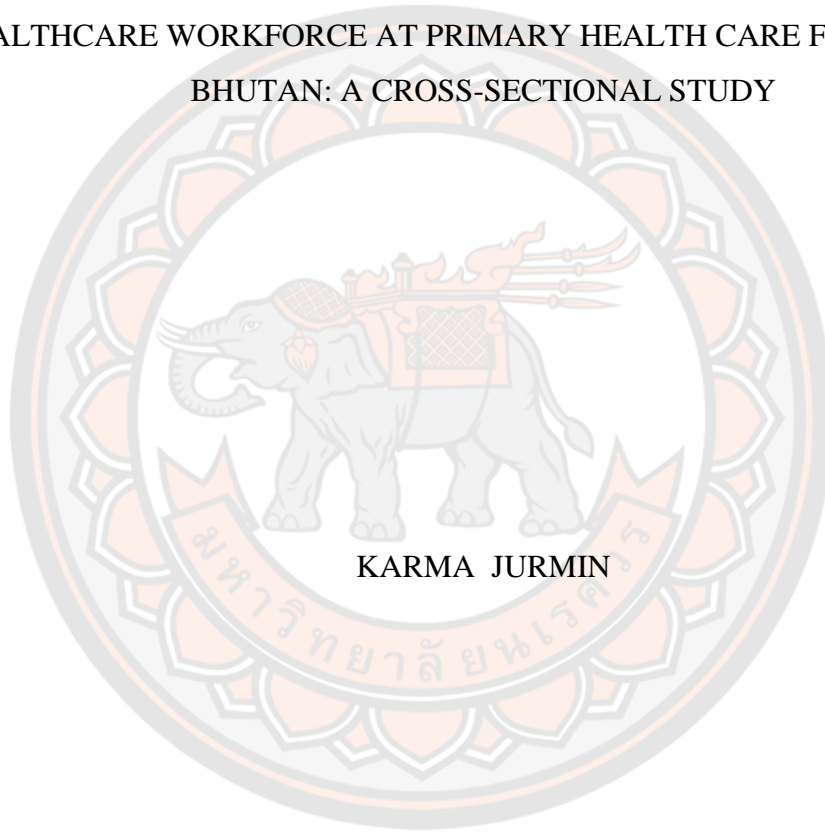




FACTORS INFLUENCING THE RETENTION OF FEMALE PRIMARY  
HEALTHCARE WORKFORCE AT PRIMARY HEALTH CARE FACILITIES IN  
BHUTAN: A CROSS-SECTIONAL STUDY



KARMA JURMIN

A Thesis Submitted to the Graduate School of Naresuan University  
in Partial Fulfillment of the Requirements  
for the Master of Public Health in Public Health Program

2022

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By Karma Jurmin

has been approved by the Graduate School as partial fulfillment of the requirements for the Master of Public Health in Public Health Program of Naresuan University

**Oral Defense Committee**

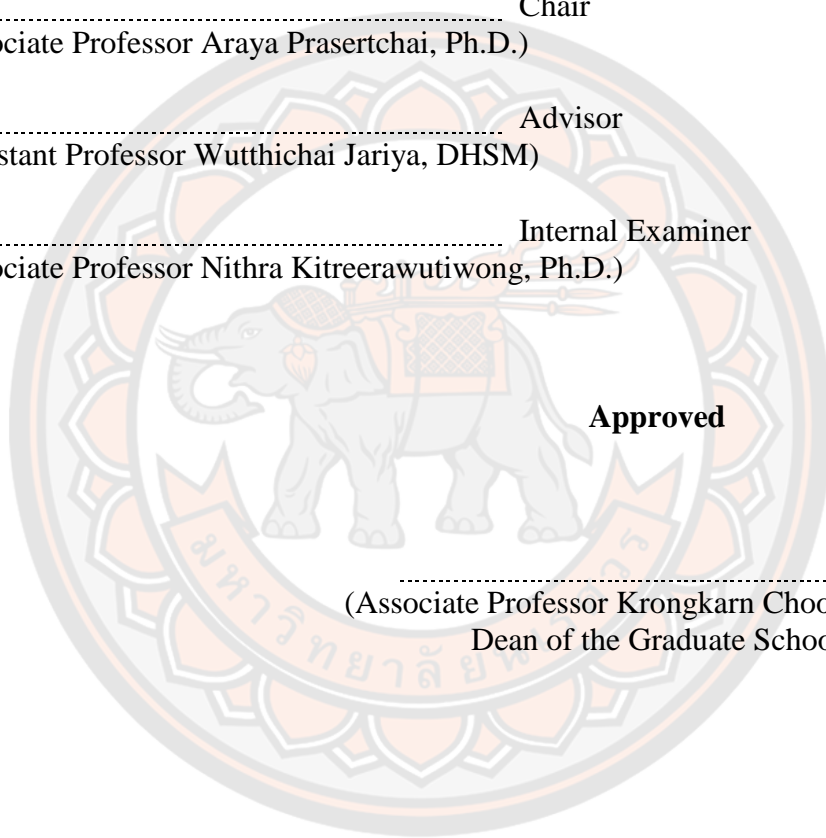
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**Title** FACTORS INFLUENCING THE RETENTION OF FEMALE PRIMARY HEALTHCARE WORKFORCE AT PRIMARY HEALTH CARE FACILITIES IN BHUTAN: A CROSS-SECTIONAL STUDY

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**Keywords** Female primary health care workforce; Human resources for health; Human resource shortage; Maternal and child health; Midwives; Primary health care; Retention; Rural area

### ABSTRACT

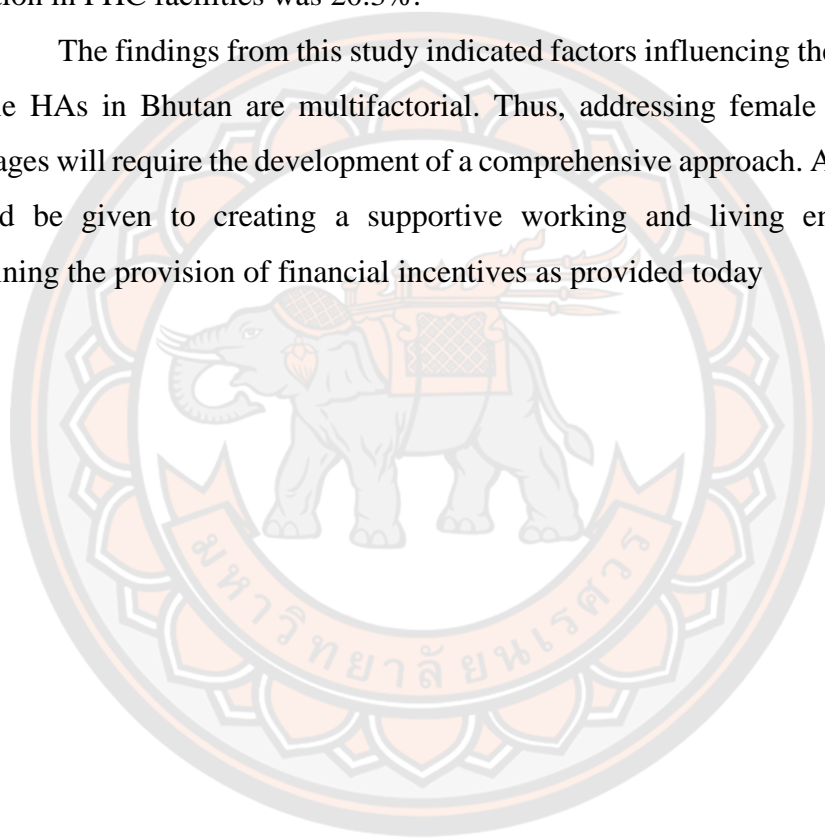
Retention of the female primary health care (PHC) workforce in PHC facilities is pivotal in achieving sustainable development goals, particularly concerning maternal and child health. Though the policy mandates at least one female Health Assistant (HA) in every PHC facility, Bhutan is yet to achieve the target. This study aimed to explore factors influencing the retention of the female PHC workforce at the PHC facilities in Bhutan.

A cross-sectional questionnaire survey was employed among all 165 female HAs working in PHC facilities across 20 districts in Bhutan. The questionnaires were developed based on the World Health Organization rural retention framework which comprised of six domains. Data were collected online using a structured close-ended self-administered questionnaire. Descriptive statistics including frequencies, percentages, means, standard deviations, maximum and minimum, bivariate analysis, and multivariate linear regression analysis were performed. The statistical significance was accepted at  $p$ -value  $<0.05$ .

The results showed that participants indicated a higher sense of retention in rural areas ( $3.52 \pm 0.92$ ). The retention of female HAs was positively significantly associated with age ( $p=0.012$ ,  $b=0.088$ ), average monthly income ( $p=0.003$ ,  $b=0.002$ ),

number of years in service ( $\rho=0.004$ ,  $b=0.091$ ), personal origin and values ( $\rho<0.001$ ,  $b=0.251$ ), family and community aspects ( $\rho<0.001$ ,  $b=0.172$ ), working and living conditions ( $\rho<0.001$ ,  $b=0.181$ ), career-relates ( $\rho<0.001$ ,  $b=0.152$ ), financial aspects ( $\rho<0.001$ ,  $b=0.303$ ), and bonding or mandatory service ( $\rho<0.001$ ,  $b=0.254$ ). The multiple regression analysis showed that financial incentives ( $\rho<0.001$ ,  $b=0.215$ ) and working & living conditions ( $\rho=0.012$ ,  $b=0.100$ ) were the predictors that influence the retention of female HAs in PHC facilities. The explanatory power (Adjusted R<sup>2</sup>) of the retention in PHC facilities was 20.3%.

The findings from this study indicated factors influencing the retention of the female HAs in Bhutan are multifactorial. Thus, addressing female PHC workforce shortages will require the development of a comprehensive approach. A particular focus should be given to creating a supportive working and living environment, and sustaining the provision of financial incentives as provided today



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## LIST OF ABBREVIATIONS

ANM	Auxillary Nurse Midwife
BCSE	Bhutan Civil Service Examination
BHTF	Bhutan Health Trust Fund
BMHC	Bhutan Medical and Health Council
CMO	Chief Medical Officer
DCE	Discrete Choice Experiment
DHO	District Health Officer
ECCD	Early Childhood Care and Development
GDMO	General Duties Medical Officer
GNH	Gross National Happiness
GNHC	Gross National Happiness Commission
HA	Health Assistant
HRH	Human Resource for Health
HRM	Human Resource Management
IUD	Intrauterine Device
KGUMSB	Khesar Gyalpo University of Medical Sciences of Bhutan
LMIC	Low Middle-Income Countries
MCH	Maternal & Child Health
MMR	Maternal Mortality Ratio
MoF	Ministry of Finance
MoHCA	Ministry of Home and Cultural Affairs
MoH	Ministry of Health
MoWHS	Ministry of Work and Human Settlement
NCD	Non-communicable Disease
NSB	National Statistical Bureau
ORC	Out Reach Clinic
PHC	Primary Health Care
RCSC	Royal Civil Service Commission
RGoB	Royal Government of Bhutan
SDG	Sustainable Development Goals
SEAR	South-East Asia Region
THE	Total Health Expenditure
U5MR	Under Five Mortality Rate
UHC	Universal Health Coverage
UN	United Nations
UNPF	United Nations Population Fund
WHO	World Health Organization
WISN	Workload Indicators of Staffing Needs

## CHAPTER I

### INTRODUCTION

#### 1.1 Background and Rationale

The World Health Organization (WHO) has identified the health workforce as a critical component of a health system. However, workforce shortages are the most frequently reported issue in health care, particularly in low and middle-income countries (LMIC). Globally, an estimated 17.4 million global health workforce shortage from an actual requirement of 60.3 million was reported in 2013. Further, the report also stated that an estimated requirement of Human Resources for Health (HRH) by the year 2030 is going to be 81.8 million with shortages of more than 14.5 million (WHO, 2016b).

Among the six World Health Organization (WHO) regions, the highest HRH shortage is reported in the countries of the South-East Asian Region (SEAR), accounting for 6.9 million (WHO, 2016b). The density of the health workforce such as doctors, nurses and midwives for the European region is 117 per 10,000 population, whereas the SEAR has just 26 per 10,000 population against the standard requirement threshold of 44.5 per 10,000. This threshold was set for the global strategy for HRH, particularly to achieve the sustainable development goals (SDGs) by 2030 (United Nations Population Fund et al., 2021). These shortages are extreme in rural areas where an estimated 66% of the region's nearly two billion people live (WHO, 2018). The situation of health workforce shortage is also a perennial concern in Bhutan.

Bhutan is one of the countries in the SEAR with the lowest health workforce density accounting for 22.5 per 10,000 population (WHO, 2018). Moreover, the current HRH standard of the Ministry of Health (MoH) mandates a need for two primary healthcare workforces (Health Assistants) in every primary health care facility (PHC facility), inclusive of at least one female HA. Female HAs as a form of critical component of PHC workforce. This cadre is comparable to a professional midwife or PHC nurse (Wangmo et al., 2018; WHO, 2020), and they are considered as the frontline healthcare workforce working in the primary health care facilities whose main



responsibility is to provide maternal and child health-related healthcare services. As of December 2021, 21.1 % (37) PHC facilities of the total 179 in Bhutan were without female HA. In urban healthcare facilities, there were 129 female HAs against the required number of 67, accounting for 92 % (62) more than required (MoH, 2021c). Therefore, the extreme variation in the numbers of female PHC workforce between rural and urban areas is in contrast to the aspiration of the Royal Government of Bhutan (RGoB) to advance health equity by “leaving no one behind” to achieve universal health coverage (UHC) and SDGs (MoH, 2021a). In addition, an inadequate female health workforce, particularly in rural areas can lead to an increased health burden particularly related to MCH.

The United Nations (2018) reported that 45% of the world’s population (3.4 billion) resided in rural areas, out of which 80% of them are categorized as the world’s extremely poor people (WHO, 2021b). In this account, according to the National Statistics Bureau (2018), 62.2% of Bhutanese live in rural areas and concurrently 62.2% of the female population are reported to be living in rural areas (MoH, 2021c). A national report on health status reported that the under-five mortality rate (U5MR) was 40.8 per 1,000 live births (LB), and the infant mortality rate (IMR) was 17.5 per 1,000 LB in rural areas. Whereas, the urban areas have much lower U5MR and IMR than the rural areas, accounting for 25.3 per 10,00 LB and 12.0 per 1,000 LB, respectively. In Bhutan, the maternal mortality ratio (MMR) is 89 against the SDG of 70 per 100,000 LB (NSB, 2018). According to United Nations (2018) and United Nations Population Fund et al. (2021) female PHC workforce plays a critical role in realizing the UHC target and 2030 SDGs, particularly the goals that are related to mothers and child health (MCH).

Understanding gender-related trends and dynamics in the health workforce is to build resilient health systems and achieve UHC (WHO, 2019). Thus, midwives are considered as the pillar of the PHC systems (WHO, 2020). Simultaneously, the United Nations (2018) and United Nations Population Fund et al. (2021) reported that midwives currently make up 6% of the global health workforce, with 0.9 million shortage and is expected to grow to an additional 0.75 million by 2030. The deployment of midwives in rural areas could avert two-third of MMR (67%), neonatal deaths (64%)

and stillbirths (65%). Moreover, the availability of midwives will be able to save 4.3 million lives annually by 2035 (UN, 2018; UNPF et al., 2021).

The shortage of midwives in rural areas is reported to be one of the vital challenges, particularly in LMIC. The shortages of midwives in rural communities can negatively impact the delivery of health services at all levels. Furthermore, it not only increases the inequity in the health system but also weakens the PHC system (Buchan et al., 2013; Chotchoungchatchai et al., 2020; WHO, 2021b). The United Nations (2018) and United Nations Population Fund et al. (2021) revealed that only about 72% of births to rural women are attended by skilled health personnel, compared with 90% for urban women. In addition, approximately 810 women die from preventable causes related to pregnancy and childbirth daily, of which more than 94% of these deaths occur in LMICs. In this context, it is estimated that globally 90% of the MMR and 80% of stillbirths occur where trained midwives are at a serious shortage (UN, 2018; UNPF et al., 2021). Similarly, Okereke et al. (2020) estimated that the MMR in Nigeria is two times higher in rural than in urban areas. These implications are largely reported to be aggravated mainly because of poor retention, uneven distribution and now due to the responsibilities in COVID-19 response, underpinning the challenges that this predicament is likely to worsen in the coming years (UNPF et al., 2021; WHO, 2016b; WHO, 2020).

Therefore, the retention of qualified and motivated female PHC workforces in rural areas is important in ensuring equity and delivering quality healthcare services for the rural population and in achieving UHC targets and SDGs (Hone et al., 2018; Lancet, 2015; WHO, 2016b; Zapata et al., 2020). The availability of at least one female PHC workforce in every PHC facility thus would contribute to a strong PHC system in the country.

According to Rao and Pilot (2014), a robust PHC system can reduce morbidity and mortality rates among the rural population and minimize the burden on secondary and tertiary health facilities. Similarly, the findings from a study carried out by (Kringos et al., 2013) reported that across 31 European countries, population health was better in countries with a robust PHC system as measured by the density of primary healthcare workforces and the quality of their work environment. Additionally, it was reported to be evident that any country that has a very strong PHC at its core has lower

health costs, better population health, higher patient satisfaction, fewer unnecessary hospital admissions, and more significant socioeconomic equity (Chotchoungchatchai et al., 2020; Dussault et al., 2018; WHO, 2021b). Thus, it was reported that upscaling of interventions at the PHC facility levels, particularly across LMICs, can save 60 million lives, reduce morbidity and increase life expectancy by 3.7 years by the year 2030 (WHO, 2021a).

The kingdom of Bhutan is a tiny country located in the eastern ranges of the Himalayas in Southeast Asia that uses the Gross National Happiness (GNH) Index to track its development and well-being (RGoB, 2008) and health services are provided free of charge by the State through the three-tiered healthcare system built upon PHC system (RGoB, 2008). As of 2020, there were three tertiary level hospitals, 48 secondary level hospitals, 184 PHCFs, 54 Sub-posts and 552 outreach clinics spread across the country. There were more than 6386 health workforces; 332 doctors, 1517 nurses, 650 Health Assistants along with 3887 other cadres of health professionals including administrative and support staff (Ministry of Health, 2021a; Thinley et al., 2017). The overall availability density of doctors, nurses and midwives in Bhutan is 22.5 per 10,000 population against the threshold of 45.5 per 10,000 population (WHO, 2018) (Thinley et al., 2017; WHO, 2020).

As of 2020, there were three tertiary level hospitals, 48 secondary level hospitals, 3 Urban Health Centres, 181 PHCFs, 54 Sub-posts, and 552 outreach clinics spread across the country. There were more than 6386 health workforces; 332 doctors, 1517 nurses, 650 Health Assistants along with 3887 other cadres of health professionals including administrative and support staff. The Royal Government of Bhutan (RGoB) revenue was reported to be the predominant source of healthcare financing, supplemented by international donors and other agencies (Ministry of Health, 2021a; Thinley et al., 2017).

Modern healthcare in Bhutan was introduced in the 1960s, and based on the adaptation of PHC, Bhutan became a signatory to the Alma-Ata Declaration in 1978. The health programmes and interventions are focused more on primary healthcare services and preventive aspects (Ministry of Health, 2021a). A primary healthcare facility (PHC facility) in Bhutan is defined as “a facility serving a minimum catchment population of 1500 to 3000 and has 5 observation beds”. In 2021, there were 179 PHC

facilities in Bhutan. It is the lowest level of health facility in Bhutan and is scattered across the rural areas of the country (NSB, 2018; Thinley et al., 2017). It is considered as the first point of contact for rural people with the healthcare system (Thinley et al., 2017). These facilities are established to ensure health services, mainly prevention and promotion and basic curative and rehabilitative services. For the far-flung areas, PHC facilities are extended through outreach services, which it is visited once every month by Health Assistants (PHC workforce) (NSB, 2018; Thinley et al., 2017). Health Assistant (HA) is the only category of health workforce deployed in the PHC facilities (WHO, 2020).

