portion of the columns represents the countries with at least one stated evidence-based interventions. Only 32 countries (22%) of the 145 countries mentioned at least one evidence-based intervention across all categories of intervention.

**Figure 4. 3 Showing stated interventions of the across the categories by 145 countries with stated strategies**



The number of interventions mentioned for each category by all the countries were recorded and compared to those within the 16 recommendations in Table 4.7 below.

**Table 4. 7 Total number of interventions, number and percentage of evidence-informed interventions**

Categories of intervention	Total number of interventions	Number and percentage of evidence-based interventions % of countries
1 Education	327	169 (52%)
2 Regulation	581	107 (18%)
3 Incentives	84	84
4 Personal and professional support	272	224 (82%)

#### 4.4 Occupational health and safety policies

A total of 76 countries (48%) of the reviewed 157 countries had mentioned at least one OHS policy that covers health workers. The most popular building block is the development of a written policy on safety, health and working conditions. However, the mention of this building block reduced from nearly a third in all documents published between 2010-2015 to below a quarter of documents published between 2016-2020. There were no remarkable changes between the other building blocks over time.

At least more than half of countries within the high-income, upper middle-income and low-income classifications had at least one OHS policy covering health workers. For lower-middle-income countries, this was less than 4 out of every 10 countries (see Figure 4.4)

**Table 4. 8 Number and percentage of countries with occupational health and safety policy building blocks covering health workers**

Occupational health and safety building blocks	Number of countries	% of countries
1. Develop a written policy on safety, health/ working condition	45	29%
2. Ensure access to Occupational Health Services	41	26%
3. Identify hazard(ous) working conditions and eliminate/control	33	21%
4. Periodic O/H education and training	19	12%
5. Information systems for management of data for OHS	17	11%
6. Create joint labour-management health safety committees	11	7%
7. Promote research on OHS issues of concern to health workers	7	4%
8. Occupational health person at national and workplace level	7	4%
9. Access to Diagnosis/treatment of HIV/AIDS, TB, hepatitis B and C	6	4%
10. Promote exposure and incident reporting	5	3%
11. Ensure entitlement for compensation for work-related disability	5	3%
12. Promote and implement greening health sector initiatives OHS	2	1%
13. Provide immunization for hepatitis B other vaccine-preventable diseases	1	1%

#### **4.5 Human Resources for Health Unit or Department within Ministries of Health**

46 countries (39%) of the total of 157 countries reviewed had mentioned having human resources for health unit or department within the ministry of health. 59% of Low-income countries documented this, with a decline in reporting the existence of such a unit as income status rose across countries (see Figure 4.4).

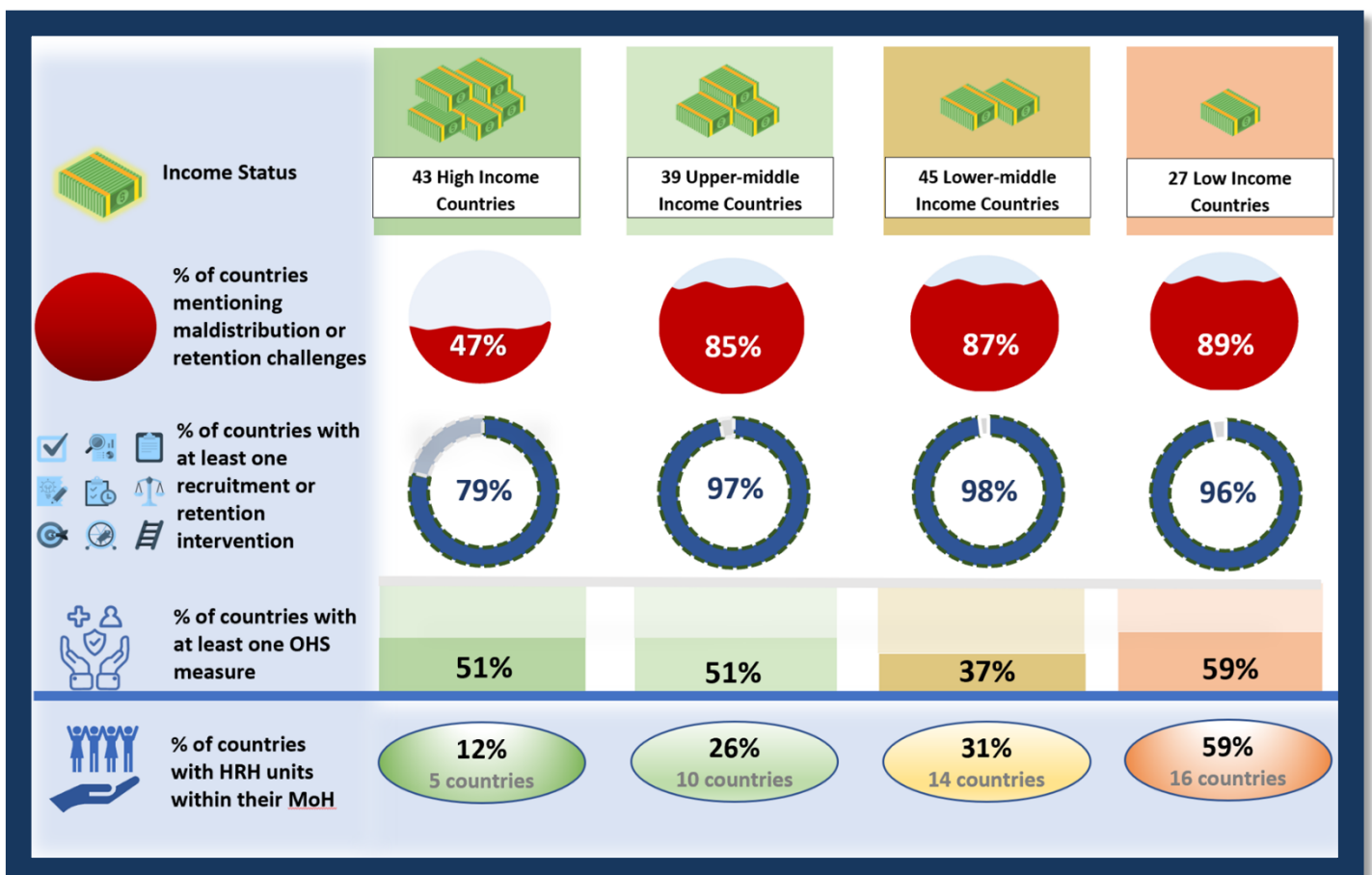
All 46 countries that mentioned having human resources for health units also stated intervention strategies. These countries, on average, had mentioned 1.7 times more interventions than countries without human resources for health units. In addition, 63% of the

countries that mentioned having an HRH unit stated interventions across all 4 categories, unlike 23% of countries that did not mention having such a unit.

#### 4.6 Findings based on the economic status of countries and territories

Using the World Bank Income classification for 2021 (World Bank, 2021) to group countries, a total of 154 countries with designated income classification were included in this section. Health workforce maldistribution or rural recruitment or retention challenges, interventions used by countries to correct this, stated OHS measures and mention of HRH units within ministries of health were compared across income groups, and the summary is presented in Figure 4.4.

Figure 4. 4 Summary of research objectives across country income groups



- Starting from high-income countries (HIC), 20 out of 43 documents stated a health workforce maldistribution or rural recruitment and retention as a key policy challenge. 34 outlined strategies or policies aimed at boosting the density of health workers in rural areas. The approaches outlined focused mainly on government regulations and education and training strategies. 3 of every 4 documents mentioned supportive interventions, while less than a quarter stated the use of incentives.
- 33 out of 39 upper-middle-income countries (UMIC) documents reviewed stated rural retention as a central policy challenge. In addition, 38 documents outlined rural recruitment and retention strategies or policies. These tended to focus on government regulations, education and training, and personal/professional support—more than a third of the documents mentioned incentives.
- 39 of the 45 lower-middle-income countries (LMIC) documents reviewed reported rural retention as a key policy challenge. Almost all documents reviewed, 44 out of 45, outlined strategies or policies for the attraction, recruitment or retention of the health workforce in rural and remote areas. These drew similarities to those outlined in documents from UMICs. However, financial incentives were more frequently mentioned (in nearly half of the documents).
- 24 of 27 low-income-country (LIC) documents reviewed reported that rural recruitment and retention were key challenges. 26 out of the 27 documents outlined at least one recruitment or retention strategy. The use of regulation was the most common approach, reported by all countries, followed by education and training and personal and professional support strategies. Over 3 in every 5 LIC reported the use of incentives.

Income classification	<i>Percentage of documents with the at least one strategy from the category</i>			
	Education	Regulations	Incentives	Support
HIC	79%	82%	24%	76%
UMIC	87%	97%	39%	71%
LMIC	84%	98%	45%	86%
LIC	96%	100%	62%	88%

**Table 4. 9 Percentage of countries with at least one strategy across the country income groups**

# **Chapter 5. Discussion and Policy Interventions (Recommendations)**

## 5.1 Discussion

### 5.1.1 Health workforce maldistribution or rural recruitment and retention remains a key policy challenge

This review highlights the widespread nature of health workforce maldistribution in rural and remote areas, propagated by the challenges in attracting, recruiting and retaining health workers in these areas. More than 80% of low- and middle-income countries state this challenge. Furthermore, the temporal assessment from 2020-2015 to 2016-2020 shows the challenge is persistent in line with other publications in this area (Scheil-Adlung, 2015; World Health Organization, 2021b).

The reasons for this persistent challenge are many. The increasing international mobility of health workers, which in turn stimulates internal migration from rural to urban areas, creates the so-called “*hierarchy of migration flows*”, depleting rural and remote areas of health workers (Dieleman & Harnmeijer, 2006; Padarath et al., 2003; WHO Regional Office for Europe, 2021). Another reason could be that the interventions being implemented by countries are not sufficient in addressing the factors that influence the decision of health worker to go to or remain in rural and remote areas. The non-comprehensive intervention plans may be linked to under-investments in the health workforce and health workforce management systems or lack of awareness of evidence-based interventions.