In the early 1970s, the PHC workforce consisted of Health assistants (HA), Auxiliary Nurse Midwives (ANM) and Basic Health Workers (BHW), who were at that time the frontiers of health service delivery in the country. Two years of certificate course training for ANM was introduced to conduct PHC activities mainly related to sexual, reproductive, maternal, neonatal, adolescent health, homebound and palliative care services. However, in 2003, considering the training course content of HA and ANM and to ensure professional's needs and equality of responsibilities, the ANM cadre was phased out and converted to HA, but the roles and responsibilities of female HA (female PHC workforce) remained the same until date. Furthermore, since 2012, the qualification of BHWs was upgraded, and at present, all of them work at the capacity of HA in various levels of health facilities in Bhutan (MoH, 2020b; Wangmo et al., 2018; WHO, 2020).

Currently, HAs have an entry qualification of class 12 science with a formal three-year professional qualification in Community Health. Unlike most countries with multidisciplinary teams, the HA cadre is deployed to work in all the PHC facilities in Bhutan. They are selected based on their academic ranking and are enrolled in the training at the Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB) through government scholarships. These selected candidates are entitled to accommodation, tuition fees, and stipends during their training period. After graduation, they are selected by the Ministry of Health (MoH) after successfully passing the annual registration examination. Once deployed in the field, HAs are responsible for providing PHC mandates to the community under its catchment area (MoH, 2020b; Thinley et al., 2017; Wangmo et al., 2018; Weel & Kidd, 2018; WHO, 2020). The

Royal Civil Service Commission (2020) reported that an annual attrition rate for HA was 2%, in the fiscal year 2019-2020, which is equivalent to the rest of the civil servants and other healthcare workforces. Similarly, the report also revealed that only 3.3% (20) HA post was vacant in 2019. However, in line with the above report and the new policy of remodeling healthcare services to the community's doorstep, it is predicted that the country will require an additional 330 HAs (MoH, 2021c).

Females account for 46.6 % (305) of the total Health Assistants (655) category. Female HAs are the professional female PHC workforce who are comparable to a professional midwife or PHC nurse (Wangmo et al., 2018; WHO, 2020). They are responsible for the provision of a wide range of PHC activities in rural areas mainly maternal and child health-related services such as antenatal care (ANC), postnatal care (PNC), family planning services, particularly the insertion of Intra-uterine devices (IUD), Pap-smear screening, immunization and so forth (Ministry of Health, 2020b). The roles and responsibilities of female HAs (female PHC workforces) are considered very crucial, especially for the rural female population. The “Competency-Based Framework for Health Assistants” reported that the PHC facilities are hobbling with the shortage of female HA, even though the clients in PHC facilities prefer female HA over male HA in availing maternal and child health-related services; such as antenatal care (ANC), postnatal care (PNC), family planning services, particularly the insertion of Intra-uterine device (IUD), Pap-smear screening and so forth (MoH, 2020b).

Therefore, as reported by the World Health Organization (2020), enhancing rural female PHC workforce retention has been considered a critical concern at the national and international levels. The World Health Organization (2021b) defines retention as the “intention of the healthcare workforce to stay and work in the rural primary health care facilities for a certain length of time”. It is indicated by the intention to stay for a certain duration. There is no benchmark for this duration (World Health Organization, 2021b). However, a study in Yemen, Jordan, Lebanon and Qatar determined the duration as 1-3 years (Fadi El-Jardali et al., 2013). Retention is essential for improving rural workforce supply, developing strong clinical bonding with the patients, and improving health outcomes of the rural population (Russell et al., 2017).

To this end, as a strategic policy to meet the public demand and curb the shortage of female HA in remote areas in Bhutan, the KGUMSB has increased the

intake of female HA annual recruitment ratio (female15:10 male) to undergo community health training (MoH, 2020b; WHO, 2020). On a similar note, the RGoB has adopted a range of retention interventions recommended by the WHO in “global policy recommendations for increasing access to health workers in remote and rural areas through improved intervention”. These interventions are broadly defined under four topics, namely; 1) Educational interventions such as support professional training and career development opportunities. 2) Regulatory interventions such as three years of mandatory rural posting and provision of 5% preferential weightage for academic or relevant training selections. 3) Financial incentives such as rural allowance, altitude allowance and travel allowance, and 4) Personal and professional support systems such as the provision of free accommodation, ensuring availability of essential medical supplies at the facility at all times, and access to basic amenities such as road connectivity, mobile phone connections, electricity and schools for children (WHO, 2020). Nevertheless, the retention of female HA in rural areas has always been a perennial problem for the MoH, and the shortage still stands at more than 21% (MoH, 2021a), raising the concerns of health equity among vulnerable populations and the possible threat in achieving the national UHC target and SDGs. Considering the preceding statements and incognito to the poor retention of female HAs in rural areas, the MoH views this issue as a critical area of national concern (MoH, 2021b; Thinley et al., 2017).

According to Fadi El-Jardali et al. (2013), increasing the number of graduates does not guarantee that these graduates will choose to practice in rural areas. Moreover, Zapata et al. (2020) reported that it is very unfortunate that most SEAR countries implemented retention policies without collecting baseline data to track progress and rigorously assess outcomes. Furthermore, monitoring, which could have informed policy changes, was also lacking. As a result, there is a need to explore the factors associated with the retention of the female PHC workforce working in rural areas to develop specific policy recommendations to meet their specific needs (Fadi El-Jardali et al., 2013).

Carson et al. (2015) revealed that having personal factors such as rural origin and longer length of rural posting during their training period was found to influence retention among health professionals. Wakerman et al. (2019) and (Lori et al., 2012)

postulated that the major factors that motivate retention of a workforce in rural areas are career development opportunities and were considered as one of the essential aspects, followed by harmonious working environments such as availability of accommodation, good staff relationship, and availability of equipment; financial incentives such as rural allowance; and availability of good schools for children. Similar evidence was reported by (Abe et al., 2021) Bogren et al. (2020), Darkwa et al. (2015), Ojaka et al. (2014), Rockers et al. (2012), and the World Health Organization (2020). Further, Bonenberger et al. (2014b) revealed that divorced or widowed health professionals increase the likelihood of staying at the rural health facility. Additionally, the younger respondents, unmarried and passionate about their current work, significantly influence their willingness to remain in rural areas (Bonenberger et al., 2014b).

Similarly, studies also reported that socio-demographic characteristics such as age, gender, income level, and the number of years in services also play a crucial part in the retention of the PHC workforce (Belaid et al., 2017; Fredrick, 2018; Kadiri-Eneh et al., 2018). At the same time, community recognition and client-provider relationships were some other domains related to family and community factors; likewise, having autonomy in the rural healthcare system was reported to be a factor in the retention of the PHC workforce in rural areas (Safi et al., 2018; Shemdoe et al., 2016; Wakerman et al., 2019). Furthermore, Mbemba et al. (2016) reported that peer recognition was highlighted as having a strong influence on the retention of health workforces in rural and remote areas. Whereas, according to Ojaka et al. (2014) and Matlala and Lumadi (2019) lack of management support, fear of litigation, and lack of recognition were reported as the reasons for the health workforce leaving their current job.

Many of the studies revealed almost identical influencing factors between the male and female health workforce on their retention in rural areas. For instance, a study involving 319 nurses concluded that flexible work schedules and opportunities to upgrade their qualifications were some of the necessities for their willingness to continue working in rural areas (Russell et al., 2021). Likewise, Munga et al. (2014) indicated that nurses are more likely to choose to remain in rural areas if their basic pay is increased. Yet, the analysis showed that nurses have few unique justifications for their willingness to stay in remote areas. These are to gain remote experiences serving

in remote areas (Berman et al., 2021; Fadi El-Jardali et al., 2013), family obligations, feeling of caring for the women and children in the community (Abe et al., 2021; Adegoke et al., 2015; Haskins et al., 2017; Mansoor et al., 2013; Olujimi et al., 2014) and finally to fulfill their service obligation (Berman et al., 2021).

All of the above literature reviews are in concurrence with the World Health Organization (2010) conceptual framework related to the global policy recommendation on the topic “increasing access to health workers in remote and rural areas through improved retention”. The framework spells out complex and multifaceted factors under six broad dimensions, namely: personal origin and values, family & community, working & living conditions, career-related, financial aspects, and bonding or mandatory services. These factors were derived from the “decisions of health workforces to relocate to, stay in or leave rural and remote areas”. This recommendation was detailed to assist any country in policy development specifically to facilitate the retention of rural health workforces (WHO, 2010). The other factors such as age, marital status, monthly income, work experience in remote areas, number of years in service and duration at the current workstation pertaining to the socio-demographic characteristics are abstracted from various studies conducted by Bonenberger et al. (2014b), Kolstad et al. (2013), Fadi El-Jardali et al. (2013); Fredrick (2018); Okyere et al. (2021).

In conclusion, the availability of a sufficient and appropriately distributed competent health workforce, particularly female HA, in the PHC facilities is one of the predominating determinants of the strength of a health system towards achieving UHC targets and the attainment of SDGs. Besides many efforts with a range of policy mediations such as an increase in recruitment of female HA, personal and professional support systems, educational support, financial support and regulatory interventions, retaining female HAs in the rural areas has always been one of the significant challenges for the MoH, Bhutan. As revealed earlier, many kinds of literature reported that so many factors influence the retention of PHC workforces in rural areas. Although some studies have documented nurses and midwives or female PHC workforces’ rural retention in other regions (Adegoke et al., 2015; Fadi El-Jardali et al., 2013; Fadi El-Jardali et al., 2013; Lori et al., 2012; Munga et al., 2014; Nowrouzi-Kia & Fox, 2020) relatively, there are only limited studies (Abe et al., 2021; Mansoor et al., 2013; Matlala & Lumadi,



2019) on rural retention of nurses, midwives or the female PHC workforces (female HA) in the SEAR. Furthermore, the researchers are unaware of any such studies in Bhutan, and despite the shortage, little is known about the retention of female primary healthcare workforces at PHC facilities in Bhutan. Therefore, given this gap, this study will be using the WHO framework (WHO, 2010) to explore the factors that influence the retention of the female primary healthcare workforce at the primary health care facilities in Bhutan. The study is expected to aid evidence-based planning for the Ministry of Health, Bhutan in improving the retention of the female primary healthcare workforce in rural areas.

### **1.2 Research Question**

What are the factors influencing the retention of the female primary healthcare workforce at primary health care facilities in Bhutan?

### **1.3 Research Objective**

To identify factors that influence the retention of the female primary healthcare workforce at primary healthcare facilities in Bhutan.

### **1.4 Hypothesis**

The retention of female primary healthcare workforces in Bhutan is influenced by socio-demographic characteristics, personal origin and values, family and community, working and living conditions, career-related, financial aspects, and bonding or mandatory service.

### **1.5 Scope of the study**

The study aimed to assess the factors influencing the retention of FPHCWF at the PHCF in Bhutan. The population of this study was 165 FPHCWF in PHCFs in all districts of Bhutan. The data collection was carried out in the month of June 2022. The independent variables for the study are socio-demographic characteristics, personal origin and values, family and community aspects, working and living conditions, career-related aspects, financial aspects, and bonding or mandatory service. The dependent variable was retention.

## 1.6 Operational Definitions

1. **Bonding or mandatory service:** referred to the perception of obligatory rural services that female primary healthcare workforces (female Health Assistants) need to practice including three years of compulsory rural posting and fulfilling the long-term obligations as per the Royal Civil Service Commission.
2. **Career-related:** opportunities provided by the Royal Government of Bhutan or availed by self, that help to advance the career of female primary healthcare workforces including continuing education opportunities, professional development courses, supervision, personal recognition system and job satisfaction.
3. **Family and community aspects:** referred to the responsibilities and attitude of the female primary healthcare workforce towards their family and the community including a sense of community spirit, family conditions and community facilities.
4. **Female primary healthcare workforce:** in this study, it was defined as female Health Assistants who are the front line, non-physician healthcare workforce working in the primary health care facilities in the country whose main responsibility is to provide maternal and child health-related healthcare services.
5. **Financial aspects:** referred to the monetary benefits provided to the female primary health care workforce to encourage them to stay in the rural areas including salary, allowance & benefits.
6. **Personal origin and values:** referred to the background of origin, behavior and beliefs of the female primary healthcare workforce including place of origin and values & altruism.
7. **Primary health care facility:** in this study, the primary health care facility was referred to the facility providing a basic level of health care that includes promotion of health, prevention of disease, early diagnosis of disease and basic curative, follow up and rehabilitation.
8. **Primary health care workforce:** referred to as the frontiers of the health services. They are known as Health Assistant (HA) working in the primary health care facilities and hospitals throughout the country and are responsible for the

community health diagnosis and management, health promotion, reproductive and child health services, diagnosis and treatment, and management of minor illnesses.

- 9. Rural areas:** in this study, it was referred to the people living beyond an area declared as 'urban' (Thromde). An urban area is defined by the following criteria; up to 75% implying 4 out of the 5 outlined- should be met: a) A minimum population of 1,500 people; b) A population density of 1,000 persons or more per square kilometer; c) More than fifty percent of the population should depend on non-primary activities; d) The area of the urban center should not be less than 1.5 square kilometers; and e) Potential for future growth of the urban center particularly in terms of its revenue base.
- 10. Retention:** referred to the intention of the female primary healthcare workforce to stay and their preference to continue working in the primary healthcare facilities and assess by the opinionnaire.
- 11. Socio-demographic characteristics:** of female primary healthcare workforces including age, marital status, monthly income work experience in remote areas, number of years in service and duration at the current workstation.
- 12. Working and living conditions:** referred to factors such as work environment, technology & medical supplies, accommodation and the workload that are necessary for the provision of quality healthcare services.

## **CHAPTER II**

### **LITERATURE REVIEW**

This chapter presented the “factors influencing the retention of female primary healthcare workforces at primary health care facilities in Bhutan”. The focus was laid on reviewing a global scenario followed by Bhutan’s health situation. A comprehensive literature review is undertaken to collect the latest and relevant pieces of evidence from research journal articles, books, documents, concepts, and so forth as structured below.

#### **2.1 Health System**

##### **2.1.1 General Health System Information**

##### **2.1.2 Primary Health Care System and its Impact on Health**

##### **2.1.3 Bhutan Healthcare System**

###### **2.1.3.1 National Healthcare**

###### **2.1.3.2 Public Health Achievements**

###### **2.1.3.3 Public Health Challenges**

###### **2.1.3.4 Health Financing**

###### **2.1.3.5 District Health System**

###### **2.1.3.6 Primary Health Care System**

#### **2.2 Human Resource for Health**

##### **2.2.1 Global and Regional Human Resource for Health Situation**

##### **2.2.2 Human Resource for Health for Primary Health Care**

##### **2.2.3 Impact of HRH Shortage and Retention in Rural Areas**

##### **2.2.4 Human Resource for Health Situation in Bhutan**

###### **2.2.4.1 National Human Resource for Health Situation**

###### **2.2.4.2 Human Resource for Health Development and Recruitment**

###### **2.2.4.3 Primary Healthcare Workforce and Their Roles**

###### **2.2.4.4 Distribution and Shortage of Female PHC Workforce**

#### **2.3 Human Resource Management and Concepts**

#### **2.4 Human Resource Management Retention Theoretical Frameworks and Concepts**

##### **2.4.1 World Health Organization Rural Retention Strategy Framework**

#### **2.5 Existing Rural Retention Strategies in Bhutan**

#### **2.6 Relevant Research**

#### **2.7 Measurement of Retention**

#### **2.8 Conceptual Framework**

## **2.1 Health System**

### **2.1.1 General Health System Information**

The health system is one of several determinants of health, and high-performing health systems can improve the health of populations. The aging population, coupled with the rising non-communicable related diseases is leading to increasing demand for healthcare. Further, in this era, countries around the world are facing increasing limitations due to the global economic crisis, continuous medical technological advancement and increasing demands for quality, safety and efficient health service delivery. The current health systems around the world face increasing challenges due to shortage and unequal distribution of health workforces. The aforementioned realities are confronted particularly by the global COVID-19 outbreak demanding every country a strong health system now than ever (Hrušovská et al., 2021).

### **2.1.2 Primary Healthcare System and Its Impact on Health Service Delivery**

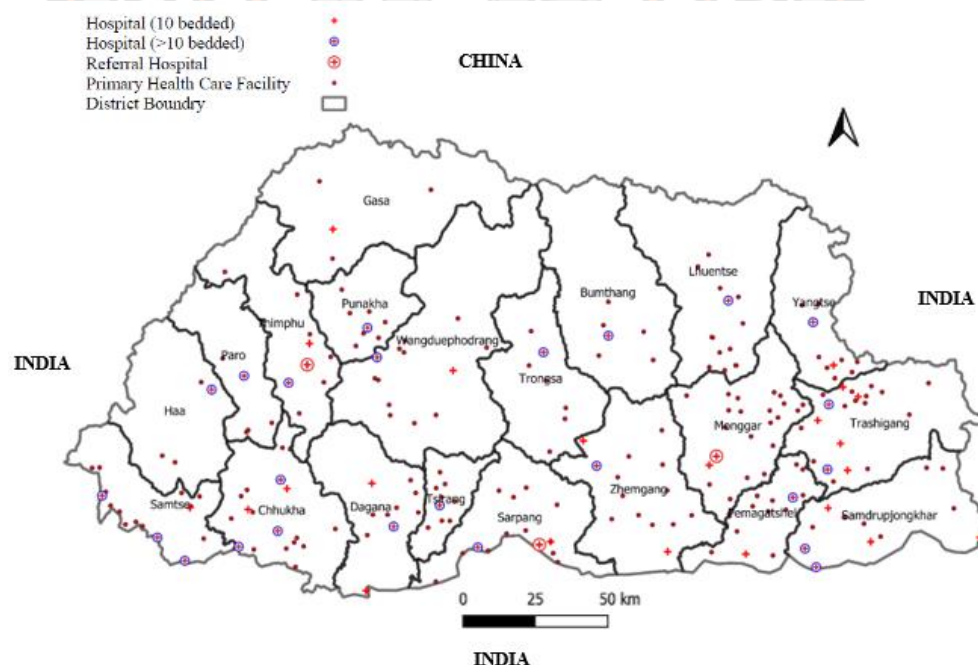
While the number of stakeholders provided an international definition of PHC, many defined PHC by the workforce employed within the sector. The scope of PHC services was mainly described at the level of the community with no discrimination among segments of the population (Alameddine et al., 2016). Weel and Kidd (2018), confirmed that the countries with strong PHC systems at their core have lower health expenditure, healthier populations, higher patient satisfaction, fewer unnecessary hospital admissions and greater socioeconomic equity. Correspondingly, in their report, Rao and Pilot (2014) stated that a country with a strong PHC system can reduce morbidity and mortality rates among the rural people and attribute to the reduction of burden on secondary and tertiary health facilities. Further, Kringos et al. (2013) in their study titled “Europe’s Strong Primary Care Systems Are Linked To Better Population Health But Also To Higher Health Spending” reported that across 31 European countries, population health was better in countries that have a strong PHC system as measured by the density of primary care providers and the quality of their work environment. The paper also mentioned that better coordination and comprehensiveness of primary care were associated with lower rates of unnecessary admissions and fewer potential years of life lost. Countries with higher levels of patient

satisfaction with interpersonal aspects of service delivery also had higher self-rated equity in health. The World Health Organization (2013b) reported that an estimated almost 90% of all maternal deaths and 80% of all stillbirths occur in 58 countries where trained midwives were at a serious shortage; the availability of health workforces could have helped to avoid millions of unnecessary deaths. Thus, the retention of qualified and motivated health workforces for the rural population is of paramount importance in ensuring equity and the delivery of quality healthcare services to achieve the health goals within the framework of PHC.

### 2.1.3 Bhutan Healthcare System

#### 2.1.3.1 National Healthcare System

Bhutan is a small landlocked country situated in the laps of the mighty Himalayas, sandwiched between giants China from the north and India from the east, south and west. It has a total area of 36,394 sq. km and an estimated population of 846,784 in the year 2021 (National Statistics Bureau, 2019). It is divided into eastern, central and western regions, and further administratively divided into 20 dzongkhags (districts) (National Statistics Bureau, 2018) (Figure 1).