Clearly, the human resources for health management systems across many countries need strengthening. Almost half of the countries aimed to strengthen health workforce planning and forecasting, and another 37% planned to build capacity and improve health workforce management across all levels. Effective and appropriate health workforce policies rely on the availability and completeness of health workforce data (World Health Organization, 2017), and almost half of the countries reviewed need their health workforce data systems strengthened (since they stated this as an intervention).

The most influential factors associated with rural practice for health workers are being from a rural area or having spent some childhood years in a rural area and being trained in a rural community (Grobler et al., 2009). Only 10% of the documents reviewed mentioned intervention to enrol rural background students in health worker education programmes or the

intervention to locate health worker education institutions or facilities closer to rural and remote areas.

With most low- and middle-income countries facing rural health workforce challenges, the health and socioeconomic implications of the projected shortfall of 18 million health workers needed for universal health coverage (World Health Organization, 2016b) on rural populations in these countries beg for urgent dialogue, investments and actions.

### **5.1.2 Many countries mention strategies to address health workforce maldistribution in rural and remote areas**

Over 9 in every 10 countries reviewed had at least intervention to address the challenge of health workforce attraction to recruitment and retention in rural and remote areas. However, over 80% of the interventions grouped within the government regulation categories and about 50% of the education and training interventions mentioned in the review can be classified as anecdotal interventions since their impact have not been evaluated. Since multiple factors influence the availability of health workers in rural and remote areas, an interconnected bundle of interventions is encouraged in addressing them (Buchan, 2004; World Health Organization, 2010, 2021b). Less than a quarter of the countries reviewed outlined the adoption of the entire spectrum of policy categories, citing at least one evidence-based strategy from all four categories of intervention.

Some of the recurring interventions retrieved from at least 10% of the policy documents which have not been evaluated require more research attention of their impact in the reversal of health workforce imbalances in rural and remote areas. Under the education category, some of these include improving the training capacity by developing faculty and improving training opportunities, standardizing the training of health workers, training managers in rural and local areas to develop management skills and conducting training needs assessments to ensure the curriculum is relevant to the context.

For regulation, almost half of the countries stated decentralization of the human resources for health function and management as an intervention strategy. It is theoretically noted that decentralization can make health systems more responsive to local needs, but in practice, it can often create governance problems, worsening local institutional weaknesses (Stubbs et



al., 2017). Two other interventions stated by nearly half of the documents reviewed were the planning and forecasting of health workers taking the local health needs into account and strengthening the human resources for health database. Less stated were interventions to build the capacity for improving human resources for health management systems and developing health workforce deployment policies for rural and remote areas. These management capacity interventions are considered a basic core requirement for retention strategies to be effective in the WHO 2010 global policy recommendations (World Health Organization, 2010). In addition, 30 countries outline plans to develop and adopt recruitment and retention strategies for rural health workers. 15 countries mentioned the formalization of community health worker roles as an intervention to improve the availability of health workers. There is limited evidence on the impact of this intervention; however, it is strongly recommended in the global guidance for the optimization of community health worker programmes (World Health Organization, 2018). Another intervention that may benefit from further research is the rotational deployment of health workers to rural and remote areas stated by 16 countries to boost the rural health workforce densities.

On the personal and professional support category of interventions, performance evaluation and appraisal were mentioned in 47 policy documents as intervention strategies. Management capacity and style influence the job satisfaction of health workers, which is linked to retention (Dieleman & Harnmeijer, 2006).

Only 11 documents from middle-income countries referred to the use of compulsory service in rural and remote areas. However, a previously conducted study in 2010 found that approximately 70 countries across all income groups had used or were using compulsory service schemes to meet the health needs of rural and remote areas (Frehywot et al., 2010).

The education interventions of ensuring that curricula of health worker education programmes reflect the local needs increased from 24% in documents published between 2010-2015 to 43% for documents published between 2016-2020. Other education interventions increased, but not so markedly.

The intervention of enrolling rural background students, which is one of the most important interventions for developing the rural health workforce, had few mentions. Only 3 low-income countries (12%), 4 lower-middle-income countries (9%), 4 upper-middle-income

countries (11%) and 2 high-income countries (6%) mentioned it. Similar low trends were observed for the intervention of locating health worker education facilities closer to rural and remote areas.

### **5.1.3 Occupational health and safety policies need to be adopted and implemented by more countries**

Nearly half of the documents reviewed stated at least one of the building blocks for developing occupational health and safety policies covering health workers (76 countries). Only 45 of the 157 countries and territories within the study had developed a written policy on safety, health and working conditions for health workforce protection at the national and workplace levels. This finding is in line with the statement by the WHO-ILO, (2020) that more than 50 countries have developed and are implementing national policy instruments for protecting the health and safety of health workers.

Across income classifications, there were no marked differences. However, all income classes of countries had less than 40% of the countries with a written policy on the safety and health of health workers. More countries mentioned ensuring a safe and supportive working environment (86 countries) than those that had at least one policy on occupational health and safety for health workers (76 countries), with about half of those mentioning the former not stating the latter. This raises the question of what precisely countries mean by providing safe working environments.

### **5.1.4 Human resources for health units within the ministries of health coordinate better recruitment and retention plans**

Countries with a unit or department dedicated to the human resources for health affairs, on average, have 1.7 times more strategies than those without this unit. Having established the need for comprehensive plans which used interventions from all the categories, the countries with an HRH unit have are three times more likely to state a comprehensive strategy plan than those without. This emphasises the importance of countries developing or strengthening this unit in line with the recommendation of the Global Strategy on Human Resources for Health: Workforce 2030. There is a clear upward trend with stated health workforce

challenges and the existence of these units. Low- and middle-income countries with the most health workforce challenges need to accelerate the development of these units.

## **5.2 Trends across income classification of countries**

Income classification appears to correlate with the documented maldistribution of health workforce and the documented response interventions. Policy documents from lower-income countries stated more strategies to circumvent low health workforce availability in rural and remote areas. This could result from larger challenges in health workforce retention in the rural areas of these countries, as increasingly documented, which significantly contributes to the lesser population coverage of essential health services in LMICs (World Health Organization, 2019c).

In the education category, bringing health worker education students to rural areas and locating health worker education facilities in rural areas were increasingly mentioned as the income status of the group increased. This could be because of the financial resources required to implement both interventions. The intervention of ensuring access to continuing professional development topped the list across all groups.

For the regulation category, the prioritization of decentralized human resources for health management system, strengthened database for health workers and improving the capacity of the management decreased as income status increased. In contrast, the mention of ensuring an enhanced scope of practice for health workers or task sharing increased as income status increased. Therefore, it is the most stated regulatory intervention in high-income countries.

The incentives are used more in low- and middle-income countries, with low-income countries 3 times more likely to use them than high-income countries. Housing/accommodation allowances or provision was decreasingly mentioned from low to upper-middle-income countries and not mentioned at all by any high-income countries.

A similar trend was observed for the personal and professional category, with better living conditions being prioritised less as the income classification rose. Providing a safe and supportive work environment is the most mentioned intervention in low-and middle-income

countries, while the use of telehealth and outreach services is mentioned most by high-income countries.

## **5.3 Policy interventions and recommendations**

### **5.3.1 More investments in the health workforce development and support**

It makes economic and ethical sense to invest in the development, training, recruitment, remuneration, protection and retention of health workers. Investments in the health and social workforce generate a powerful multiplier effect on economic growth (World Health Organization, 2016c). This is achieved because populations are healthier and more productive when they have access to health workers, and also more jobs are created both in the health and non-health sectors. Rural populations and communities stand to gain the most from these investments. However, the political will to take committed actions towards this is often subdued.

Some of the policy interventions listed below require increased investments in the health workforce and health workforce management systems. Without these investments and actions by decision-makers across countries, universal health coverage and health security cannot be achieved.

### **5.3.2 Strengthen the health workforce management systems across countries**

A strengthened health workforce management system is the fundamental requirement for planning, coordinating, implementing, monitoring and evaluating strategies that increase the density and distribution of health workers through improved recruitment and retention (Buchan, 2004; Dieleman & Harnmeijer, 2006; World Health Organization, 2010, 2021b) and adjusting them when necessary to best respond to the changes in health needs of the health systems. Some interventions stated by countries like HRH planning and forecasting, improving the HRH databases, strengthening the management capacity at local levels are functions of an effective health workforce management system (World Health Organization, 2010).

National HRH or health workforce policies, which are commitments to the health workforce goals and a guide for action on the health workforce priorities of countries through detailed strategies (Nyoni et al., 2006), need to be updated across many countries. In addition, finance, implementation, monitoring and evaluation plans which were missing in some of the reviewed documents need to be developed and presented in the updates for these policies.

Countries, especially those with more rural health workforce challenges that are yet to develop or strengthen their HRH units or departments within their ministries of health, need to accelerate the process of doing so. These HRH units are associated with better quantity (stating more interventions) and quality (stating more comprehensive cross-cutting interventions) of responses to the maldistribution of health workers in rural and remote areas.

### **5.3.3 Prioritization of protection, safety, and support of health workers**

The importance of protecting health workers who are at increase health and safety risks cannot be overstated. More countries need to urgently develop their occupational health and safety policies protecting health workers and ensure continual access to occupational health and safety services by health workers in the frontlines. Only 1 policy document mentioned the provision of vaccinations to health workers to protect them from vaccine-preventable diseases like Hepatitis B. In the context of the COVID-19 pandemic, where the protection of frontline workers not only helps break the cycle of infection but also preserves the functioning of this vital pillar of the health system, more commitments and actions are needed to secure and vaccinate frontline health workers.