**Figure 1 Map of Bhutan Illustrating 20 Districts and Distribution of Health Facilities Across the Country**

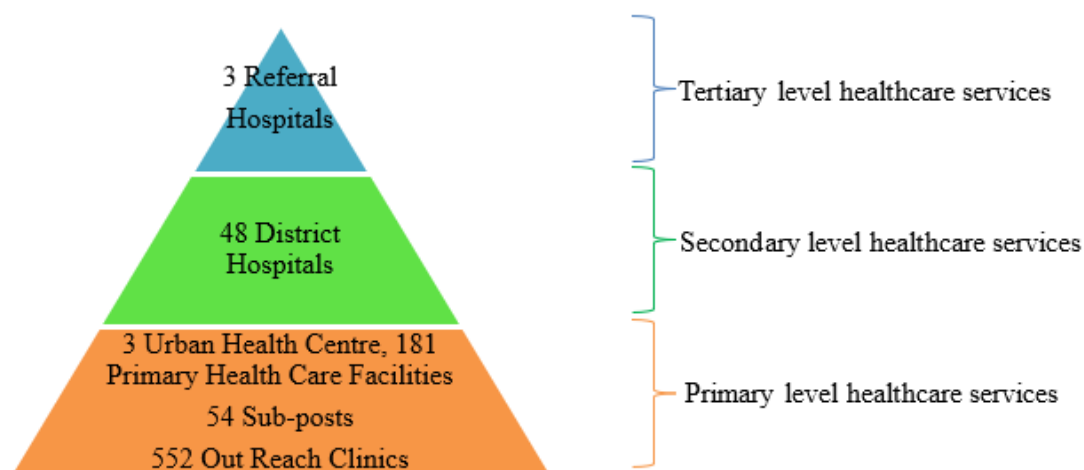
**Source:** Ministry of Health, 2021a

Guided by the national development philosophy of Gross National Happiness (GNH) (Thinley et al., 2017), health services are provided free of charge by the State as enshrined in the constitution of the Kingdom of Bhutan, including treatment abroad (RGoB, 2008). Modern healthcare was introduced in 1961 with two hospitals and 11 dispensaries. The Ministry of Health (MoH) is the central authority responsible for the development of health policy and all other stewardship functions, as well as organizing and providing quality and comprehensive health care services, including health promotion, disease prevention, curative and rehabilitative services. The RGoB bears the majority of the health expenditure, supplemented by funds from international donors and other agencies. Over the last few decades, health administration and management have been devolved to districts in accordance with the RGoB's decentralization policy. So, to strengthen district health management, MoH supports technically in terms of health planning, administration, deployment & standardization of HRH, medical supplies, infrastructure development; and provision of equitable & quality healthcare services to all sections of the population (Thinley et al., 2017).

Today, healthcare services in the country are delivered through a three-tiered health system structured in a hierarchy; at the base, there are 3 Urban Health Centres, 181 PHCFs, 54 Sub-post and 552 ORC (Out Reach Clinic). PHC facilities and the Sub-post are the lowest tiers that provide PHC services. The middle tier encompasses 48 hospitals and functions as a nodal referring center for PHC facilities in their jurisdiction and adjoining PHC facilities of other districts. In this tier, the major focus is on treatment and curative services and functions as a secondary level health service system. The apex tier has three referral hospitals. It acts as a nodal referring center for district hospitals. This top tier provides advanced tertiary medical care (MoH, 2021a; Thinley et al., 2017) (Figure 2).

Services in traditional and allopathic medicine are completely integrated and delivered under one roof. Traditional medicine has been an integrated part of Bhutan's national health, with one hospital in Thimphu and 72 traditional medicine units all across the country. The total number of health facilities per 10,000 population was 3.5 (MoH, 2021a). At the grassroots level, village health workers (VHWs) play a key role in health promotion and act as a bridge between the health service system and the

community. Additionally, patients who require life-saving medical services that are not available in Bhutan are referred abroad (Thinley et al., 2017).



**Figure 2 Three-tier System Showing the Levels and Number of Health Facilities in Bhutan**

**Source:** Ministry of Health, 2021a

#### 2.1.3.2 Public Health Achievements

The health programmes and interventions are focused more on PHC services and preventive aspects. These measures were further reinforced after becoming a signatory to the Alma Ata declaration in 1978. Despite the difficult geographical terrain, dispersed population settlements and many other challenges, access to health services has improved remarkably. Bhutan is among the top global performers in gains in life expectancy in the past 40 years. Currently, Bhutan's PHC coverage stands above 90%. Universal childhood immunization was achieved in 1990 and immunization levels have been maintained at over 95% since 2010 (Thinley et al., 2017). Over the span of five decades, life expectancy has more than doubled to 70.2 years in 2017, from 32.4 years in 1960. The maternal mortality ratio (MMR) has declined by more than eight folds within three decades, from 770 maternal deaths per 100,000 live births in 1984 to 89 in 2017. For the same period, the under-five mortality rate (U5MR) reduced from 162 to 34 per 1000 live births. Leprosy and iodine deficiency disorders have been eliminated and malaria is targeted to be eliminated soon (NSB, 2020). While the Crude



Birth Rate declined from 19.7 to 15.5 between 2005 and 2017, the Crude Death Rate has seen a slight reduction from 7.1 to 6.7 during the same period. The Total Fertility Rate has declined below the replacement rate, from as high as 5.6 to 1.7 between 1994 and 2017 (NSB, 2018).

#### 2.1.3.3 Public Health Challenges

Despite many achievements in public health, Bhutan's health system is still challenged by multiple health burdens. Thinley et al. (2017) suggested the MoH pay much closer attention to health equity, as disparities exist in access to and utilization of health services as well as in health outcomes between urban and rural areas, among districts and between western, central and eastern regions. Bhutan still has a young population with a median age of 26.9 years, the declining Total Fertility Rate and mortality rates are growing concerns as they result in population aging and rising dependency which calls for strengthening of the existing health system for chronic care. Furthermore, 62.2% of the Bhutanese female population were reported to be living in rural areas (MoH, 2021c), where U5MR was 40.8 per 1,000 LB, and IMR was 17.5 per 1,000 LB in rural areas. Whereas, the urban areas have much lower U5MR and IMR than the rural areas, accounting for 25.3 per 10,00 LB and 12.0 per 1,000 LB, respectively. In Bhutan, the maternal mortality ratio (MMR) is 89 against the SDG of 70 per 100,000 LB (NSB, 2018).

Besides the above challenges, about 6% of the population are currently above 65 years of age and the share of the elderly population is expected to rise to 10.7% by the year 2027. The old-age dependency ratio has slowly increased from 7.5 in 2005 to 8.7 in 2017 (NSB, 2018). While communicable diseases continue to have a significant burden on the existing health system, non-communicable diseases (NCDs) are on the rise, with new threats from emerging diseases like the global COVID-19 and re-emerging diseases (WHO, 2020). Increasing trends of NCDs including cancers contribute to increasing referrals out of the country. In the past six years, cancers, heart disease and kidney diseases were the top three conditions requiring referrals (NSB, 2020). About 60% of all deaths in Bhutan are due to NCDs (NSB, 2018).

#### 2.1.3.4 Health Financing

In 2020, the total health expenditure (THE) of Bhutan was estimated at Nu. 8.7 billion (USD 0.12 billion) which was 4.5% of the Gross Domestic Product (GDP).

The cost of capital and current health expenditure was around Nu. one billion and Nu. 7.7 billion respectively for the same financial year (FY). The expenditure on curative services was relatively higher as compared to the preventive service. Among the diseases, the largest share was spent on non-communicable diseases followed by reproductive health care and infectious diseases accounting for 41%, 23%, and 19% respectively. In terms of source of health financing, the government is the primary source of financing in Bhutan (80.1%), followed by out-of-pocket expenditure (15.4%), and the rest of the world (3%) (MOH, 2021a). With the gradual phasing out of international donors, Bhutan has adopted an innovative financing mechanism through Bhutan Health Trust Fund (BHTF) to support the procurement of vaccines and essential drugs in the country (Thinley et al., 2017).

#### 2.1.3.5 District Health Service

Bhutan is administratively divided into 20 dzongkhags (districts) and further into 205 gewogs (sub-districts) (NSB, 2018). Health facilities are dispersed across the country. The health sector, administration and management of the district health system consist of the district health office, secondary care level hospitals, PHC facilities and sub-posts at the primary level. It is considered as an essential part of the overall health system in the country (Thinley et al., 2017).

The district health sector is headed by a District Health Officer (DHO) who has a qualification of Bachelor's degree in Public Health and is selected through the Bhutan Civil Service Examination (BCSE) (RCSC, 2018). DHOs are directly accountable to the district administration under the Ministry of Home and Cultural Affairs (MoHCA), and in parallel, they are also accountable to the MoH for reporting the progress of health status. Further, the DHOs are responsible not only for planning and budgeting but also implementation of national policies and programmes as well as monitoring and evaluating the programmes at the district level and sub-district levels. DHOs have the authority to undertake deployment of HRH from the existing pool within their respective district. Delivery of services in the hospitals and PHCs are determined and governed by the standards, guidelines and operating procedures developed by the MoH (Thinley et al., 2017).

According to the Ministry of Work and Human Settlement (2008), in Bhutan, a rural area is referred to as the people living beyond an area declared as 'urban'

(Thromde). An urban area is defined by the following criteria “(up to 75% implying 4 out of the 5 outlined) should be met: a) A minimum population of 1,500 people; b) A population density of 1,000 persons or more per square kilometer; c) More than fifty percent of the population should depend on non-primary activities; d) The area of the urban center should not be less than 1.5 square kilometers; and e) Potential for future growth of the urban center, particularly in terms of its revenue base” (MoWHS, 2008). Thus, by the definition, all the district hospitals are located in urban areas. These hospitals are managed by a senior medical doctor with assistance from the hospital Administrative Officer. He/she is also responsible for the planning and implementation of health activities under his catchment population, in addition to day to day clinical management and patient referrals services. Drugs and medical consumables are supplied to all the health centers centrally. To overcome the gap of health equity and enhance health service accessibility for those people who cannot go to higher health facilities, health services are provided through the conduct of regular mobile health camps and school health visits. Hospitals are also supported by an effective referral system and backed by emergency helicopter services (Thinley et al., 2017).

#### 2.1.3.6 Primary Healthcare System

Prior to 2019, Primary Health Care Facilities in Bhutan were known as Basic Health Unit Grade II (BHU-II) (MoH, 2020a). It is defined as “a facility serving to a minimum catchment population of 1500 to 3000 and has 5 observation beds”. It is the lowest level of health facility in Bhutan, mostly located in far-flung places. It is usually located at more than one-hour walking distance from a nearby health facility (Thinley et al., 2017). Currently, there are 184 PHC facilities in Bhutan (MOH, 2021a). It functions under the administrative span of district health administration or local government and often senior staff are given the responsibility of managing the center. Budgets for the health centers are directly managed by the respective local government (Thinley et al., 2017).

The core functions of the PHC facility are to provide preventive and promotive health services to the catchment population, such as immunization and growth monitoring; family planning; maternal & child related health services including normal deliveries; disease screening such as non-communicable diseases and cervical cancers, HIV and Hep B; adolescent health services; elderly care, palliative care, health

education; voluntary counseling; basic laboratory services such as urine for albumin & sugar, blood glucose monitoring, rapid blood hemoglobin, prepare and examine blood slides for malaria; attend emergencies; diagnosis and treatment of minor illness; referral to higher health facilities; etc (MOH, 2020b). For the far-flung areas, PHC facilities are extended through the provision of outreach services, which it is visited once every month. Health Assistants (PHC workforce) work in the PHC facilities and carry out the responsibilities to fulfil PHC mandates (WHO, 2020).

In conclusion, the majority of the world's vulnerable population lives in rural areas. Therefore, the burden of diseases related to maternal and child health predominantly occurs in these populations. Thus, countries with a strong PHC system are inevitable in ensuring timely and equitable delivery of MCH services and guaranteeing a way in achieving UHC targets and SDGs. Similarly, Bhutan has come a long way in terms of the modern healthcare system development and achieved many public health goals. PHC is provided at PHC facilities that are spread across the country but still, the country experiences a disparity in health distribution, mainly among the rural population. Therefore, a strong PHC system that includes equitable distribution and deployment of competent HRH in the rural areas is very crucial in realizing the national health goals and notably keeping every citizen healthy and happy. In this study, PHCFs and Sub-posts posted FHAs were taken as the unit of analysis for this study.

## **2.2 Human Resources for Health**

### **2.2.1 Global and Regional Human Resource for Health Situation**

Globally, there is an acute shortage of human resources for health (HRH) against the benchmark of 44.5 per 10,000 population. Shortages are being aggravated by the geographical maldistribution of the health workforce (WHO, 2020). According to the World Health Organization (2016b), in 2013, there was a total of 43 million health workforce in the world, with an accumulated projection of 67.3 million by 2030. It was also reported that there was a shortfall of an estimated 17.4 million health workforce in 2013 and is expected a shortage of more than 14.5 million by 2030. These shortages are predicted to be in the LMIC.

Though the greatest need for healthcare services is in rural areas, there has always been an inverse distribution in the delivery of healthcare services in rural when

compared to the urban population (Jacob, 2021). United Nations (2018) reported that, in 2018, 45% of the world's population (3.4 billion) resided in rural areas, where 80% of the world's extremely poor people live in rural areas (WHO, 2021b). However, unfortunately, only 25% of doctors and 38% of nurses were found to be working there and the shortage of HRH has presented significant obstacles in achieving UHC goals (WHO, 2013a).

Similarly, the South-East Asia Region (SEAR) is severely impacted by the HRH shortage accounting for 6.9 million health workforce (WHO, 2016b). At present, the ratio of the health workforce in the region is 26.0 per 10,000 population, comparatively much lower than the required threshold of 44.5/10,000 set by the Global Strategy on HRH (United Nations Population Fund et al., 2021). Moreover, the World Health Organization (2020) reported that these shortages are found to be extreme in rural areas where an estimated 66% of the region's nearly two billion people live.

Hines et al. (2020) reported that rural or remote areas are perceived as the crust of challenges for the health workforce to live and work due to fewer resources to care for patients and less health infrastructure. Some health professionals also fear being the only practitioner that may bring in the physical, emotional and mental demands following it. Thus, according to (van Rensburg, 2014) many countries reported it as an issue of social and political concerns since these challenges are exacerbated by maldistribution in the deployment of HRH leading to inequities in the effective delivery of health services. The extent and severity of its presentation vary by nation, with the degree of scarcity worsening with increasing remoteness, and it is predicted that the situation would worsen in the coming years, particularly in LMICs (WHO, 2020). An estimated 66% of nearly 2 billion of the SEAR population live in remote or rural areas and the situation is likely to deteriorate in the coming years (WHO, 2016b).

### **2.2.2 Human Resources for Health for Primary Health Care**

Dussault et al. (2018) in their report on "Building the Primary Health Care Workforce for 21<sup>st</sup> Century on Background Paper to the Global Conference on Primary Health Care" stated that rural health facility is the first point of contact for people with the healthcare system and relatively refers to as "the basic structural and functional unit of the public health services in developing countries, which provide accessible, affordable and available primary healthcare to its catchment population". Further, the

PHC workforce is defined as “all people engaged in actions whose primary intent is to enhance health” through the application of the PHC lens engaged in the continuum of health promotion, disease prevention, treatment, rehabilitation and palliative care. Dubey et al. (2021), in their article, it was reported that HRH is “all people primarily engaged in actions with the primary intent of enhancing health”. They perform the role of gatekeepers to the health system. The HRH can consist of diverse categories such as clinical, management and support staff with different qualifications and skills depending on the country’s situation and means of monitoring. Management and support staff are also considered as important elements of health systems that enhance healthcare services coverage and health outcomes.

The World Health Organization (2020) mentioned that in Chhattisgarh state in India, the rural PHC workforce team consists of Medical Officers, Traditional Medicine doctors, Staff Nurse, and Lady Health Visitors (LHV) for approximately 30,000 population. Further, ANM and Multi-Purpose Health Workers (MPHW) are deployed in the Sub-Centre of the rural areas for a population of approximately 5,000 people. Similarly, in Indonesia, by the regulation, it is mandatory to have nine categories of cadre in all the PHC facilities. The cadre consists of medical doctors, dentists, nurses, midwives, public health workers, sanitary workers, medical laboratory technicians, a nutritionist and a pharmacist. However, in Myanmar, the Rural Health Centre (RHC) is a level of health facility that provides PHC services to the rural population. At the RHC level, the HRH team consists of Health Assistants, midwives, LHV, Public Health Supervisors and Watchmen. Further at the lower level, at Sub-rural health centers, the PHC workforce consists of a midwife and a public health supervisor. Furthermore, in Sri Lanka, at the primary medical care unit (PMCU), the key health professionals are doctors, nurses and public health midwives.

In many countries, midwives are often placed in rural areas and have been highlighted as the pillar of the PHC system (WHO, 2020). They play a critical role in realizing the UHC target and 2030 sustainable development goals (SDGs) (UN, 2018; UNPF et al., 2021). United Nations (2018) and United Nations Population Fund et al. (2021) reported that midwives currently make up 6% of the global health workforce, with 0.9 million shortage and the shortage of midwives is expected to grow to an additional 0.75 million by 2030, particularly in LMICs.

### **2.2.3 Impact of Shortage and Retention of HRH in Rural Areas**

There is a truth in saying that HRH is the movers and shakers of any well-functioning health system, hence the saying, no workforce no health (Buchan & Campbell, 2013). People living in rural areas are confronted with unique challenges due to their settlements being located far-flung and isolated and rural people are considered to have to have much poorer health outcomes and a higher burden of diseases in comparison to the people living in urban areas (Cosgrave, 2020). Many of the studies claim that the shortage of health workforce in rural areas can negatively affect the delivery of health services. Furthermore, it was reported that an insufficient health workforce in rural areas can impede the equity and accessibility of healthcare services for a significant percentage of the population (WHO, 2020). Stigler et al. (2016) reported that the unavailability of the health workforce in PHC facilities often leads to delays in seeking health behavior resulting in the advancement of diseases and complications. According to Okereke et al. (2020), in Nigeria, the maternal mortality ratio (MMR) was estimated to be two times higher in rural (828 deaths per 100,000 live births) than in urban (351 deaths per 100,000 live births) areas and was linked to poor retention and maldistribution of the health workforce. Subsequently, the World Health Organization (2021a) reported that scaling up PHC interventions, especially across LMICs could save 60 million lives, drastically reduce morbidity burden and increase average life expectancy by 3.7 years by the year 2030. Thus, in concurrence with the importance of a health workforce in achieving PHC goals and SDGs, sufficient and balanced distribution of health workforce is indispensable (Tangcharoensathien et al., 2013); significantly, the strategies to encourage health workforce in rural areas is being considered to be an integral part of the agenda for strengthening the 21<sup>st</sup> health system (WHO, 2018).

### **2.2.4 Human resources for health system in Bhutan**

#### **2.2.4.1 National Human Resource for Health Situation**

HRH system is a dynamic process and HRH policies in Bhutan are based on a diverse range of factors. On the demand side burden of disease, health service needs, the introduction of new services and technologies; and infrastructural development are the important factors influencing the demand for the health workforce. On the supply side factors such as the type of education, training and development, numbers of health

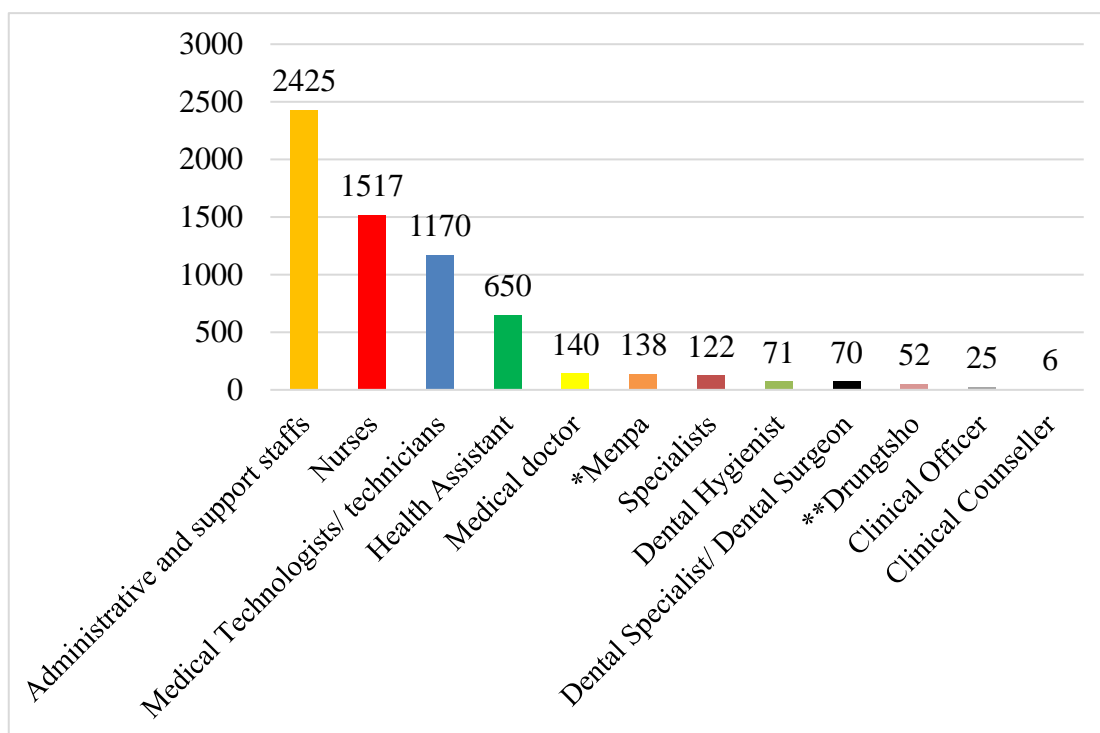
workforces produced, labor participation and the attrition of the health workforce influence the supply of health workforce (MoH, 2011). The national policies and plans may also have an impact on the health workforce situation. In addition, socio-economic developments in Bhutan also determine the availability of human capital and finances for the health sector (Thinley et al., 2017).

Though the number of the health workforce in the country has steadily increased, still shortages remain at the stark. While the HRH Master Plan (2013–2023) estimates an overall requirement of health workforce for the country is more than 10,000, (MoH, 2011) the total number of HRH strengths in the year 2020 was only 6386 (MoH, 2021a). Apart from administrative and support staff, Nurses (1517) constitutes the major proportion of the health workforce, followed by Medical Technologists and Technicians (1170), and Health Assistants (650). Overall, Bhutan's availability of doctors, nurses and midwives was 22.5 per 10,000 population, just about the WHO threshold of 22.8 per 10,000 set up in 2006. Availability exceeds 30 per 10,000 if HAs are included, which however is still well below the SDG threshold, established at 44.5 per 10,000 population (MoH, 2021a). The number of doctors per 10,000 population has slightly increased from 4.3 in 2019 to 4.6 in 2020. The overall density of doctor to population was 0.46 in 2020, which is still lower than the WHO recommended rate of one doctor per 1,000 population, and the nurse to bed ratio is 1:1.06 in 2020, whereas, the HRH targets for the 11th Five-Year Plan (2013–2018) were to have a nurse-to-bed ratio of 1:6 at per the WHO recommendation (Figure 3) (MoH, 2021a).

#### 2.2.4.2 Human Resource for Health Development and Recruitment

The only medical and health university in Bhutan, KGUMB provides various short certificate courses in addition to diploma courses, bachelor's and master's degree residency programmes. All the training are provided through the government scholarship programme. The University also offers diploma, bachelor's and master's courses in Bhutanese Traditional Medicine. On the contrary, the country is dependent on other countries for undergraduate education in the field of medicine, nursing, pharmacy, laboratory and other allied subjects, mostly sponsored by the government. All MBBS graduates are trained abroad (WHO, 2020).





**Figure 3 Number of Existing Human Resources for Health in Bhutan, 2020**

**Note:** \*Mempa: Traditional pharmacist \*\*Drungtsho: Traditional doctor

**Source:** Ministry of Health, 2021a

All categories of the health workforce in Bhutan wishing to become a public servant must register with the Bhutan Medical & Health Council (BMHC) and pass through Bhutan Civil Service Examination (BCSE) for bachelor's graduate and selection interview for diploma and certificate level category. Based on the registration examination marks and the availability of vacancies, new staff are deployed by the MoH in health facilities (WHO, 2020). The number of the health workforce in Bhutan is determined by the service standard (MoH, 2019a).

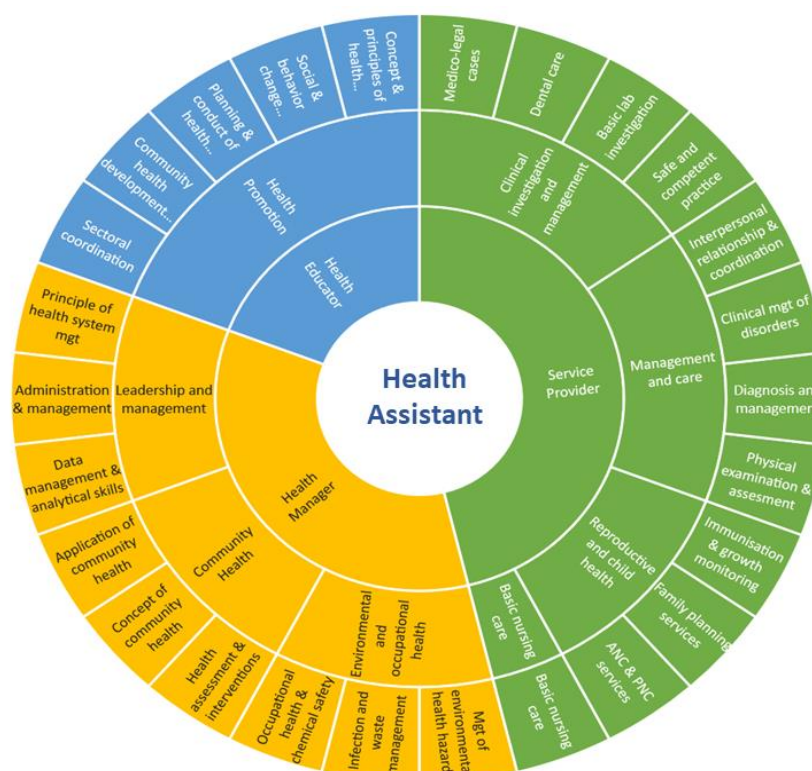
At the tertiary level of healthcare, it consists of disciplines of the health workforce ranging from super-specialist such as cardiologists, neurologists, radiologists, oncologists and other health experts such as neonatologists, oncologists, cardiologists and so forth, inclusive of the hospital administration and support staff. Whereas, at the secondary level of healthcare, besides administration and support staff, general doctors along with vital health specialists such as gynecologists, surgeons,

orthopedic surgeons, internal medicine specialists and pediatricians are posted there. Likewise, HAs are posted in the PHC facilities and Sub-posts, and work as the sole primary care provider in the PHC facilities in Bhutan (Thinley et al., 2017).

#### 2.2.4.3 PHC Workforce and Their Roles

In the early 1970s, in Bhutan, the PHC workforce consisted of Health assistants (HA), Auxiliary Nurse Midwives (ANM) and Basic Health Workers (BHW), who were at that time the frontiers of health service delivery in the country. Two years of certificate course training for ANM was introduced to conduct PHC activities mainly related to sexual, reproductive, maternal, neonatal, and adolescent health. However, in 2003, considering the training course content of HA and ANM and to ensure professional's needs and equality of responsibilities, the ANM cadre was phased out and converted to HA, but the roles and responsibilities of female HA (female PHC workforce) remained the same until date. Furthermore, since 2012, the qualification of BHWs was upgraded, and at present, all of them work at the capacity of HA in various levels of health facilities in Bhutan (MoH, 2020b; Wangmo et al., 2018; WHO, 2020). Currently, HAs have an entry qualification of class 12 Sciences with a formal three-year qualification of Diploma in Community Health from the KGUMSB and the number of HAs deployed in each PHC facility is determined by the health service standard of the Human Resource Division. The current standard sets a need for at least two HAs in each PHC facility, which is inclusive of one female HA in the team (WHO, 2020).

Health Assistants are trained in community health diagnosis and management, health promotion, reproductive and child health services, diagnosis, treatment and management of minor illness, leadership management, environment and occupational health presented in the form of a conceptual framework as shown in figure 4.



**Figure 4 Competency-based Framework for Health Assistant in Bhutan**

**Source:** Ministry of Health, 2021b

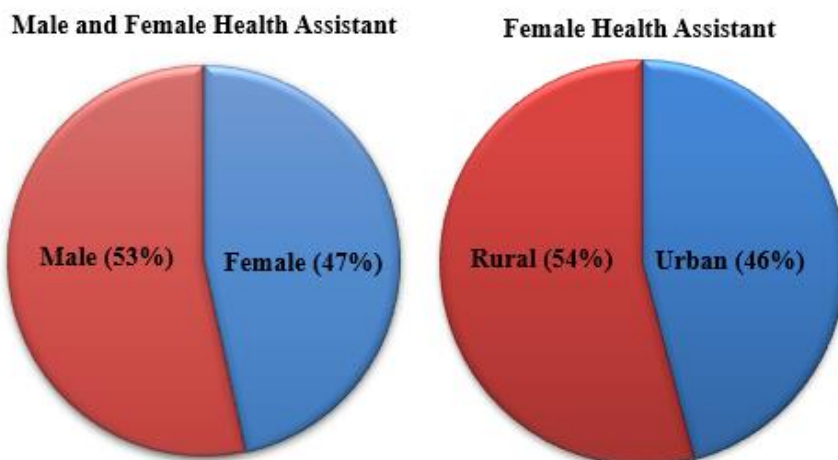
Over the years, the roles and responsibilities of HAs have increased, coupled with rapid advancement in the health and medical field, changing patterns of diseases, an approach to taking health services to the community (people-centered care), and increased expectations from the community for quality care (WHO, 2020). In 2020, there were 650 HAs in Bhutan, of which 46.6 % consisted of females. The density of HA was reported at 8.9 per 10,000 population (MoH, 2021a), with an attrition rate of 2%, equivalent to the annual attrition rate of 2 for overall health workforces (RCSC, 2020).

The University absorbs 25 candidates (15 female and 10 male) annually to undergo community health training. The proportion of the candidates is kept higher for females in order to curb the shortage of female HA and keep up with the demand of the

public (MoH, 2020b). Female HAs are the health professional midwives working in PHC facilities who carry out PHC activities specifically related to maternal and child health such as midwifery services such as ANC, PNC and delivery; family planning; pap-smear screening; immunization; health counseling and disease prevention and promotions. Further, their roles and responsibilities in the delivery of PHC services are stretched with COVID-19 pandemic (MoH, 2021a) and the new government policy of remodeling healthcare services especially related to NCD to the doorstep of the community. As a result, it is predicted that the country will require an additional 330 HAs in addition to the current number (MoH, 2021c). This requirement was stipulated as per the demand of women in the community, according to the World Health Organization (2020) “there has been an increasing demand for female HA in PHC facilities to provide maternal and reproductive health services in the communities, however, often the standard is not always met”. Despite the provision of all basic amenities such as road connectivity, telecommunication services, mobile phone connections, electricity and educational facilities across the country, PHC workforces often experience many challenges living in rural areas (WHO, 2020).

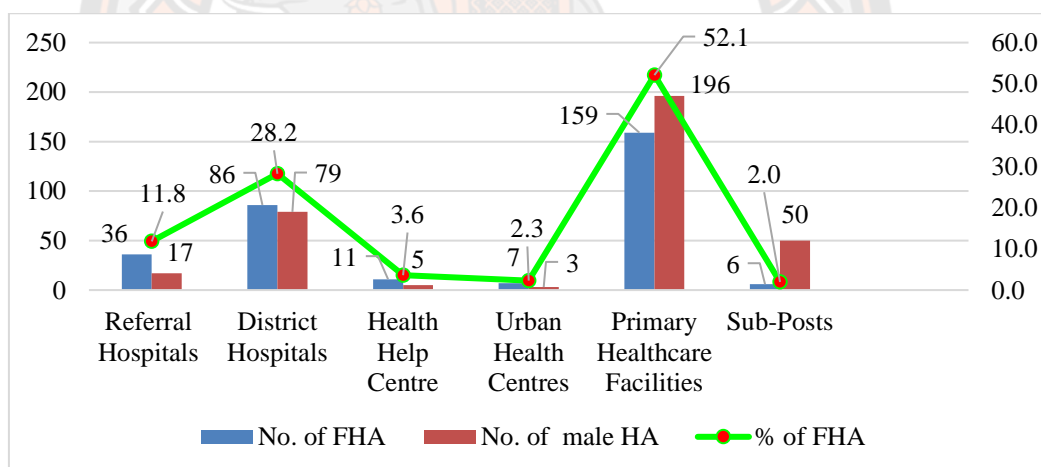
#### 2.2.4.4 Distribution and Shortage of Female Health Assistants

According to the Health Management and Information System, Ministry of Health, Bhutan, as of 31<sup>st</sup> December 2021, there were a total of 655 Health Assistants in Bhutan, of which 350 (53.4%) were male and 305 (46.6%) female. Further, of the 305 females, 140 (45.9%) were working in urban 165 (54.1%) (Figure 5). However, 21.1% (37) of the total 179 PHC facilities were without female HA, whereas, there were 129 female HAs in urban health facilities against the actual required number of 67, accounting for 92% (62) more than required. Further, if 11 female HAs working in HISC are considered, the number of female HA working in rural areas is going to be much higher, (MoH, 2021c) indicating a gross maldistribution of female HA between urban and rural areas (Figure 6). Furthermore, as shown in figure 7, in the regional comparison of the distribution of female HA, the Western region has the highest gap, followed by the Central region and the Eastern region, accounting for 27.9%, 20.5%, and 14.9% respectively, (MoH, 2021c).



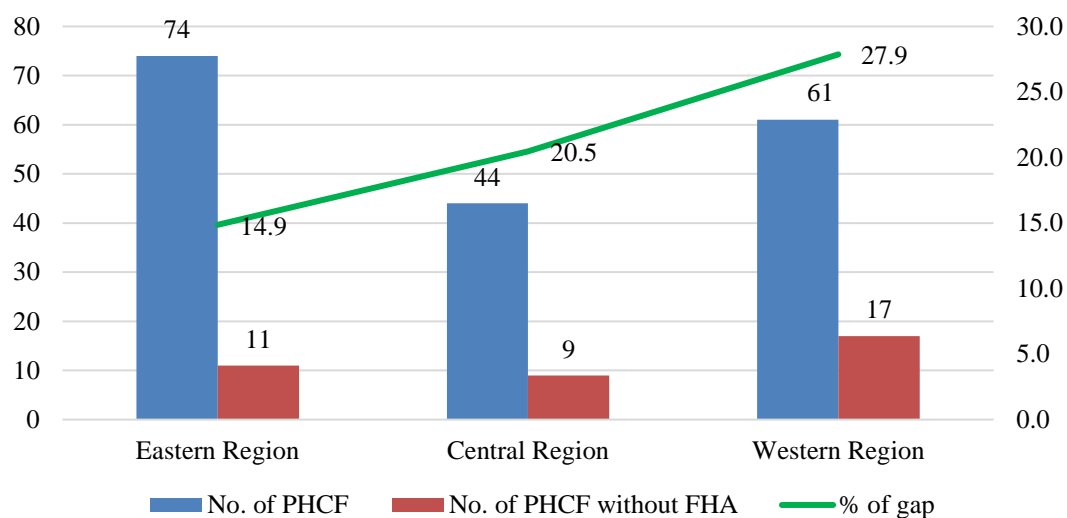
**Figure 5 Distribution Health Assistants in Bhutan, 2021**

Source: Ministry of Health, 2021c



**Figure 6 Distribution of Health Assistants Across Various Levels of Health Facilities in Bhutan, 2021**

Source: Ministry of Health, 2021c



**Figure 7 Region-wise Comparison of Female Health Assistants Deployed in Primary Healthcare Facilities in Bhutan, 2021**

**Source:** Ministry of Health, 2021c

Though the current service standard of the MoH mandates having at least one female HA in every PHC facility and often the targets are not always achieved (WHO, 2020). The national newspaper (Kuensel, 2018) reported that there is constant pressure from the communities about women being reluctant to avail of health services when faced with male healthcare workforces due to gender differences and confidence, especially related to reproductive and sexual. This problem was prescribed to be very genuine and warned that the shortage of female HA in rural areas is going to have serious implications on the lives of women and children; and the quality of healthcare for the rural communities. Likewise, a report on a competency-based framework report conducted for HA cadre in Bhutan shared the concerns of the clients preferring female HA over male HAs in availing health services particularly reproductive related health services such as family planning services, particularly the insertion of IUD. The same was reported with Pap smear screening, ANC and PNC services (MoH, 2020b). A similar concern was raised during the third Biennial Health Conference in 2015. The shortage of female HAs, in PHC facilities in Bhutan, was one of the pressing agendas (MoH, 2015). On a similar note, for the FY 2017-2018, as a part of the HRH targets to enhance mechanisms to reduce maldistribution and curb female HA shortages in rural

areas, the ministry implemented a strategy to ensure posting one female HA in every PHC facility. However, the concept did not come to reality since female HAs are frequently reported preferring to work in urban health centers. The report also assumed that the factors for their intention to leave the rural health facility are mainly due to marital issues, health conditions, career development opportunities and better educational opportunities (WHO, 2020).

The Ministry of Health (2020b) reported having a maldistribution of the health workforce among the levels of health facilities and argued that the existing HRH standard is calculated at the bare minimum level and indicated that there is a need to review the existing standard. Similarly, a report on “workload indicators of staffing needs (WISN) in selected health facilities of Bhutan” conducted by MoH and the WHO country office in 2020 reported having a shortage of female HA in rural areas compared to urban-based hospitals. This study was conducted to support rationalization and evidence-based staffing norms to deliver people-centred comprehensive quality care (MoH, 2019b).

In summary, the shortage of HRH in rural areas can impede the equity and accessibility of healthcare services for a significant percentage of the population. Thus, in concurrence with the importance of the role in achieving health goals, sufficient and balanced distribution of the health workforce is indispensable. These challenges are further exacerbated by the shortage of female PHC workforce or midwives. They are often placed in rural areas and have been highlighted as the pillar of the PHC system and play a critical role in realizing the UHC and SDG. The female PHC workforce performs the role of gatekeeper to the health system. Similarly, in Bhutan, though the government has instituted a policy of a mandate to deploy one female HAs in every PHC facility, this gap is still an issue. This is because rural women prefer female HA over male HA and the MCH related achievements are very low among the rural population. Despite the implementation of various strategies, retention of female PHC workforce in rural areas has been a chronic problem for the MoH marking a considerable threat to the national health goals.

### **2.3 Human Resource Management and Concepts**

The role of Human Resources Management (HRM) in the healthcare delivery system and systematic management is very critical (Pillai et al., 2019). An organization with good HRM is reported to achieve the employees or organizational goals (Pillai et al., 2019). The positive impact of HRM practices on increasing employee engagement and satisfaction is scientifically proven (Hrušovská et al., 2021). According to the World Health Organization (2021b) HRM capacity can be strengthened through components such as HR planning, efficient HR information management system, recruitment and hiring practices, work environment and performance management system that can help to successfully implement retention strategies, this, in turn, can improve health outcomes for rural populations.

Hernandez and O'Connor (2010) described that HRM can be broadly referred to as “the management of people in an organization”. The processes can be viewed as a continuous cycle of related activities of job analysis, recruitment, selection and onboarding, training and development, performance appraisal, compensation management, labor relationships and retention. These functions must be performed to ensure the availability of HR that support the strategic thrust of the organization. The HRM processes are discussed in the section that follows;

1. Job analysis is a systematic process of gathering information about jobs and describing it to provide the necessary information in the implementation of its functions successfully.