All countries should endeavour to improve the safety and security of the work environment and living conditions for health workers, especially those in rural and remote areas, by conducting situational analysis and taking contextually relevant actions to respond accordingly to the observed needs and challenges. About 70% of the global health workers are women (Boniol et al., 2019), which raises the need for actions to prevent all forms of harassment and violence while ensuring fairness and flexibility of support. Optimized supportive systems are linked to better motivation, increased job satisfaction and improved retention (Dieleman & Harnmeijer, 2006; Lehmann et al., 2006; World Health Organization, 2010, 2021b).

### **5.3.4 Monitor and evaluate implemented interventions and their impact on health workforce densities and health outcomes.**

A detailed budgeted plan for the monitoring and evaluating the interventions being employed should be part of all HRH policies. This requires a robust health system and health workforce data collection and management base. Countries need to strengthen their health workforce databases by progressively implementing the National Health Workforce Accounts (World Health Organization, 2017).

Some of the interventions mentioned by countries that have not been evaluated for their impact on the density and distribution of health workers and the health impacts will benefit from planned assessments. These include:

- the training of rural health managers to develop management skills
- training needs assessments of the local health worker education curriculum to ensure it aligns with the local health needs.
- the effectiveness of the rotational deployment of health workers in rural and remote
- formalization and absorption of community health worker programmes into the health sector

### **5.3.5 Implement the rural pipeline programme to address the shortage of health workers in rural and remote areas, especially in low- and middle-income countries**

A concrete, evidence-based approach to increasing the availability of health workers in rural areas is the rural pipeline or rural pathway approach. This involves combining some of the education category interventions like admitting rural background students (students who spent some childhood years in rural areas), training them in rural environments using a curriculum that is relevant to rural practice (Kwan et al., 2017; Tesson et al., 2005).

All countries should make efforts to develop their rural pipeline by investing in rural education, attracting students in rural areas into health worker education programmes; besides gaining from increased availability of health workers, rural areas which are usually deprived stand to benefit economically from health worker education training programmes and institutions (Hogenbirk et al., 2021). The new global guidance on the development of the rural health workforce (WHO, 2021b) encourages countries to use scaffolded learning or

remedial classes in the training of rural background students that require academic support. Due to the higher index of poverty in rural areas, financial support should be given to students through subsidies, grants, loans, scholarships with return of service agreements to work in rural areas after their qualification (World Health Organization, 2021b).

### **5.3.6 Take advantage of the accelerated use of technologies to expand the use of telehealth in a rural and remote area**

The pandemic has accelerated the use of telecommunications and telehealth in health service delivery to rural populations (Chu et al., 2021; Shura et al., 2020). Where feasible, this should be scaled up to improve the connectivity of both rural communities and their health workers to the non-rural support health networks for the consultations, services, assistance, training and development they need. This also requires investments in telecommunications and internet infrastructure as well as the training of health workers to be comfortable and proficient with this method of service delivery.

### **5.3.7. Better dissemination of best practices in developing, attracting, recruiting and retaining health workers in rural and remote areas**

Insufficient dissemination of best practices results in the lack of adoption of those practices (Buchan, 2004). The importance of the availability of best practice recommendations in different languages promotes dissemination and decreases the likelihood of misinterpretation of recommendations. The updated 2021 WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas is available in the six major international languages of Arabic, Chinese, English, French, Spanish, Russian with a summary document in the mentioned languages, including Portuguese. This will help address any issue of ignorance about the existence of evidence-based recommendations to address the retention challenge on the part of decision-makers.

## 5.4 Limitations of study

- The use of the NHSP or HRHP documents may not always contain information on the occupational health and safety measures or the existence of human resources for health unit within the ministry of health, and hence this would not be counted for the country even though the measures exist.
- Long standing interventions or practices may not have been mentioned in the most recent policy document of countries or territories which may affect the results of the study. An example of this is the low number of countries mentioning the use of compulsory services in comparison to study by Frehywot et al., 2010.
- Interventions or measures adopted or implemented after the publication of the policy document were not captured which would mean an undercounting of current measures being implemented by countries. The flipside of this is that interventions that were discontinued are not also taken into account in this study. An example of this is the comparison of the use of incentives mentioned by the six countries included in Case studies of South-East Asia region (World Health Organization. Regional Office for South-East Asia, 2020) (which employed multiple sources of information like official documents, programmatic reports, study reports, media reports, key informant interviews and observations from visits) and the correspondence with findings of this study. All six countries mentioned had been shown to have employed the use of incentives in the Case studies. However only 4 of them had mentioned this in the policy document that was reviewed for this study.
- Google translate was used to translate 44% of the documents, which may have resulted in some meanings, measures or interventions being lost in the translation process. This would have affected the overall results of the study.