2. Recruitment is the second process that plays an important role in helping organizations by using either the active or passive method. The active method can consist of direct appointments. This method of recruitment is usually quick and easy, whereas, a passive method of recruitment can be made via advertisement on websites, social media, etc.

3. Selection and onboarding is the process of selecting the right person for the right job “job fit”. It is one of the important components of HRM for every organization. Under this process, the criteria for predicting employee effectiveness are required. Onboarding happens after a selected candidate has accepted an offer and is the process of supporting the recruits to reach their optimal productivity. Equal attention must be given to the validity and reliability of the selection instrument.



4. Training and development is the investment in HR capacity development for the organization. It is said that the training and development of employees must be based on the change and needs, such as updated medical knowledge and change in medical technology. It is said that improvement in the skills and abilities of employees will contribute to sustaining levels of performance.

5. Performance appraisal is the systematic evaluation of an employee's work behavior on criteria measuring important job-related activities. Performance appraisal can serve multiple purposes for the management to guide the selection of individuals for promotion, determine employee compensation, and identify areas of personal need for training and development or improvement. Some of the commonly adopted performance appraisal methods in recent healthcare settings are a continuous quality improvement (CQI) or total quality management (TQM) and performance appraisal, 360-degree feedback and team appraisals.

6. Compensation management can influence an organization on its strategic direction. The roles of compensation management are to motivate employees, reinforce the structural systems of the organization and terminate individuals based on appraisal and compensation systems. Compensation can be either in direct or indirect form. Direct compensation is all tangible rewards of the working relationship in the form of base pay, differential pay, short-term & long-term incentive and cash reward. Whereas, flexible benefits, unpaid leave, etc.

7. Labour relationships are concerned with the relationship within the organization. Mutual respect and perseverance of trust between management and employee can be mutually beneficial in achieving a high level of productivity and a positive labor management relationship. In this context, the preservation of administrative flexibility is important for the long-run survival of quality health care.

8. Retention of high-performance employees is essential to that of recruitment as recruitment is self-defeating to invest significant resources in successful recruitment efforts if such effort is hindered by high turnover rates. The multifaceted approach to retention involves resolving issues in terms of payment, benefits, education and career advancement, work environment and sense of mission and accomplishment (Hernandez & O'Connor, 2010).

Poor access to health services due to health workforce shortages leads to significant health disparities in vulnerable populations, predominantly when the shortages are in PHC facilities (Hines et al., 2020). Thus, to support the aforementioned statements, Haider et al. (2015), reported that employee retention is a critical and costly issue. It continues to be one of the critical challenges for countries across the globe. According to Cosgrave et al. (2018), the terms retention and turnover intention (TOI) are used interchangeably, especially while discussing the average length of time between commencement and termination of a career in the workforce. So is the TOI and reasons for staying/ leaving, where it can be used vice-versa.

While retention is “the health workforce remaining employed in rural areas for a certain period of time and is measured by turnover rate” (WHO, 2021b), TOI is “an individual’s thoughts about leaving and intention to quit” and is reported to be a very strong predictor of an individuals’ decision to stay or leave the health position (Cosgrave et al., 2018). However, there is no framed benchmark for this duration and some of the studies that have measured this indicator and pointed out an average duration of only four years. Yet, the turnover of an employee can cost the organization more than 2.5 times the employee’s salary to backfill the position (Haider et al., 2015). Further, Zhao et al. (2019) reported that higher turnover was associated with significantly higher hospitalization rates and higher average health costs. In contrast, lower turnover was always more cost-effective. Further, a lack of HRM motivation among the health workforce affects their satisfaction and retention; and leads to their decision to migrate to urban health centers or affluent countries (Shah et al., 2016).

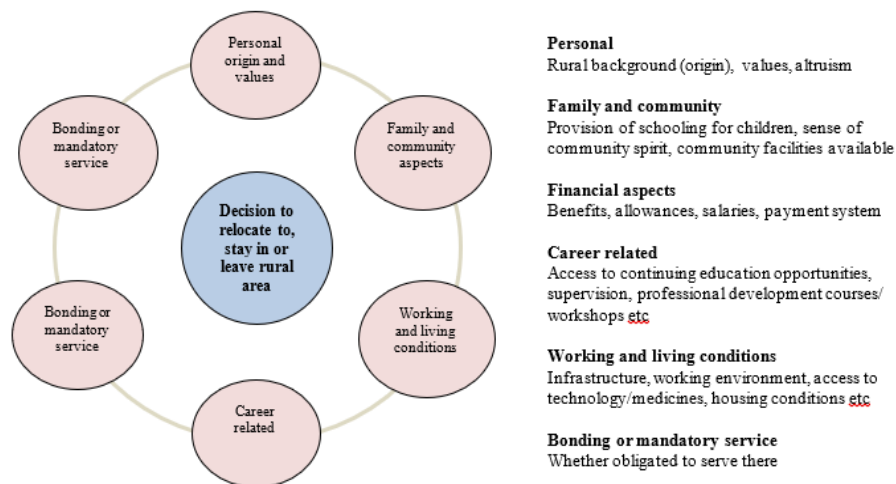
Therefore, owing to the above facts, retention is one of the vital aspects of the HRH system in every organization. Retention of HRH can not only save a huge amount of money invested in the HRD but also accelerate the achievement of organizational goals. Most importantly, retention of HRH in an organization ensures the continuity of quality health care. Moreover, the retention of HRH especially in the rural areas is important for any country since many vulnerable populations dwell there. Thus, depriving them of health services especially due to the shortage of health workforce is preventable and limiting them of health services can alter the achievement of PHC targets and SDGs. Consequently, this study is going to explore the factors influencing the retention of rural health workforces in Bhutan.

## 2.4 Human Resource for Health Retention Theoretical Framework

The retention framework for this study is being developed based on the WHO conceptual framework in the document titled “increasing access to health workers in remote and rural areas through improved retention” (WHO, 2010) (Figure 8). The framework is explained in detail hereunder;

### 2.4.1 The World Health Organization rural retention strategy framework

The WHO has identified lists of complex factors that influence the decision of PHC workforces to stay or leave rural and remote areas. These factors are reported to be having a direct relationship with individuals, health system characteristics; and socio-economic and political environment. Further, the influence of these factors is complex and strongly affected by the degree of motivation, be it social, economic, cultural, religious, etc. In this context, the World Health Organization (2010) has come up with the conceptual framework of the factors that influence “the decision to relocate to, stay in or leave rural and remote areas”. The factors were categorized into 6 broad domains; namely: 1) personal origin and values, 2) family and community, 3) financial aspects, 4) career-related, 5) working and living conditions; and 6) bonding or mandatory service (figure 8).



**Figure 8 Conceptual Framework on the Factors Related to Health Workforces' Decisions to Relocate to, Stay in or Leave Rural and Remote Areas**

**Source:** World Health Organization, 2010, p.14

#### 2.4.1.1 Personal Origin and Values

##### *Personal Origin (rural background);*

The rural background is the driving force behind the female health workforce's desire to return home because of the feeling of a sense of belonging to the community; the feeling of helping their parents, relatives, family, and friends. Hines et al. (2020) stated that the area of origin has a considerable impact on whether or not health professionals choose to work in rural settings, with those who grew up in rural locations being considerably more likely to return to rural areas. A research conducted in Australia for 610 doctors who completed General Practitioner (GP) vocational training, 74-91% of the rural origin or rural training cohort GPs remained in rural regions during their first 5 years after graduation, whereas 87-95% of the urban origin or urban training cohort remained in metropolitan areas (McGrail et al., 2016). Similarly, Carson et al. (2015) carried out a study among doctors, nurses and allied health professionals reported that those health professionals who had spent their childhood years in rural areas or part of their professional training in rural areas were more likely to select to work in rural areas.

##### *Values and Altruism;*

Health workers' readiness to serve in rural areas is associated with their attitude and willingness to work. In a study conducted in India among the midwives of Tshwane District by Matlala and Lumadi (2019), it was revealed that the reasons for staying in rural areas are due to the passion for midwifery. Likewise, a study conducted by Adegoke et al. (2015) among 119 midwives revealed that the feeling of caring for the women and children in the community was reported to be some of the factors for their willingness to continue working in rural areas. A similar report was stated by Hines et al. (2020). Furthermore, the report also mentioned that it is significant among mid-level health professionals for their willingness to stay in rural areas longer to save people's lives. Correspondingly, Rose and van Rensburg-Bonthuyzen (2015) indicated that health professionals were having a feeling of a strong attachment to the communities in which they worked and that they felt obligated to give back, either to their own people or to the less fortunate communities, and they were most likely to remain in rural areas. In a nutshell, the retention of the female primary healthcare workforce in rural areas is

particularly correlated to the place of origin which has equal importance to that of values and the sense of altruism.

#### 2.4.1.2 Family and Community Aspects

##### *Sense of Community Spirit;*

The community's respect and trust toward health workforces can have a significant impact on whether or not health professionals choose to stay in rural areas. Abe et al. (2021) conducted a study to explore “factors influencing the retention of secondary midwives at health centers in rural areas in Cambodia” and reported that living with one’s parents or husband is one of the significant influential factors for the nurses in their decision to stay in rural areas. Furthermore, Shemdoe et al. (2016) conducted a study among 83 mid-level health professionals in Tanzania and reported that those participants willing to stay were reported to be having a very good relationship with the local community and was mentioned as the most important motivating factor in encouraging rural health professionals to continue staying in the existing health facility. The paper also found that having community recognition and a strong patient-provider relationship improves health practitioners' feeling accepted and appreciated in their work which encourages them to stay in rural areas. Similar findings were observed in the survey of Belaid et al. (2017) conducted in the Tillabery region, Niger that health professionals were more likely to stay in rural areas if they have a strong sense of community spirit and relationships.

##### *Family Condition;*

According to Safi et al. (2018), it was revealed that family support was cited as one of the important approaches to retaining the health workforce in rural areas. Further, the health and wellness of any family members are accorded as the highest form of priority for any individual. Haskins et al. (2017) reported that some rural health workforce prefers to leave rural health facility and work in urban areas near their family. It was reported that the other reason was to live in an urban area where there are good medical facilities to take care of their chronically ill family members (Jaeger et al., 2018).

##### *Community Facilities;*

To account for the feature of personal life, schooling for children of the rural health staff is particularly essential. According to the World Health Organization (2020)

existence of a good school near to the community enhances the possibility of the health workforce staying in rural areas. Further, the paper also indicated that other amenities such as mobile networks, affordable markets nearby and recreational centers are some of the important amenities for the health workforce to accept rural jobs. Similar reports have been expressed in their studies conducted by Lori et al. (2012), Okyere et al. (2021) and Shemdoe et al. (2016). Further, they also reported that poor transportation services and lack of spousal job opportunities in the area were identified as having a negative influence on the retention of healthcare workforces in rural areas. It can be concluded that a sense of community spirit, family conditions and community facilities are equally important to that of working and living conditions towards enhancing rural retention of health workforces.

#### 2.4.1.3 Working and Living Conditions

##### *Work Environment;*

The availability of a safe and pleasant work environment is essential to be more attractive (Belaid et al., 2017; Wakerman et al., 2019). Likewise, the World Health Organization (2020) mentioned that health facilities with work environment related amenities such as electricity supply, clean water supply and good road conditions can make health facilities more attractive that will enhance the livelihood of the rural workforces. Nowrouzi-Kia and Fox (2020) concluded that flexible interprofessional relationship is significantly associated with nurses' intent to leave the current workplace. Similarly, in a study of 665 Ugandan health workforces (Rockers et al., 2012), 426 doctors said that the quality of the health facility was a major factor in their decision to take a rural position, similarly, Fadi El-Jardali et al. (2013), in their study among 857 nurses in underserved areas of Lebanon reported that 62.5% of the PHC facility nurses like to remain in the existing place because of a good work environment.

##### *Technology and Medical Supplies;*

According to Lori et al. (2012), the availability of materials and resources such as medical equipment and medicines ranked as the top predictor for the rural health workforce and willingness to stay in the rural health facilities. Further, Honda et al. (2019) in remote Senegal, among the 55 physicians and 256 other cadres of health workforces, both categories reported the availability of equipment as the second most

important attribute for their willingness to retain in the remote areas. Similar findings were reported in the study conducted among 404 primary healthcare workforces in Kenya. On the contrary, Bogren et al. (2020) in their study conducted among 63 midwives in the Democratic Republic of Congo reported that lack of equipment and medical resources are one of the challenges and the demotivating factors for midwives to remain in their current workplace. A similar report has been concluded by (Nowrouzi-Kia & Fox, 2020).

*Accommodation;*

Wakerman et al. (2019) in their study among remote health workforces, 65% expressed their desire to continue to work in rural areas and one of the reasons is due to the availability of accommodation. Similarly, the World Health Organization (2020) noted accommodation as an important factor for rural retention of the health workforce, thus, it was recommended that ensuring the availability of accommodations to rural health staff as one of the strategies for rural health workforce retention. Similar findings were reported in a study conducted among 119 rural midwives in Nigeria (Adegoke et al., 2015). Further, Berman et al. (2021) conducted a discrete choice experimental study for 472 rural midwives in Malawi and concluded that respondents were 2.04 times more likely to choose a rural profession if good accommodation was provided than no accommodation.

*Workload;*

Several studies pointed out that there is a direct relationship between the workload and retention of the health workforce in rural areas. Nurses in African countries have highlighted heavy workloads, staff shortages, and time limitations as important causes of stress, that demotivate health workforces to stay in the rural areas for a longer period. Furthermore, the paper also reported that work-related stress is common among those nurses with heavy workloads (Lori et al., 2012). Similarly, Matlala and Lumadi (2019) reported that the impact of the midwife shortage is directly related to poor quality care, leading to low morale and burnout, and concluded that the nurses are demoralized due to a chronic staff shortage. In contrast, Fredrick (2018) in their report stated that having a manageable workload can enable health workforces to do their jobs well and efficiently. Thus, having either a balanced workload or a good

team to manage the workload in the facility increases the likelihood of health workforces taking a job and staying in rural areas (Berman et al., 2021).

In the context of working and living conditions, sub-domains such as work environment, technology and medical supplies, accommodation and workload are reported to be important factors. Besides, career-related factors also play a role in the rural retention of the female primary healthcare workforce.

#### 2.4.1.4 Career-related

##### *Access to Continuing Education Opportunities;*

Health care professionals value continuing medical education since it keeps them up to date on new medical information that allows them to build competency and deliver quality health care. Similarly, in a systematic review, three studies involving 319 nurses reported that having the ability to improve qualifications was associated with a greater rural retention rate (Russell et al., 2021).

##### *Professional Development Courses;*

Wakerman et al. (2019) also reported that the provision of continuing professional development opportunities to the rural health workforces encourages them to enhance their clinical knowledge and likelihood of staying in rural health facilities. Further, Honda et al. (2019) reported that the provision of training opportunities is the second most influential determinant for the rural health workforces to stay in the rural areas, similar to Fredrick (2018) and Cosgrave et al. (2018) that health workforce who had an opportunity for training had a higher chance of staying.

##### *Supervision;*

Rural environments can make health workforces feel isolated; to encourage them to practice in rural areas, supervision must be provided in a friendly and supportive manner. Further, the personal recognition system can ensure positive feedback while building self-esteem and the inner drive of the health workforce to encourage working in rural areas. The studies also reported that supervision is a cost-effective method of training for health workforces in rural areas because it provides an opportunity for early problem identification and solution, and improves the competency of health staff. Furthermore, Ofei and Paarima (2022) concluded that leadership styles significantly predict the nurses' intentions to stay. Seangrung and Chuangchum (2017) and Yasin et al. (2020) reported that peer support and quality of supervision were



significant predictors of job satisfaction and the intention of health workforces to stay in rural areas.

*Personal Recognition System;*

In a systematic review conducted by Mbemba et al. (2016), five of the studies reported that peer recognition was highlighted as having a strong influence on the retention of health workforces in rural and remote areas. Similar reports were presented by Ojaka et al. (2014), and Matlala and Lumadi (2019) that lack of management support, fear of litigation, and lack of recognition were reported as the reasons for the health workforces leaving their profession.

*Job Satisfaction;*

In contemporary organizations, high job satisfaction successfully leads to increased organizational productivity, lower staff turnover rate and lower work stress. Employees who are satisfied with their jobs will perform tirelessly to attain better performance and productivity. Yasin et al. (2020) collected data from 349 nurses in Southern Ontario and concluded that peer support, work conditions, quality of supervision, and achievement/job interest/responsibility were significant predictors of job satisfaction. Further, a study by Adegoke et al. (2015) for 119 midlevel midwives in rural Nigeria reported that if employees are more satisfied with their job, they are less likely to leave. It also helps to recruit better quality talent as new talent sees employee staying power as added value. The above statement can be supported by a study conducted by Fadi El-Jardali et al. (2013), in which, it was reported that the nurses' job satisfaction has a directly proportional relationship with the quality of service provision and their intent to remain in underserved areas. In short, access to continuing education opportunities, professional development courses, supervision, a personal recognition system and job satisfaction influence the retention of the female health workforce in rural areas. Moreover, the financial aspects are one of the key factors that influence the retention of the female PHC workforce in rural areas.

2.4.1.5 Financial Aspects

*Salary;*

Difference salaries scales in the settings can influence health workforces to practice in rural areas. The key compensating action that can support and encourage rural health workforces to stay in rural areas is financial incentives, including salary

(Wakerman et al., 2019). Conversely, Shah et al. (2016) in their study among physicians of rural healthcare facilities in Pakistan stated that inadequate remuneration is one of the most important factors contributing to lack of motivation and a source of intention to leave their workplace. Correspondingly, a study conducted by Berman et al. (2021) among 472 rural nurse midwives, reported that they are 3.84 times more likely to choose a rural job with a 50% salary increase. Likewise, in a survey of 362 nursing students in rural Tanzania, Munga et al. (2014) indicated that their basic pay should be increased by 80 % to 100% in order to practice in rural areas. Further, Belaid et al. (2017) in their report, it was stated that during the concept mapping results for health professionals in Nigeria, salary conditions were classified as the top two priorities among the factors inhibiting retention in rural areas.

#### *Allowance and Benefits;*

Allowances in rural areas are particularly important for healthcare workforces to stay in remote areas. Belaid et al. (2017) conducted a study among 192 mixed categories of health workforces working in the rural area of the Tillabery region, Niger. The findings observed that lack of financial compensation was one of the main factors inhibiting their stay in rural areas. The study claimed that financial compensations were particularly related to remoteness and retention. Likewise, a study conducted by Kadiri-Eneh et al. (2018) for 378 rural PHC workforces, in Rivers State, Nigeria concluded that higher salaries and remunerations were the commonest influential factor for their preferences to stay in rural health facilities. Similarly, Seangrung and Chuangchum (2017) in their studies on “factors affecting the rural retention of medical graduates in lower Northern Thailand” reported that financial factors such as payment for on-call and after-hour work were one of the critical factors for their retention in rural areas. In this context, there is a strong connection between the rural retention of the female health workforce in rural areas, salary, allowance and benefits and the retention of the female health workforce in the rural areas. Further, these domains are also inclined by the bonding and mandatory organizational policies.

#### 2.4.1.5 Bonding or Mandatory Service

##### *Obligatory Services;*

Obligatory service means to take service mandated to serve in a particular place for a certain period of time. The compulsory scheme is among the means of

increasing the number of health workforces in rural areas. According to the World Health Organization (2020), in Sri Lanka, the obligatory assignment system of health workforces to rural areas has significantly addressed human resource maldistribution and the sustainability of rural health services. Further, the national retention impact assessment carried out by Arora et al. (2017) reported that various regulatory measures established as part of Thailand's special rural recruiting track may have a favorable impact on physicians' decisions to work and stay in the Ministry Of Public Health (MOPH) health services. Compulsory service requirements in rural and remote locations are controlled in order to improve doctor recruitment and retention in MOPH facilities. The report pointed out that compared to their regular track counterparts, medical graduates under the special assignment scheme had a greater retention rate (overall retention of 78.2 % and 52.5 %, respectively). Further, the paper also reported that 4425 (90.9 %) of the MOPH's 4869 medical graduates still work in the areas where they were primarily assigned before 3 years. The above statement can be supplemented by a DCE study conducted by Berman et al. (2021) among 472 rural Malawian nurse midwives who reported that there were significant associations between bonding agreement and their intention to stay in rural areas. Those who had the bonding agreement with the government (OR 3.66, CI 2.22–6.04,  $p < 0.01$ ) were substantially more likely to say they were "likely" or "very likely" to work in a rural region in the future. In this context, how the government implements or imposes the policy of bonding and mandatory rural service plays an equal role in the retention of the female health workforce in rural areas.

As a result, it can be understood from the above studies that numerous factors interact at the same time, implying that intervention may be delivered as part of a bundle system. The framework consists of 6 independent variables and 17 sub-topics. Therefore, the WHO recommended adopting a bundle of policies for the countries to ensure better retention of the rural health workforce. It was highlighted that “the best results can be achieved by choosing and implementing a bundle of contextually relevant recommendations, encompassing interventions on education, regulation, financial incentives, and personal and professional support” (WHO, 2021b). These interventions were applied in several policy interventions, such as “improving retention of health workers in rural and remote areas: case studies from WHO South-East Asia Region”

(WHO, 2020), “attraction and retention of rural primary healthcare workers in the Asia Pacific Region” (Liu et al., 2018), “global strategy on human resources for health: workforce 2030” (WHO, 2016a) and “WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas” (WHO, 2021b). However, the WHO framework does not include socio-demographic characteristics.

Bonenberger et al. (2014b) in their study of 256 different disciplines of the health workforce, consisting of 82% female, working predominantly in rural areas in three Eastern regions of Ghana, discovered that being divorced or widowed increases the likelihood of staying at the current health facility, but being apart from one's family decreases the intention of staying. Furthermore, as compared to individuals under the age of 30, being 40 years or older significantly reduces the likelihood of leaving the existing health facility. Further, Fredrick (2018) claimed that age has statistical significance in influencing the rural health workforce's decision to stay or leave the place. When compared to other age groups, the health workforce aged 31 to 40 years were more likely to leave their workplace; however, those aged 51 and higher exhibited stability in staying at the facility.

Bonenberger et al. (2014b) reported that concerning the profession, registered nurses were more likely of having the intention to leave than health and ward assistants. Similarly, the study reported that being divorced or widowed increases the odds of their intention to stay in rural health facilities. Similarly, Okyere et al. (2021) discovered that the option for choosing rural areas was to prevent marital conflicts by staying close to their spouse and family. The study consisted of 70.5% nurse category.

Likewise, Kolstad et al. (2013) revealed that 20% of all participants in Tanzanian research of 300 Clinical Officers and 120 Assistant Medical Officers were eager to work in rural regions. Bonenberger et al. (2014b) also reported that in comparison to the individuals who had only worked in the current health facility for 1 year or less than those who had been there for more than 5 years had a much lower likelihood of intending to leave the existing health facility. According to the findings, health workforce's decisions to stay or leave rural areas are heavily influenced by their spouses. In summary, socio-demographic characteristics such as age, marital status, monthly income, work experience in remote areas, number of years in service and

duration at the current workstation are significantly associated with the retention of the female health workforce in rural areas.

Therefore, this study will adopt six WHO conceptual frameworks and abstract six factors related to socio-demographic characteristics. This framework is being used since it is explicitly underpinned by the factors that influence the decisions of health workforces to relocate to, stay in or leave rural and remote areas, which are the key steps in understanding the extent of the problems and in guiding the appropriate choice of interventions for health workforce retention in rural areas. As stated earlier, the contents of this framework are also strongly related to the research carried out in many countries. Therefore, this framework is very relevant to this study as it can help in answering research questions comprehensively.

## **2.5 Existing Rural Retention Strategies in Bhutan**

In Bhutan, the RGoB has adopted various HRM strategies to encourage the public health workforce to continue working in remote areas. More than 62% of Bhutanese live in rural areas (NSB, 2018), and according to the World Health Organization (2020), rural development has always been the focus of the country's development policy. The government has undertaken various reforms to improve the quality of healthcare services, however many of these are central-level policies that are not rural-specific (Thinley et al., 2017). The health workforce in Bhutan is considered within the broader designation of public servants (Ministry of Finance, 2016). However, retaining female HA (female PHC workforce) in rural areas has been pervasive for much of the past decades. All rural PHC facilities in Bhutan are staffed with HA cadre (PHC workforce); therefore, as per the case study report, based on the WHO recommendation, the policy interventions to improve retention of rural and remote areas in the country specifically revolve around the HA category, as described below (WHO, 2020);

### **2.5.1 Educational Interventions**

All the HAs are enrolled in the training at the KGUMSB through government scholarships. During their undergraduate training, HAs are entitled to accommodation, tuition fees and stipends. Currently, HAs have an entry qualification of 12<sup>th</sup> standard science with three years of training in a Diploma in Community Health. Annually, the

MoH recruits around 25 HAs based on their merit ranking and on the availability of a vacancy and deployed in various levels of health facilities across the country (WHO, 2020). Further, to ensure the provision of continuous quality healthcare services and to enable them to renew their professional practicing license with the BMHC, the MoH facilitate HAs in the provision of continuing medical education (CME) through the conduct of training and workshops. The measures were also taken to upgrade the qualification and enhance the career ladder of HAs (BMHC, 2018). Similarly, the University started a two year Bachelor's in Public Health (BPH) course in 2011. Some HAs, upon completion of professional up-gradation, were posted as DHOs or Program Officers in the MoH (WHO, 2020).

### **2.5.2 Regulatory Interventions**

After initial deployment in the public service, HAs must serve in their initial place of posting for at least three years prior to becoming eligible for the requested transfer. Moreover, it is expected for the health workforce to remain within the public sector for twice the duration of their training period (RCSC, 2018). Health professionals in Bhutan are registered and licensed after the evaluation of their degrees and certificates with the Bhutan Medical and Health Council (BMHC). The Council is responsible for ensuring the quality of medical and health education imparted by the universities and private institutions and mandates improving and sustaining quality services by ensuring that health professionals fulfill the minimum competency level and ethical standards (BMHC, 2021). At the end of 5 years, all health professionals are required to earn a minimum of 30 credits, based on which their registration will be renewed by the Council (BMHC, 2018). As per the Royal Civil Service Commission (2018), government servants in rural areas are entitled to preferential incentives for promotion, training and scholarships. Service in the rural area(s) is given an additional 5% preferential weightage for academic or relevant training selection compared to a candidate who has not served in any rural places.

### **2.5.3 Financial Incentives**

In line with the Financial and Accounting Manual, Ministry of Finance (2016) "the remuneration and allowances of public servants are reviewed by the Pay Commission and approved by the Parliament". In general, besides monthly salary, health professionals are entitled to a professional allowance of 35% to 55% of basic

pay depending upon the qualification and number of years in the service. They are also entitled to a house rent allowance of 20% of the basic pay and Travel Allowance and Daily Subsistence Allowance (TADA). Further, the nurses are entitled to a uniform allowance of Nu. 5,000 per year and night duty allowance of Nu. 500 per night. Equally, to encourage the retention of public servants in remote and rural areas, they are entitled to a range of financial packages such as rural area allowance ranging from Nu. 2,000 to 10,000 and a high-altitude allowance of Nu. 2,000 to 3,000 as prescribed by the (MoF, 2019). By nature of roles and responsibilities; and PHC facilities being located in rural areas, on average HAs enjoy a fair amount of financial incentives.

#### **2.5.4 Personal and Professional Support Systems**

National Statistics Bureau (2020) reported that Bhutan is having rapid socioeconomic growth, most of the communities are in access to basic amenities such as road connectivity, mobile phone connections, electricity and educational facilities across the country. In addition, unlike other categories of public servants working in rural areas, most of the HAs have access to government quarters within the vicinity of the health facility compound. Moreover, public servants in rural areas also get 100 units of free electricity (WHO, 2020). Over the past decade, the government has established ECCD facilities for children in both urban and rural areas, where the working parents can leave their children in the ECCD while they are at work. Furthermore, besides all of the above, PHC workforces also enjoy good social trust and respect from the community, adding value to their retention (WHO, 2020).

The regulation of the MoH compels all PHC facilities to have more than 95% of essential medicines and medical equipment available throughout the year. PHC facilities are always supported by an effective referral system both inside and outside the country, backed by emergency air services. All of these provide professional satisfaction while working in rural areas that can encourage the retention of HAs in rural areas (WHO, 2020).

#### **2.6 Relevant Research**

There is a dearth of studies that look at the factors and topics related to influencing retention of the PHC workforce in rural and remote areas. The review will be grouped into two, firstly, for the general health workforce and the other for nurses,

midwives or other female health professionals working in the rural areas to understand whether there is a difference in the factors between these two cohorts. Accordingly, the conceptual framework will be drawn based on the findings.

Factors influencing retention of general rural health workforce;

Mbemba et al. (2016) performed a systematic review of 15 papers titled "factors impacting recruitment and retention of healthcare personnel in rural and distant locations in developed and developing countries: an overview." According to the report, rural origin was the most important factor impacting recruiting, followed by career development. Professional advancement opportunities, professional support networks, and financial incentives all influence rural retention of the PHC workforce.

Fredrick (2018) conducted a cross-sectional study on "Factors influencing retention of health workers in primary healthcare facilities in Kakamega County, Kenya" and concluded that the age, duration of work, balance of work between personal life and profession, supervisor's competency, manageable workload and availability of equipment and accommodations were statistically significantly associated with whether health workforce would leave or stay. The age group between 31-40 years exhibited the highest proportion of leavers (57%). In addition, the fair evaluation and those who had an opportunity for training had a higher chance of staying. Gender, marital status and birthplace, current salary package, safety and security did not significantly determine the retention of the PHC workforce.

Kadiri-Eneh et al. (2018) conducted a study on "an assessment of the potentials for retention of different disciplines of primary healthcare workers in Rivers State, Nigeria" among 378 respondents. It was reported that better work opportunities outside their current facility (56.9%), higher salary (35.7%), opportunities for promotion (33.1%) and capacity building (24.1%) were the most common reasons for their preferences to leave rural health facilities. Moreover, age, type of profession, number of years in the service, general working environment, ability and skills they acquire was found to be having statistically significant relationships with their desire to leave the rural workplace.

Haskins et al. (2017) reported in their research on "factors influencing recruitment and retention of professional nurses, doctors and allied health professionals in rural hospitals in KwaZulu Natal" among 150 rural and 267 urban health



professionals. The report revealed that living or working in rural areas is perceived as negative and the healthcare services are poorly delivered. The marital status, the general environment, accommodation, remuneration and promotions were statistically significant for the health professionals' concerning their retention at the current workplace.

Ojaka et al. (2014) conducted a study on “factors affecting motivation and retention of primary healthcare workers in three disparate regions in Kenya” in three regions of Nairobi among 404 healthcare workers. In this study, health workforce demotivation is considered as the critical contributor to the shortage of health workforce and hamper in the delivery of health services. The paper revealed the availability of remuneration, career development and continuing education opportunities, good health infrastructure, availability of health resources, pleasant relationships with the management of the health facility, and personal recognition systems are the predictors for their willingness to stay in the current health facility.

Bonenberger et al. (2014) conducted a study on “the effects of health worker motivation and job satisfaction on turnover intention in Ghana: a cross-sectional study” among 256 different disciplines of health professionals working predominantly in rural areas in three Eastern regions of Ghana. It was reported that factors such as career development (OR = 0.56, 95% CI: 0.36 to 0.86), workload (OR = 0.58, 95% CI: 0.34 to 0.99), management (OR = 0.51, 95% CI: 0.30 to 0.84), organizational commitment (OR = 0.36, 95% CI: 0.19 to 0.66), and burnout (OR = 0.59, 95% CI: 0.39 to 0.91) were significantly associated with the TOI.

World Health Organization (2020) report on “improving retention of health workers in rural and remote areas: case studies from WHO South-East Asia Region” mentioned that one of the key building blocks for the Decade of health workforce strengthening, improving health workforce retention, particularly in rural/remote areas, has become a major policy area of technical focus in the countries in the region. It was also reported that according to Wiskow et al. (2010, p. 7) the work environment, working relationships, working conditions and organizational culture; pay, other financial and non-financial incentives, such as living accommodation; family-friendly policies such as flexible working hours, time off for childcare and eldercare; career opportunities and access to education such as speciality training, continuing

professional development and peer networks/ productive working relationships; and responsive management, effective supervision and focused mentoring are the factors that contribute to improving worker retention.

In a study conducted in Australia, General Practitioners who work in small remote health facilities are twice the risk of leaving than in urban health facilities (Wakerman et al., 2019). According to the study, 62.5 % of the rural workforce expressed a desire to continue working in rural areas for a variety of reasons, including autonomy, available housing, rural allowance, flexible working hours, community recognition of work, and enhanced client-provider relationships. It was revealed that the turnover and retention strategies in most of the studies are broadly categorized under three themes relating to training & appropriate education, ensuring a safe & supportive environment; and providing continuous individual and family support.

Belaid et al. (2017) conducted a study titled “understanding the factors affecting the attraction and retention of health professionals in rural and remote areas: a mixed-method study in Niger” in the Tillabery region, Nigeria, among 15 policymakers, 102 health professionals, 46 local health managers and 29 midwifery students. The study revealed that living and family conditions were important factors in attracting and retaining health professionals in rural areas. Further, local environmental factors, such as no electricity, unavailability of schools for their children, social factors such as isolation, national and local insecurity, working conditions such as high workload, lack of financial compensation and individual factors such as marital status and gender considerably influenced the choice to practice in rural areas.

Alameddine et al. (2016) carried out a study on “upscaling the recruitment and retention of human resources for health at primary healthcare centres in Lebanon” involving 22 semi-structured interviews with PHC experts. In their study, they reported that professional development opportunities, supportive work environments and management systems and flexible work schedules were the key factors for the retention of health professionals in rural health facilities. Also, they recommended that the best way to enhance rural retention may have to consider the development of strategies considering these factors.

Carson et al. (2015) study on “the ‘rural pipeline’ and retention of rural health professionals in Europe’s northern peripheries” carried out among doctors, nurses and

allied health professionals reported that those health professionals who had spent their childhood years in rural areas or part of their professional training in rural areas were more likely to select to work in rural areas. Moreover, it was specifically mentioned that nurses who had education in rural areas were more likely to express their retention ambitions.

Rose and van Rensburg-Bonthuyzen (2015) in their qualitative study on “to explore reasons and make contributions to understand important positive determinants of the retention of rural health professionals” reported that teamwork and community affiliation are the intrinsic factors, whereas, the geographical location of the PHC facility, opportunity to carry out a diversity of work at the PHC facilities, functional referral networks, and strong management and leadership structures are extrinsic factors for the retention of the rural health workforce. Predominantly, the desire of moving to an urban area is also linked to the absence of career development opportunities.

Cosgrave et al. (2018) in their study “an explanation of turnover intention among early-career nursing and allied health professionals working in rural and remote Australia - findings from a grounded theory study” identified core categories and basic social processes. According to the authors, many of the earlier studies exploring rural recruitment and retention on nurses and allied health categories in Australia and other developed countries reported having three main factors in influencing the decision of rural health workforces either to stay (pull effect) or to leave a rural health position (push effect). They are categorised as; 1) workplace conditions, 2) career development opportunities; and 3) social and personal factors.

Thus, based on the above literature, the factors that influence the retention of PHC workforces in rural areas can be summarised as below;

Socio-demographic characteristics and personal factors such as age, gender, income and number of years in services also play a crucial part in the retention of the rural health workforce. Likewise, having rural origin and longer length of rural posting during their training period, being unmarried and having a passion for the current work significantly influences their willingness to remain in rural areas. Similarly, community recognition, availability of good schools for children and client-provider relationships were some other domains related to family and community factors. Further, major factors that motivate retention of a workforce in rural areas are career-related

opportunities; harmonious working & living conditions such as availability of accommodation, good staff relationship, availability of equipment and medicines; flexible working time and safety. Salary and allowances are related to financial aspects. Obligatory rural posting was reported under the bonding or mandatory service. Only a few studies reported the autonomy of the rural healthcare system as one of the factors for retention among various disciplines of the rural health workforce.

Further, the determinants that influence the overall PHC workforce's retention are not unique to midwives, nurses, or the female PHC workforce. The following are the list of literature related to the factors influencing their retention in rural areas:

Factors influencing retention of rural Nurses, midwives and female primary healthcare workforce;

Berman et al. (2021) conducted a study on the title “analysis of policy interventions to attract and retain nurse midwives in rural areas of Malawi: a discrete choice experiment” administered to 472 Nurse Midwife staff. The analysis revealed that having lived in rural areas (OR=3.40, CI=1.71 to 6.79,  $p$ -value<0.01), having bonding agreement/ obligation (OR=3.66, CI=2.22 to 6.04,  $p$ -value<0.01), having very good (OR=6.14, CI=1.89 to 19.93,  $p$ -value<0.01) and good (OR=7.50, CI=2.33 to 24.09,  $p$ -value<0.01) work experience working in a rural area previously, having lived in a rural area previously (OR=3.40, CI=1.71 to 6.79,  $p$ -value<0.01), salary with 25% top-up (OR=1.78, CI=1.51 to 2.10,  $p$ -value<0.01), availability of accommodation (OR=2.08, CI=1.71 to 2.44,  $p$ -value<0.01), manageable workload (OR=1.32, CI=1.13 to 1.54,  $p$ -value<0.01), access to education (OR=1.29, CI=1.12 to 1.49,  $p$ -value<0.01) and supportive management (OR=1.51, CI=1.32 to 1.73,  $p$ -value<0.01) were significantly associated with choosing to retain themselves in rural areas.

Adegoke et al. (2015) conducted research titled “job satisfaction and retention of midwives in rural Nigeria” using ‘Herzberg’s Two-Factor Theory of Motivation. There were 119 midwives, respondents, in this study. The result showed the factors that contribute to their intention to stay in rural health facilities include; the provision of permanent employment chances, uninterrupted payment of remuneration, career development opportunities including support for continuous medical education, good accommodation, promotion opportunities, job opportunities for husbands and accommodation for family. Further, supportive supervision, a feeling of caring for the

women and children in the community, a chance to help others, a feeling of accomplishment, respect and fair treatment from senior/ supervisor were pointed out as a source of personal and job satisfaction.

Olujimi et al. (2014) in their report on the “study of attrition, availability, and retention of midwife service scheme officers in Nigeria” described that in Nigeria midwives were posted in PHCF to ensure the provision of MCH services for 24 hours. The study pointed out having an unacceptably high attrition rate of 32% among the cadre. Thus, irregular payment of salaries, temporary job status, inadequate support system, poor accommodations and working conditions including lack of medical supplies, and being posted far from family was reported to be the attributing factors to difficulty in retaining the midwives working in hard-to-reach areas of Nigeria and indicated an urgent need of focus on this matter.

Matlala and Lumadi (2019) in their study on “perception of midwives on shortage and retention of staff at public hospitals in Tshwane District” generated that the reasons for staying in the profession were due to passion for midwifery, fear of change, no other place to go for midwives and availability of training opportunities and other resources. Whereas, lack of management support, fear of litigations, financial issues, lack of recognition and compromised autonomy, heavy workload and no flexibility on working hours were reported to be the reasons for the cadre leading to leave the profession.

Ofei and Paarima (2022) concluded that the leadership styles significantly predict the nurses’ intentions to stay at the current workplace. It was reported that there is a positive relationship between transformational leadership style ( $r=0.326$ ,  $p$ -value $<0.0001$ ) and nurses’ intention to stay. Similarly, the participative leadership style ( $r=0.226$ ,  $p$ -value $<0.0001$ ) and nurses has a weak but positive association with the nurses’ intention to stay.

Russell et al. (2021) conducted a systematic review on interventions for health workforce retention in rural and remote areas for 34 articles with a total of 58,188 participants. The results showed that three studies with 319 nurses concluded that flexible work schedules support, extending their skills and upgrading qualifications improve their retention in rural areas.