## 5.5 Conclusion

This document analysis supports the hypothesis that health workforce maldistribution or challenges in the attraction to, recruitment to and retention in rural and remote areas for health workers remains a persistent challenge globally. 3 out of every 4 country document reviewed highlighted this challenge. The reasons for this persistent challenge are most likely the under-investments in both the development of rural health workforce, attraction, recruitment and retention of rural health workers, with the increasing international mobility of health workers. Many countries mentioned the need to strengthen their human resources for health management systems, with less than a third stating the existence of a human resources or health unit or department within their ministries of health.

Although many countries mentioned strategies to improve the density and distribution of health in rural areas, the above-mentioned reasons could have contributed to the low levels of comprehensive bundles of interventions across the entire spectrum of policy categories citing at least one strategy from all four categories. Very few countries mentioned an active development of the rural health workforce by enrolling rural background students in health worker education programmes, and the conducting training of health workers closer to rural areas. While 60% of countries planned to create safe, secure and supportive work environments only about 30% had developed a written policy on safety, health and working conditions for health workforce protection at the workplace.

Intensifying the focus, attention and actions on increasing the number of health workers in rural and remote areas through context-relevant bundles of interconnected interventions and ensuring that they are well motivated and protected to carry out service delivery, is key to achieving universal health coverage. The health, health workforce and socioeconomic impact of the COVID-19 pandemic calls for urgent actions, to prevent a worsening of the rural gap in access to health care. Actions and investments in the rural health workforce development, retention and health workforce management systems will not only pre-empt the projected shortage of 18 million health workers, but it will also protect the most vulnerable, poorest and hardest to reach populations. An investment in developing the rural health workforce is an investment in: the health and wellbeing of rural populations, health security and emergency preparedness, poverty reduction, women and girls, decent rural jobs, economic growth, reducing inequalities and ultimately sustainable rural development in rural and remote areas.

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**Annex. List of included countries and territories (by income groups), type of document, period, stated maldistribution, HRH unit existence, OSH measures.**

**Table A. 1 List of included low-income countries and territories**

Document	Type of document	Period for the document	Stated rural HWF challenges	HRH unit	Education	Regulation	Incentives	Personal or professional support	OHS measures
Burkina Faso	NHPSP	2011	Yes	1	3	4	1	2	1
Burundi	HRH	2011	Yes	1	1	3	2	4	0
Central African Republic	NHPSP	2015	Yes	1	3	6	1	2	1
Chad	NHPSP	2016	Yes	0	2	1	0	3	2
Democratic Republic of Congo	NHPSP	2016	Yes	1	4	4	2	2	0
Eritrea	NHPSP	2017	No	1	2	4	0	0	4
Ethiopia	NHPSP	2015	Yes	0	4	5	0	2	0
Gambia	NHPSP	2014	Yes	1	2	7	3	4	3
Guinea	NHPSP	2015	Yes	0	2	3	1	2	1
Liberia	NHPSP	2011	Yes	0	3	7	3	0	5
Madagascar	NHPSP	2015	Yes	1	1	6	1	2	0
Malawi	NHPSP	2017	Yes	1	5	5	0	3	4
Mali	NHPSP	2014	Yes	1	2	5	0	2	2
Mozambique	NHPSP	2014	Yes	1	3	7	0	2	5
Niger	NHPSP	2017	Yes	1	1	5	1	2	0
Rwanda	HRH	2011	Yes	1	4	8	1	2	0
Sierra Leone	NHPSP	2017	Yes	1	2	5	0	0	2
South Sudan	NHPSP	2016	Yes	0	1	9	0	2	1
Togo	NHPSP	2017	Yes	0	2	6	1	3	2
Uganda	NHPSP	2015	Yes	0	2	3	0	3	1
Haiti	NHPSP	2012	No	0	2	3	0	2	0
Afghanistan	NHPSP	2016	Yes	0	4	6	1	2	0
Somali	HRH	2016	Yes	1	3	10	1	5	2
Sudan	NHPSP	2012	Yes	1	1	7	1	1	0
Yemen	NHPSP	2010	Yes	1	3	3	2	2	0
Tajikistan	NHPSP	2010	Yes	0	4	5	1	1	3
Democratic People's Republic of Korea	HRH	2011	No	0	0	0	0	0	0