A study of 1427 nurses conducted by Nowrouzi-Kia and Fox (2020) on "the factors associated with intention to leave in Registered Nurses working in acute care hospitals" concluded that job satisfaction, flexible interprofessional collaborative relationships and resource availability were significantly associated with nurses' intent to leave.

Fadi El-Jardali et al. (2013) in their study on "a national study on nurses' retention in healthcare facilities in underserved areas in Lebanon" reported that of the 857 nurses 62.5% of the PHCF nurses like to remain in the existing place because of a good work environment and colleagues. Further, the study revealed that nurses who are married, fewer years of work experience and not have a career progression plan have the higher intent to continue staying in the PHCFs. It was revealed that nurses' job satisfaction has a directly proportional relationship with their intent to remain in underserved areas.

In summary, many of the above studies revealed having almost identical influencing factors in the retention of the general categories of PHC workforce and female PHC workforce in rural areas. Yet, some papers reported female health workforces having few unique intents for their willingness to stay in remote areas were due to the urge in gaining remote experiences, family obligations, the feeling of caring for the women and children in the community and finally to fulfilling their service obligation.

As a result of the above findings, researchers have identified various components in the context of Bhutan that is likely to influence the retention of the female PHC workforce in PHC facilities. These dimensions can be categorised into seven broad domains and twelve independent variables; (1) Socio-demographic characteristics related factors such as age, marital status, income, work experience in remote areas, number of years in service and current workplace. (2) Personal origin and values consist of personal origin, values & altruism. (3) Family and community aspects such as a sense of community spirit, family conditions and community facilities. Moreover, the majority of the study reported (4) working & living conditions, (5) career-related opportunities and (6) financial aspects are some of the main factors influencing retention of the PHC workforce in rural areas. Work environment, technology & medical supplies, accommodation and workload were reported as some

of the areas for working and living conditions domain. Moreover, access to continuing education opportunities, professional development courses, supervision, personal recognition system and job satisfaction are considered as the subset elements under the career-related factors. Pertaining to the financial aspect, salary, allowance and benefits are a subset for this factor. In the same way, the obligatory rural posting was reported under the (7) bonding or mandatory service domain. These 12 independent factors could influence the retention of female PHC workforce in PHC facilities as presented in the conceptual framework of this study (Figure 9).

## 2.7 Measurement of Retention

In this study, to measure the dependent variable, retention was referred to as the intention of the female primary healthcare workforce to stay and their preference to continue working in the primary health care facilities.

Fadi El-Jardali et al. (2013) used a WHO conceptual model (WHO, 2010) in their study "A National Study on Nurses' Retention in Healthcare Facilities in Underserved Areas in Lebanon." It was evaluated using 25 items and rated on a four-point Likert scale (ranging from 'very dissatisfied - score of 1' to 'very satisfied - score of 4'). Nurses were asked to describe whether or not they intended to stay.

Similarly, Ofei and Paarima (2022) in their study on "Nurse managers leadership style and intention to stay among nurses at the units in Ghana" used 16 items that were measured on a 4-point Likert scale. The Cronbach alpha coefficient for subscale turnover intention yielded 0.82. A higher scale suggests nurses had higher intentions to continue to stay in their current workplaces (Ofei & Paarima, 2022).

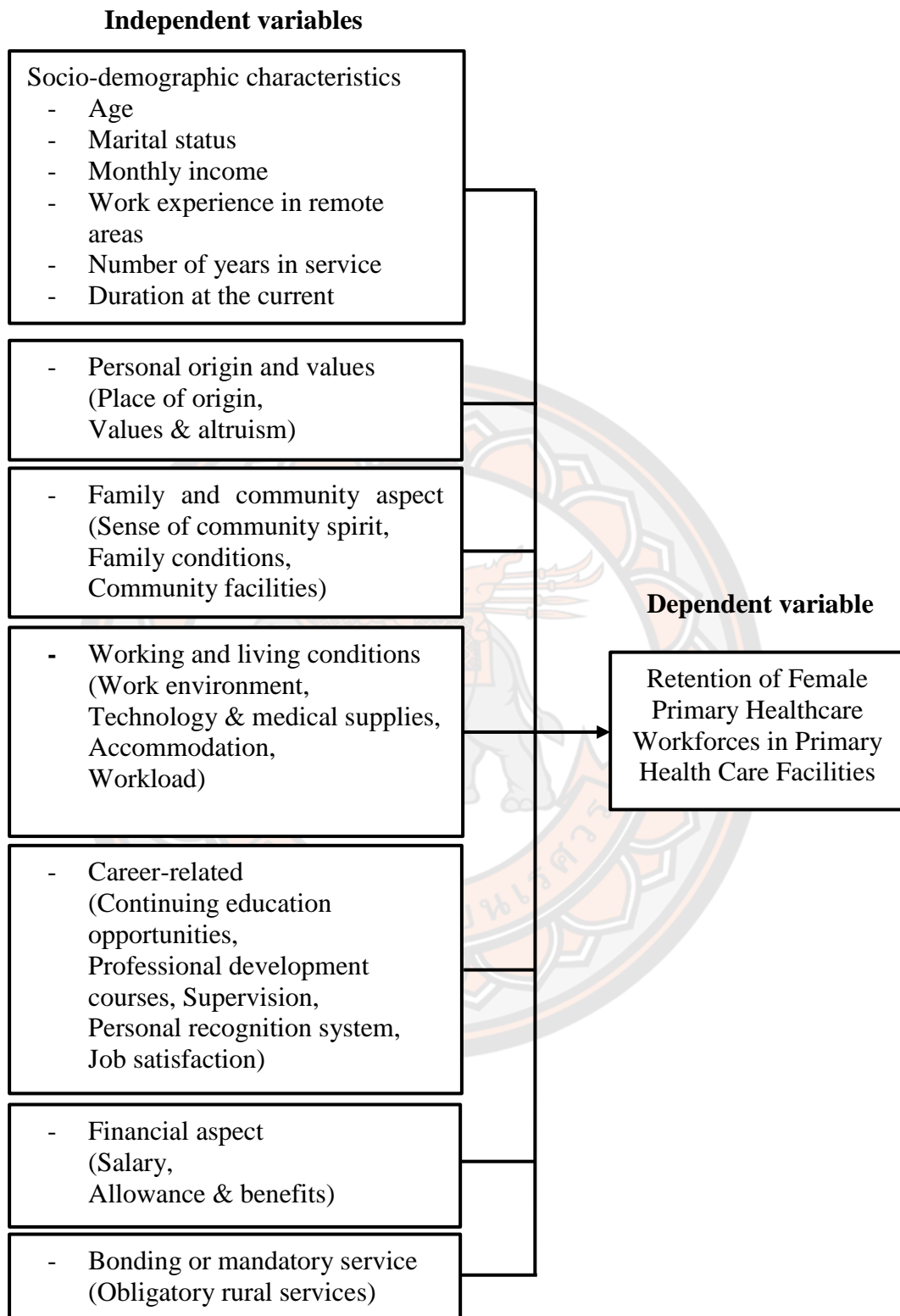
In addition to this, a study on "the factors associated with intention to leave in Registered Nurses working in acute care hospitals" conducted by Nowrouzi-Kia and Fox (2020) used a scale that includes three items on a 5-point scale that contained different statements for each item and ranged from 1 (*eg. I would prefer very much to continue working in this hospital*) to 5 (*eg. I would prefer very much not to continue working here*). The scale scores were derived by summing the responses to the items and ranged from 3 to 15, with higher scores reflecting a greater intention to leave. The scale demonstrated internal consistency reliability with a Cronbach's alpha of 0.83. This study adapted the items from the above literature and a reversed scale was

employed, where a higher score was considered to have a greater intent to stay (retention).

In this study, retention was referred to as the intention of the female primary healthcare workforce to stay and their preference to continue working in the primary healthcare facilities and assessed by the opinionnaire (Hines et al., 2020). The measurement of this dependent variable in this study consisted of 14 items and the scale ranged from 1 to 5, where a higher score was considered a greater intent to stay present in the conceptual framework of this study (figure 9)







**Figure 9 Conceptual Framework**

## CHAPTER III

### RESEARCH METHODOLOGY

This research is about “factors influencing the retention of female primary healthcare workforce at primary health care facilities in Bhutan”. The objective of this research was to assess the factors that influence the retention of the female PHC workforce (female HA) at PHC facilities in Bhutan.

#### 3.1 Research Design

A quantitative cross-sectional descriptive study design was used in this study.

#### 3.2 Research Site

This study was carried out nationwide in all PHC facilities as well as the six Sub-posts located in the rural areas of Bhutan where female PHC workforces are available.

#### 3.3 Research Period

The research period for this study is from December 2021 to October 2022.

#### 3.4 Study Population

The target population for this study included all the female PHC workforces in Bhutan's PHC facilities and Sub-posts. All 165 female primary healthcare workforces were invited to participate in this study. The distribution of 165 female HA in the country is shown in table 1. The main strength of involving the total population for the study is that since this kind of study involves a whole population, it minimizes the selection bias, thus, enhancing its accuracy and generalisability about the population being studied (Sekaran & Bougie, 2009; Thygesen & Ersbøll, 2014). However, total population sampling has its constraints. According to Paul (2008), the first limitation of sampling a total population is, time-consuming and expensive since it involves the whole population and a lot of resources. Further, Sekaran and Bougie (2009); Thygesen

and Ersbøll (2014) revealed that the generalisability can be significantly compromised if the researcher is unable to collect data from all of the sample population or if a proportion of members opt not to participate in the research.

**Table 1 District Wise Distribution of Female Health Assistants in Primary Healthcare Facilities in the Three Regions of Bhutan, 2021**

Region	District	No. of PHC facilities	Number of female HA	Total
Eastern	Lhuentse	14	11	69
	Mongar	22	22	
	Pemagatshel	11	10	
	Samdrupjongkhar	07	06	
	Trashigang	13	13	
	Trashiyangtse	07	07	
Central	Bumthang	05	06	40
	Dagana	07	06	
	Sarpang	10	08	
	Trongsa	05+01*	05	
	Tsirang	07+01*	04	
	Zhemgang	10	11	
Western	Chukha	13	11	56
	Gasa	03	02	
	Haa	04+01*	04	
	Paro	03+01*	05	
	Punakha	07+01*	08	
	Samtse	12	10	
	Thimphu	09	06	
	Wangdue	10+01*	10	
Total		(179+6**) = 185	165	

**Note:** \* Sub-posts deployed with female HA

\*\* Total number of Sub-posts with female HA

**Source:** Ministry of Health, 2021c

The target population list for this study was obtained from the Ministry of Health's 2021 administrative data. As discussed earlier this study was involve a census of 165 female PHC workforces working in PHC facilities and Sub-posts across the country. There are several widely adopted rules of thumb applied in the generalized scientific guideline for sample sizes and decisions. For instance, according to Roscoe

(1975) and the recent study by Sekaran and Bougie (2009), sample sizes of larger than 30 and fewer than 500 are adequate and acceptable for most research. This statement is in correspondence with the report of Hair et al. (2006) and Kline (1979). According to them, the sample size should be at least 100. Further, Hair et al. (2006) also stated that as a general rule, the sample size should be at least five times the number of variables being examined, and more acceptable sample size would have a 10:1 ratio. Since this study consisted of 12 independent variables, and according to the above study, the total sample required for this study is 60. As this study had 165 participants, it fulfilled all the prerequisites.

Besides, to ensure data quality for multiple regression, the researcher also considered using the G\*power program to calculate the actual requirement of participants for this study. The power of 0.15, an effect size of 0.9, and an alpha value of 0.05 were considered, and taking into account, the number of independent variables G\*power software suggested a sample size of 157 (Faul et al., 2009). However, owing to the size of the study population, we included all 165 midwives as participants in this study.

#### **Inclusion criteria**

- Female primary healthcare workforce working in primary healthcare facilities and Sub-posts at the time of the survey.
- Being willing to participate in the study.

#### **Exclusion criteria**

- Having been recruited in the job for six months or less.
- Going to resign from job in the next six months.

### **3.5 Research Variables**

#### **Independent variables**

Socio-demographic characteristics, Personal origin and values, Family and community, Working and living conditions, Financial, Career-related and Bonding or mandatory service.

#### **Dependent variables**

Retention of female primary healthcare workforces in primary health care facilities.

### **3.6 Research Instruments**

Questionnaires for this study were prepared and administered in English since all the female PHC workforces are well versed in English. English is used as the medium of curricular instruction in Bhutan starting in elementary school and also as the medium of official language for communication purposes (Thapa, 2016).

The instruments for these questionnaires consisted of eight sections containing information on socio-demographic characteristics, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, bonding or mandatory service under the independent variables and retention under the dependent variable. Further, the independent variables were categorized into 12, consisting of age, marital status, monthly income, number of years in service, duration at the current workstation, work experience in remote areas, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects and bonding or mandatory service. These variables were selected based on the numbers of literature and aligned to the conceptual framework of the World Health Organization (2010) and accordingly, the research instruments were developed in line with this framework.

#### **3.6.1 Section 1: Socio-demographic Characteristics**

This section consisted of nine items that are related to age, marital status, monthly income, number of years in service, duration in the current place of posting, work experience in rural areas, and their intention to stay in the health facility. These questionnaires were in ‘fill-in-the-blank’, ‘yes’ or ‘no’ and ‘multiple-choice question’ formats. The items for this section were adapted from the studies conducted by Fadi El-Jardali et al. (2013) and Ojaka et al. (2014) on the topic “a national study on nurses’ retention in healthcare facilities in underserved areas in Lebanon” and “factors affecting motivation and retention of primary healthcare workers in three disparate regions in Kenya”. The study also adapted some of the items from the study “the factors that attract healthcare professionals to and retain them in rural areas in South Africa” reported by Rose and van Rensburg-Bonthuyzen (2015).

#### **3.6.2 Section 2: Personal Origin and Values**

This section consisted of seven items related to the place of origin, and values & altruism. The items for this section were adapted from the studies conducted by

(Dotson et al., 2014) on the topic “An empirical analysis of nurse retention: what keeps RNs in Nursing?” and Carson et al. (2015) titled “the ‘rural pipeline’ and retention of rural health professionals in Europe’s northern peripheries”. These instruments were adopted to assess this variable because these instruments have been tested and used specifically to measure the effects of altruism and value congruence among the nursing profession, which shares the similar characteristics with the female primary healthcare workforces in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The Likert scale was used for this study because it is simple to construct, and permits for quantification of responses, item ranking and identification of trends. Moreover, respondents are more likely to respond to all of the statements in the items, and it can best help capture people's opinions (Kothari & Garg, 2014). The rating scale was measured as follows:

Positive Statement(Item number: 20-26)		Negative Statement(Item number: 0)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

**Mean score**

1.00-3.00

3.01-5.00

**Personal origin and values**

Low personal origin and values

High personal origin and values

### 3.6.3 Section 3: Family and Community Aspects

This section consisted of 12 items related to the sense of community spirit, family conditions and community facilities. The items for this section were adapted from the studies conducted by Haskins et al. (2017) and Kinyili (2015) on the topic “factors influencing recruitment and retention of professional nurses, doctors and allied health professionals in rural hospitals in KwaZulu Natal” and “roles of human resource management practices on retention of staff in public health institutions in Machakos County, Kenya”. Thus, these instruments were adopted to assess this variable because these instruments were tested and used specifically to measure the effects of family and community aspects on the intention of the health workforce including nurses to stay in the rural areas, which shares similar characteristics with the female PHC workforce in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement(Item number: 27-38)		Negative Statement(Item number:0)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

Mean score	Family and community aspects
1.00-3.00	Low family & community support
3.01-5.00	High family & community support

### 3.6.4 Section 4: Working and Living Conditions

This section consisted of 15 items related to the work environment, technology & medical supplies, accommodation and workload. The items for this section were adapted from the studies conducted by Fadi El-Jardali et al. (2013), Haskins et al. (2017) and Kinyili (2015). Thus, these instruments were adopted to assess this variable because these instruments have been tested and used specifically to measure the effects of working and living conditions on the intention of the health workforce including midwives and nurses to stay in the rural areas, which shares the similar characteristics with the female PHC workforce in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement(Item number: 39-52)		Negative Statement(Item number: 53)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

Mean score	Working and living conditions
1.00-3.00	Unfavorable working and living conditions
3.01-5.00	Favorable working and living conditions



### 3.6.5 Section 5: Career Related

This section consisted of 15 items related to continuing education opportunities, professional development courses, supervision, a personal recognition system and job satisfaction. The items for this section were adapted from the studies conducted by Adegoke et al. (2015) related to “job satisfaction and retention of midwives in rural Nigeria”. Further, the items are adapted from the studies conducted by Dotson et al. (2014) and Haskins et al. (2017). Adegoke et al. (2015). Thus, these instruments were adopted to assess this variable because these instruments have been tested and used specifically to measure the effects of career related to the intention of the health workforce including midwives and nurses to stay in the rural areas, which shares similar characteristics with the female PHC workforce in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement(Item number: 54-68)		Negative Statement(Item number: 0)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

#### Mean score

1.00-3.00

3.01-5.00

#### Career related

Limited career related opportunities

Adequate career related opportunities

### 3.6.6 Section 6: Financial Aspects

This section consisted of seven items related to the salary; and allowance & benefits. The items for this section were adapted from the studies conducted by Ojaka et al. (2014), Dotson et al. (2014) and Adegoke et al. (2015). Thus, these instruments were adopted to assess this variable because these instruments have been tested and used specifically to measure the effects of financial aspects on the intention of the health workforce including midwives to stay in the rural areas, which shares similar characteristics with the female PHC workforce in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement (Item number: 69-75)		Negative Statement (Item number: 0)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

#### Mean score

1.00-3.00

3.01-5.00

#### Financial aspects

Limited financial support

Adequate financial support

### 3.6.7 Section 7: Bonding or Mandatory Service

This section consisted of four items related to salary; and allowance & benefits. The items for this section were adapted from the studies conducted by Kinyili (2015) and Haskins et al. (2017). Thus, these instruments were adopted to assess this variable because these instruments have been tested and used specifically to measure the effects of bonding or mandatory service on the intention of the health workforce including nurses to stay in the rural areas, which shares similar characteristics with the female PHC workforce in Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement(Item number: 76-79)		Negative Statement(Item number: 0)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

$$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$$

#### Mean score

1.00-3.00

3.01-5.00

#### Bonding and mandatory service

Limited bonding or mandatory support

Adequate bonding or mandatory support

### 3.6.8 Section 8: Retention

This section consisted of four items related to the intention of the female PHC workforce to stay in the current rural workplace. The items for this section were based on the concept of the World Health Organization (2010) domain “decision to relocate to, stay in or leave rural areas”. Accordingly, the items were adapted from the studies conducted by Ofei and Paarima (2022) and Nowrouzi-Kia and Fox (2020).

The prior study is about “Nurse managers' leadership style and intention to stay among nurses at the units in Ghana”. The intent to stay section consists of 16 items measured on a 4-point Likert scale which gathered data on the intention to stay among nurses. A higher scale suggests nurses had higher intentions to continue to stay in their current workplaces (Ofei & Paarima, 2022). The Cronbach's alpha coefficient for subscale turnover intention yielded 0.82.

Similarly, the later study was about “the factors associated with intention to leave in Registered Nurses working in acute care hospitals”. The scale for this study includes three items. It was measured using a 5-point scale that contained different statements for each item and ranged from 1 (*eg. I would prefer very much to continue working in this hospital*) to 5 (*eg. I would prefer very much not to continue working here*). The scale scores were derived by summing the responses to the items and ranged from 3 to 15, with higher scores reflecting a greater intention to leave. The scale demonstrated internal consistency reliability with a Cronbach's alpha of 0.83 (Nowrouzi-Kia & Fox, 2020). This study was adapted and used the reversed scale, where a higher score will consider as having greater intent to stay.