**Table A. 2 List of included lower-middle-income countries and territories.**

Document	Type of document	Period for the document	Stated rural HWF challenges	HRH unit	Education	Regulation	Incentives	Personal or professional support	OHS measures
Algeria	NHPSP	2015	No	0	0	0	0	0	0
Angola	NHPSP	2012	Yes	0	2	7	1	3	0
Benin	NHPSP	2018	Yes	1	2	6	1	5	2
Cabo Verde	NHPSP	2012	Yes	0	1	5	1	1	0
Cameroon	HRH	2013	Yes	1	4	7	3	2	0
Congo	NHPSP	2015	Yes	0	3	8	0	2	0
Comoros	NHPSP	2010	Yes	1	1	4	0	2	1
Cote D'Ivoire	NHPSP	2016	Yes	1	0	3	0	1	0
Ghana	NHPSP	2014	Yes	0	0	5	0	2	0
Kenya	NHPSP	2014	Yes	0	4	5	0	4	0
Lesotho	NHPSP	2017	No	0	3	5	0	1	6
Mauritania	NHPSP	2012	Yes	1	1	5	1	1	0
Nigeria	NHPSP	2016	Yes	0	0	4	0	2	2
Sao Tome and Principe	NHPSP	2017	Yes	1	1	4	0	1	0
Swaziland	HRH	2012	Yes	1	5	9	0	4	2
United Republic of Tanzania	NHPSP	2015	Yes	0	2	7	1	1	4
Zambia	NHPSP	2017	Yes	0	2	7	0	4	0
Zimbabwe	NHPSP	2016	Yes	0	1	4	0	0	1
Bolivia plan	NHPSP	2010	Yes	0	1	1	0	1	0
El Salvador	NHPSP	2014	No	0	1	0	0	0	0
Honduras	NHPSP	2010	Yes	0	0	1	0	0	0
Nicaragua	NHPSP	2015	Yes	0	2	2	0	3	2
Djibouti	NHPSP	2013	Yes	1	2	5	0	3	0
Egypt	NHPSP	2014	Yes	0	2	1	0	1	0
Morocco	NHPSP	2012	Yes	0	0	3	1	4	2
Pakistan	NHPSP	2016	Yes	0	1	6	1	0	0
Kyrgyzstan	NHPSP	2013	Yes	0	3	5	1	1	3
Moldova	NHPSP	2014	Yes	0	4	1	1	0	2
Ukraine	NHPSP	2015	Yes	0	2	5	2	1	0
Bangladesh	HRH	2015	Yes	1	3	5	1	3	0
Bhutan	HRH	2011	Yes	1	6	8	3	3	1
India	NHPSP	2017	Yes	0	7	8	1	4	0
Myanmar	HRH	2012	Yes	1	5	9	1	5	1
Nepal	HRH	2011	Yes	1	6	11	2	5	0
Sri Lanka	NHPSP	2016	Yes	1	4	6	0	3	1
Timor Leste	NHPSP	2011	Yes	1	2	5	1	3	1
Cambodia	NHPSP	2016	Yes	0	2	7	2	5	1

Kiribati	NHPSP	2012	No	0	2	5	0	0	0
Laos	NHPSP	2016	Yes	0	5	9	2	2	0
Mongolia	NHPSP	2017	No	0	2	1	0	1	3
Papua New Guinea	NHPSP	2011	Yes	0	0	1	0	3	0
Philippines	NHPSP	2017	Yes	0	3	8	1	1	0
Solomon	NHPSP	2016	Yes	0	3	2	0	2	0
Vanuatu	NHPSP	2010	No	0	2	2	0	3	0
Vietnam	NHPSP	2016	Yes	0	5	5	0	1	0

**Table A. 3 List of included upper-middle-income countries and territories.**

Document	Type of document	Period for the document	Stated rural HWF challenges	HRH unit	Education	Regulation	Incentives	Personal or professional support	OHS measures
Botswana	NHPSP	2010	Yes	1	8	8	2	3	3
Gabon	NHPSP	2017	Yes	1	2	1	1	2	0
Namibia	NHPSP	2010	Yes	0	2	4	1	4	1
South Africa	HRH	2012	Yes	1	8	10	3	4	0
Argentina	NHPSP	2010	Yes	1	2	2	1	1	4
Belize	NHPSP	2014	Yes	0	1	6	0	1	2
Brazil	NHPSP	2016	Yes	0	4	7	0	0	0
Colombia	NHPSP	2012	Yes	0	3	2	1	1	8
Costa Rica	NHPSP	2016	No	0	3	2	0	0	0
Dominica	NHPSP	2010	Yes	1	2	4	0	0	0
Dominican Republic	NHPSP	2016	Yes	0	2	2	0	1	0
Grenada	NHPSP	2016	Yes	0	0	3	0	2	0
Guyana	NHPSP	2013	Yes	1	4	5	1	3	1
Jamaica	NHPSP	2015	Yes	0	1	3	0	2	2
Mexico	NHPSP	2019	Yes	0	4	3	1	3	0
Paraguay	NHPSP	2013	Yes	0	1	5	0	2	0
St Lucia	NHPSP	2015	Yes	0	0	1	0	2	2
Suriname	NHPSP	2011	Yes	0	0	1	0	0	1
Iraq	NHPSP	2014	Yes	1	3	7	1	4	0
Jordan	HRH	2018	Yes	0	3	7	1	3	2
Lebanon	NHPSP	2016	No	0	1	1	0	0	3
Albania	NHPSP	2016	Yes	0	4	2	1	0	1
Belarus	NHPSP	2016	No	0	0	0	0	0	0
Bulgaria	NHPSP	2015	Yes	0	3	3	1	2	3
Georgia	NHPSP	2011	Yes	0	2	1	0	0	0
Kazakhstan	NHPSP	2014	Yes	0	2	1	0	2	4
North Macedonia	NHPSP	2012	Yes	1	1	5	0	0	0
Russia	NHPSP	2016	Yes	0	1	0	0	2	1

Serbia	NHPSP	2016	Yes	0	3	1	0	0	3
Turkey	NHPSP	2013	Yes	0	2	5	1	2	6
Indonesia	HRH	2011	Yes	0	3	6	1	3	0
Maldives	HRH	2014	Yes	1	8	8	3	5	0
Thailand	NHPSP	2012	Yes	0	0	3	0	0	0
China	NHPSP	2011	Yes	0	1	7	0	3	4
Fiji	NHPSP	2016	Yes	1	1	4	0	1	0
Malaysia	NHPSP	2011	Yes	0	0	3	0	0	1
Marshall Islands	NHPSP	2017	No	0	3	2	0	2	0
Tonga	NHPSP	2015	No	0	3	4	0	4	3
Tuvalu	NHPSP	2016	No	0	2	3	0	3	2

**Table A. 4 List of included high-income countries and territories.**

Document	Type of document	Period for the document	Stated rural HWF challenges	HRH unit	Education	Regulation	Incentives	Personal or professional support	OSH measures
Andorra	NHPSP	2015	No	0	0	0	0	0	0
Antigua and Barbuda	NHPSP	2016	No	0	0	3	0	0	0
Australia	NHPSP	2016	Yes	0	3	0	1	1	0
Austria	NHPSP	2013	No	0	0	0	0	0	0
Bahamas	NHPSP	2010	No	0	0	0	0	0	0
Bahrain	NHPSP	2016	No	1	0	2	0	0	0
Brunei	NHPSP	2012	No	0	3	3	0	0	0
Canada	NHPSP	2020	Yes	0	0	3	0	2	0
Chile	NHPSP	2016	Yes	1	2	4	0	2	6
Croatia	NHPSP	2010	Yes	1	1	6	1	4	4
Czechia	NHPSP	2014	No	0	1	1	0	1	0
Denmark	NHPSP	2013	No	0	0	0	0	0	0
Finland	NHPSP	2012	Yes	0	0	2	0	2	1
France	NHPSP	2018	Yes	0	3	2	0	3	6
Greece	NHPSP	2019	Yes	0	2	3	0	0	4
Iceland	NHPSP	2013	Yes	0	1	2	0	1	4
Ireland	NHPSP	2013	No	0	1	2	0	0	1
Italy	NHPSP	2011	No	0	2	1	0	1	4
Latvia	NHPSP	2011	No	0	1	1	0	1	1
Lithuania	NHPSP	2016	Yes	0	1	0	0	0	5
Luxembourg	NHPSP	2013	No	0	2	0	0	0	3
Malta	NHPSP	2014	No	0	1	3	0	1	0
Mauritius	NHPSP	2017	No	1	2	2	0	1	1

Nauru	NHPSP	2016	Yes	0	1	4	0	2	0
Netherlands	NHPSP	2014	No	0	0	0	0	0	2
New Zealand	NHPSP	2016	Yes	0	2	2	0	2	0
Norway	NHPSP	2016	Yes	0	3	4	0	2	0
Oman	NHPSP	2014	Yes	0	2	2	1	2	0
Palau	NHPSP	2014	Yes	0	0	0	0	3	2
Panama	NHPSP	2016	Yes	0	1	4	1	2	1
Poland	NHPSP	2016	No	0	0	0	0	0	4
Portugal	NHPSP	2012	No	0	0	0	0	0	0
Qatar	NHPSP	2015	No	1	0	2	0	3	3
Romania	NHPSP	2014	Yes	0	2	5	2	3	1
San Marino	NHPSP	2015	No	0	1	0	0	1	4
Seychelles	NHPSP	2016	No	0	6	2	0	3	1
Singapore	NHPSP	2012	No	0	0	1	0	1	0
Slovenia	NHPSP	2016	Yes	0	1	4	2	1	4
Sweden	NHPSP	2011	Yes	0	0	0	0	0	2
Switzerland	NHPSP	2013	No	0	2	0	0	0	0
United Kingdom	NHPSP	2020	No	0	0	0	0	0	0
Unites States of America	NHPSP	2010	Yes	0	3	3	1	1	0
Uruguay	NHPSP	2015	Yes	0	1	1	1	1	0

**Table A. 5 List of included countries and territories without income classification.**

Document	Type of document	Period for the document	Stated rural HWF challenges	HRH unit	Education	Regulation	Incentives	Personal or professional support	OHS measures
Cook Islands	HRH	2015	Yes	0	4	3	1	5	0
Niue	NHPSP	2011	Yes	0	3	4	0	2	0
Somaliland	NHPSP	2011	Yes	1	3	4	2	2	2

Keys	
	No stated maldistribution or rural HWF challenges
	Stated maldistribution or rural HWF challenges
	OHS measures
	No stated rural HWF interventions
	No intervention/ measure