These instruments were adapted since it shares identical characteristics with the female PHC workforce working in the rural areas of Bhutan. The respondents were asked to choose any one answer on the scale and each item was rated with a five-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The rating scale was measured as follows:

Positive Statement(Item number: 80)		Negative Statement(Item number:81-83)	
Choice	Score	Choice	Score
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Neutral	3	Neutral	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

The mean scores ranged from 1.00 to 5.00. Further, to allow statistical analysis to be conducted with more power, the total scores for retention were then classified and analyzed into two interval scales as interpreted below (Best & Kahn, 2006):

	$\frac{(\text{Maximum data} - \text{Minimum data})}{\text{Interval}}$
<b>Mean score</b>	<b>Retention</b>
1.00-3.00	Low intention to stay
3.01-5.00	High intention to stay

Measuring validity and reliability of the research instrument.

#### **Inspection content validity**

This process was applied prior to the application of the instruments to the participants. Three experts were involved to assess the content validity, construct validity and its appropriateness. The experts consisted of one professor from Naresuan University, Thailand, one policymaker working from the Ministry of Health, Bhutan and one academician from the Khesar Gyalpo University of Medical Sciences of Bhutan, who are experts in the field of human resource management and health system management (details in appendix G). Accordingly, if any of the instruments with the final score of an Item Objective Congruence (IOC) index of  $>0.5$  were accepted, otherwise, items below 0.5 were either deleted, revised and then reassessed (Rovinelli & Hambleton, 1977). The final value of IOC ranged from 0.67 to 1.00 as shown in appendix 4.

**Index of Item-Objective Congruence:** IOC was calculated by this formula;

$$\text{IOC} = \frac{\sum R}{N}$$

Where;

**IOC:** the congruence between the scale objective and the items in the scale to measure the factors influencing retention of PHCWF in PHCF.

$\sum R$ : the total scores of the agreement of experts in each item.

**N:** the total number of experts.

### **Evaluation of reliability**

The reliability of the instrument was determined by internal consistency. To test this, a pilot study was carried out among thirty female HAs who were working in the hospitals and had the experience of working in any of the PHC facilities in Bhutan. This was due to the limited sample size and this category was chosen since the selection criteria are almost identical except for the current workplace. The participants were asked to fill up the form assuming they were currently working in their last place of posting (PHC facility). The results of the pre-test were evaluated for reliability by using Cronbach's Alpha Coefficient. Items with a Cronbach's alpha score of 0.7 to 0.9 was accepted, whereas, items that have a Cronbach's alpha score of < 0.7 or > 0.9 were deleted or revised as it is considered unreliable or redundant (Devellis, 2012; Nunnally, 1978). The Cronbach's alpha score for this study was 0.827. The range of Cronbach's alpha is presented below and in Appendix H;

<b>Variable</b>	<b>Alpha value</b>
1. Personal origin and values	0.770
2. Family and community aspects	0.710
3. Working and living conditions	0.794
4. Career-related	0.806
5. Financial aspects	0.754
6. Bonding or mandatory service	0.771
7. Retention	0.811

**Cronbach's Alpha Coefficient:**  $\alpha$  was calculated by this formula:

$$\alpha = \frac{k}{k-1} \left[ 1 - \frac{\sum s_i^2}{s_t^2} \right]$$

Where,

$\alpha$ : Cronbach's Alpha Coefficient.

$k$ : the number of items in the questionnaires (the number of questions).

$\sum s_i^2$ : the total variance of each item.

$s_t^2$ : variance of the instrument.

### 3.7 Data Collection

In this study, the researcher used a structured questionnaire and collect responses through computer-assisted self-interviewing (CASI) using a google form by creating an electronic survey link. The questionnaires were self-administered and the respondents were asked to fill them up on their own. It was administered in English since all the female HAs are literate and well versed in the English language. The researcher chose this method since it was time-saving and cost-effective. Moreover, this method is very relevant in this situation of COVID-19 pandemic as it limits the exposure of the researcher and respondents to the virus. Furthermore, this method can also protect respondents' anonymity, allowing them to react honestly without fear of being identified. The information was obtained in accordance with the following sequence:

1. Submit research protocol to NU-EC (Naresuan University Ethical Committee).
2. Seek approval to conduct the study from the Research Ethics Board of Health, Ministry of Health, Bhutan.
3. Inform the District Health Officers about the study and the study population and collect respondents' mail ID or contact points.
4. Share the self-administered online survey link directly with the participants via email, telegram, or messenger.
5. Moreover, in the case of non-respondents the researcher were communicate directly with the individuals in the fourth week of the study period. However, if

they are still unable to contact them via the above means, they were notified with the help of the District Health Officers.

6. A brief introduction and purpose of the study were presented on the first page of the google form.
7. Finally, the data were collected in the month of June 2022, for a duration of one month. The participants were reminded every 10<sup>th</sup> day.
8. Their confidentiality was maintained at all times.
9. We achieved a response rate of 100%.

### **3.8 Data Analysis**

The data was entered and analyzed using the SPSS program (Statistic Package for Social Science) version 22.

Socio-demographic characteristics under section one were described using descriptive statistics, including frequencies, percentages, mean, standard deviations, maximum & minimum; and were presented as tables.

Simple Linear Regression and Multiple Linear Regression (MLR) analyses were carried out to estimate the correlation and factor prediction between the independent variables (age, marital status, monthly income, number of years in service, duration at the current workstation, work experience in remote areas, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects and bonding or mandatory service) and dependent variable (retention). The statistical significance was set at  $p$ -value  $<0.05$ .

Assumption testing of Multiple Linear Regression;

According to Schreiber-Gregory and Bader (2018), any deviation from assumptions can have a significant impact on the outcomes and future directions of any analysis. The linear regression has five key assumption components;

Assumption testing of Multiple Linear Regression;

1. Assumption of linearity:

The dependent variable and the predictors must have a linear relationship. All the variables including the dependent variable (retention) were measured on a continuous scale except marital status which was in a nominal scale. It was converted



to continuous data '0' as single, divorced, widowed, or separated (reference) and '1' as married. Other variables were all collected in the form of interval ratios or ratio scales as shown in Appendix I. The linear relationship between the independent and dependent variables was also assisted using the correlation matrix as shown in Appendix K.

#### 2. Assumption of an absence of multicollinearity:

When the independent variables are significantly correlated with one another, multicollinearity arises. According to Suksatan et al. (2021), Variance Inflation Factors (VIF) and Tolerance are the two types of tests to measure this assumption. The presence of multicollinearity is indicated by a VIF value of less than 10 or a tolerance value greater than 0.20 (Hair et al., 1995). The data set for both tolerance and VIF values were 0.675 and 1.482 respectively, which is within the acceptable range (Appendix J). The correlation coefficient matrix ratings for the variables ranged from 0.693 to 0.159 (Appendix K) and considering the recommended value of less than 0.8, no multicollinearity between the variables exists (Hair et al., 1995).

#### 3. Assumption of the autocorrelation of residuals:

It refers to the assumption that the errors of measurements are correlated. It was verified by performing the Durbin-Watson test. The value of the test was to be between 1.50 to 2.50. The existence of autocorrelation was denoted by a value less than or greater than the given range. The analysis also revealed that the Durbin-Watson value for this study was 1.987, which falls within the range of 1.50 to 2.50, implying that no extreme outlier exists or no auto-correlation of residuals in this study data set (Astivia & Zumbo, 2019) (Appendix L).

#### 4. Assumption of normality of residuals:

Multivariate normality assumes that the independent variables are not substantially correlated with one another. This assumption is best tested by plotting on a histogram or a P-P-Plot. P-P-Plot showed the data were distributed normally on the diagonal line indicating normality of residuals (Appendix M).

#### 5. Assumption of homoscedasticity of residuals:

It is assumed that the variance of the residuals is constant at all points in the linear model. If this is not the case, the residuals are said to be heteroscedastic. Violations of this assumption can result in considerable distortion of results and significantly weaken the analysis, raising the likelihood of a Type I error. The scattered

plot was used to test the assumptions of homoscedasticity of residuals (Osbourne & Waters, 2002). The plot showed patterns were symmetrically distributed, indicating no homoscedasticity of residuals (Pallant, 2020) (Appendix N).

### **3.9 Ethical Clearance**

This study was approved by the Institutional Review Board of Naresuan University, Thailand (Approval Number 205/2022) (Appendix 'A'), the Research Ethics Board of Health, Bhutan (Exemption Number REBH/PO/2022/020) (Appendix 'B'). Further, an administrative clearance was sought from the Ministry of Health, Bhutan (Letter Number MoH/PPD/ADM.CI/9/2022/015) (Appendix 'C'), and respective District Health Officers were informed via an official mail account.

On the first page of the survey questionnaire, a consent form was attached with an overview of the study explaining the objectives. Every respondent was given the choice to consent or reject to participate in the study. Those willing to participate were asked to click the informed consent box, otherwise, the study was dismissed. There were no foreseeable risks by involving them in this study except for the participants which could have wasted a few minutes of their valuable time answering the questionnaires.

In order to ensure the privacy and maintain the confidentiality of the participants, they were contacted individually via an instant messaging platform such as email, telegram, messenger, etc. The participants were not required to reveal their names or email ID. The participants were encouraged to fill up questionnaires according to their convenient time and venue. Further, their responses and information is maintained only with the principal researcher and their anonymity will not be disclosed to anyone without their consent so that their privacy is respected and confidentiality is maintained. In the case of the study publication, their personal information will not be disclosed. All the data will be kept for 3 years at Naresuan University and will be destroyed within 2025.

## CHAPTER IV

### RESEARCH RESULTS

This study was designed to investigate the factors (socio-demographic characteristics, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, bonding or mandatory services) that influence the retention of female primary healthcare workforces in the rural areas in Bhutan. A cross-sectional study was employed among 165 female primary healthcare workforces who were working in rural areas during the time of the study.

Before collecting the data from the study participants, the questionnaires were assessed for content validity (IOC) by three experts who evaluated content validity, construct validity and suitability for content. After the expert's confirmation, all criteria and the items were used in a pilot study. IOC (Index-of item-Objective Congruence) was performed and the validity value ranged from 0.67 to 1.00, which is with the permissible score of  $>0.5$  (Appendix F). The items were further tested for their reliability by conducting a pilot test among 30 female HAs working in the hospitals and who had experience working in any of the PHC facilities. The reliability of the instruments was assessed and Cronbach's alpha value for this study was 0.827 (Appendix H).

Data collection of the study was carried out in June and July 2022. Data were collected from the participants through a self-administered questionnaire via a google form. All the results were processed using the SPSS version 22.0 subject to the Naresuan University, Phitsanulok, Thailand.

The statistical and data analysis were presented in two parts: descriptive statistics and inferential (analysis) statistics. Descriptive statistics primarily described all the independent and dependent variables in frequency, percentage, mean, standard deviation, minimum and maximum. Concerning the inferential statistics to find out the factors influencing the retention of female PHC workforces at PHC facilities in Bhutan, a simple linear regression was performed to determine the correlation between the

dependent and independent variables, and multiple linear regression to determine its predictors. The results were presented in four parts in the following sequence:

**4.1 Part I:** Socio-demographic characteristics

**4.2 Part II:** Factors associated with health workforces' decisions to retain in rural areas.

**4.3 Part III:** Analysis of association between independent variables and the retention of female PHC workforce at PHC facilities in Bhutan.

**4.4 Part IV:** Analysis of factors influencing retention of female PHC workforce at PHC facilities in Bhutan.

#### **4.1 PART I Socio-demographic Characteristics**

As illustrated in Table 2, all 165 female PHC workforces met the criterion for inclusion in this study. Their age range is classified as less than 30 years (80, 48.5%), between 31 to 40 (52, 31.5%), and above 41 (33, 20%), with a mean age of  $32.92 \pm 8.9$  and minimum and maximum age of 22 and 56 respectively. Of those, 55.8% (92) had a monthly income less than Nu. 25,000. Among 165 participants, 72.1% (119) were married, and 27.9% (46) were either single, divorced, separated, or widowed. Nearly 63% (103) were in service ranging between six months to 10 years. While a little over a quarter (27.9%) of the participants reported having worked in rural health facilities for more than 11 years, about 72.1% (119) of them reported having served less than 10 years. Nearly half of the participants (50.9%) reported having worked in the current workstation for 3 years or less with a mean score of  $4.53, \pm 3.94$ .

**Table 2 Number and Percentage (%) of Socio-demographic Characteristics Among the Participants (N=165)**

<b>Variables</b>	<b>n</b>	<b>%</b>
<b>Age</b>		
≤30 years	80	48.5
31-40 years	52	31.5
≥41 years	33	20.0
$\bar{x}$ = 32.92, SD = ± 8.15, Median = 31, Min = 22, Max = 56		
<b>Monthly income (Nu*)</b>		
≤25,000	92	55.8
25,001-35,000	55	33.3
≥35001	18	10.9
$\bar{x}$ = 27094, SD = ±5648, Median = 25000, Min = 20,000, Max = 45,000		
<b>Marital status</b>		
Married	119	72.1
Single, widowed, divorced, or separated	46	27.9
<b>Number of years in service</b>		
≤5 years	61	37.0
6-10years	42	25.5
11-20 years	33	20.0
≥21 years	29	17.6
$\bar{x}$ = 10.31, SD = ±8.9, Median = 8, Min = 6 months, Max = 35 years		
<b>Duration at the current workplace</b>		
≤3 years	84	50.9
4-10 years	67	40.6
≥11 years	14	8.5
$\bar{x}$ = 4.53, SD = ±3.94, Median = 3, Min = 6 months, Max = 19 years		
<b>Work experience in rural areas</b>		
≤10 years	119	72.1
≥11 years	46	27.9
$\bar{x}$ = 8.30, SD = ±7.32, Median = 6, Min = 6 months, Max = 32 years		

**Note:** \* Ngultrum, where 77.85 Ngultrum=1United States Dollar

#### 4.2 PART II Factors Associated with Health Workforces' Decisions to Retain in Rural Areas

**Table 3 Mean, Standard Deviation (SD), and Interpretation of Personal Origin and Values Among the Participants**

Personal origin and values	$\bar{x}$	SD	Interpretation
<b>Values and altruism</b>			
I deeply feel a calling to be a Health Assistant (HA).	4.20	0.98	High
I became HA to help others (eg. patients, community people)	4.68	0.67	High
I enjoy caring for my patients unconditionally.	4.66	0.62	High
Other health professionals have a positive perception of HA.	3.44	1.00	High
<i>Total average</i>	<b>4.24</b>	<b>0.61</b>	<b>High</b>
<b>Place of origin</b>			
I feel that being born in rural areas can encourage HA to choose to work in rural areas.	3.25	1.21	High
I feel that being brought up in rural areas can encourage HA to choose to work in rural areas.	3.15	1.21	High
I feel that having spent the majority of school education in rural areas can encourage HA to choose to work in rural areas.	3.01	1.22	High
<i>Total average</i>	<b>3.14</b>	<b>1.15</b>	<b>High</b>

Personal origin and values were measured by two subdomains (values and altruism, and place of origin) and seven items. Given the Likert scale scores ranging from 1 to 5 (strongly disagree to strongly agree) and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, all the items in this variable had a mean score higher than 3 as shown in Table 3, indicating a higher sense of personal origin and values among the female PHC workforces of the rural health facilities in Bhutan. Both the subdomains for this variable were reported to have mean scores higher than 3 indicating having a higher sense of values and altruism, and a place of origin among the participants. Individual item analysis revealed that the item with the highest mean was “I became HA to help others” ( $\bar{x} = 4.68$ ,  $SD \pm 0.67$ ) and the lowest mean was “I feel that having spent most of the school education in rural areas can encourage female HAs to choose to work in rural areas” ( $\bar{x} = 3.01$ ,  $SD \pm 1.22$ ).

**Table 4 Number and percentage (%) of Personal Origin and Values on Retention of Female PHC Workforce in PHC Facilities (N=165)**

Level	Number	%
Low personal origin and values (1-3.0)	28	17
High personal origin and values (3.01-5)	137	83
$\bar{x}$ = 3.77, SD=0.68, min-max (2-5)		

Table 4 illustrates the description of personal origin and values. Among the total of 165 participants, 83% of them were having high personal origin and values, whereas 17% reported having low personal origin and values. The scores ranged from 2 to 5 with 5 being highly influential in retention. The mean score of this variable was 3.77 with SD =  $\pm 0.68$ , indicating high personal origin and values among the female PHC workforce.

**Table 5 Mean, Standard Deviation (SD), and Interpretation of Family and Community Aspects Among the Participants**

Family and community aspects	$\bar{x}$	SD	Interpretation
<b>Sense of community spirit</b>			
I consider myself a part of the community.	4.56	0.68	High
I have a lot of trust and support from the community.	4.13	0.75	High
I feel patients respect me as a HA.	4.23	0.79	High
My professional work is being valued by the community.	4.30	0.77	High
<b>Total average</b>	<b>4.31</b>	<b>0.60</b>	<b>High</b>
<b>Family conditions</b>			
I feel that having chronic medical conditions within the family members that require frequent visits to the hospital can discourage a HA to stay in the PHC facility.	4.12	1.08	High
I feel that living in the same place with one's spouse can encourage a HA to stay in the PHC facility.	3.99	1.08	High
I feel that having a decent school for the children in the community can encourage a female HA to stay in the PHC facility.	4.04	1.13	High
<b>Total average</b>	<b>4.05</b>	<b>0.79</b>	<b>High</b>
<b>Community facilities</b>			
The community where I live has good shopping facilities.	2.17	1.21	Low
The commodities in the community where I live are affordable.	2.87	1.25	Low

<b>Family and community aspects</b>	<b><math>\bar{x}</math></b>	<b>SD</b>	<b>Interpretation</b>
The community where I live has good recreational/ entertainment facilities.	1.91	0.99	Low
The place where I live has a good mobile phone network connection.	3.16	1.16	High
The community where I live has a good transportation facility.	2.68	1.42	Low
<b>Total average</b>	<b>2.56</b>	<b>0.91</b>	<b>Low</b>

The family and community aspect was measured by three subdomains (sense of community spirit, family conditions and community facilities) and 12 items. Given the Likert scale scores between 1 to 5 and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, eight items in this variable had a mean score higher than 3 indicating a higher sense of family and community aspects, whereas, four items had a mean score of less than 3 indicating poor or inadequate community facilities in the rural areas, as shown in Table 5. Two subdomain scales; a sense of community spirit and family conditions were reported to have higher mean scores, whereas the community facilities subdomain score was having a mean score lower than 3 depicting poor or inadequate community facilities in their residential area. The highest score mean among the items in this variable was “I consider myself a part of the community” ( $\bar{x} = 4.56$ ,  $SD \pm 0.68$ ), and the lowest mean was “The community where I live has good recreational/ entertainment facilities” ( $\bar{x} = 1.91$ ,  $SD \pm 0.99$ ).

**Table 6 Number and percentage (%) of Family and Community Support on Retention of Female PHC Workforce in PHC Facilities (N=165)**

<b>Level</b>	<b>Number</b>	<b>%</b>
Low family and community support (1-3)	31	18.8
High family and community support (3.01-5)	134	81.2
$\bar{x} = 3.51$ , $SD = 0.55$ , min-max (2-5)		

Table 6 illustrates the description of family and community aspects. Among the total of 165 participants, 81.2% of them were having high family and community support, whereas 18.8% reported having low family and community support. The scores ranged from 2 to 5 with 5 being highly influential in retention. The mean score



of this variable was 3.51 with SD =  $\pm 0.55$ , indicating high family and community support.

**Table 7 Mean, Standard Deviation (SD), and Interpretation of Working and Living Conditions Aspects Among the Participants**

<b>Working and living conditions</b>	$\bar{x}$	SD	<b>Interpretation</b>
<b>Work environment</b>			
I enjoy working in this health facility.	3.95	0.94	Favorable
When I come to work, I know what is expected of me.	4.49	0.67	Favorable
I always have a good working relationship with my co-worker(s) and the Caretaker.	4.53	0.69	Favorable
At work, I have access to safe and clean drinking water.	4.31	0.99	Favorable
At work, I have a reliable electricity supply.	4.13	0.96	Favorable
<b>Total average</b>	<b>4.16</b>	<b>0.60</b>	<b>Favorable</b>
<b>Technology and medical supplies</b>			
There is an adequate supply of medicines to do my job well and efficiently.	3.93	0.86	Favorable
The medical equipment in this health facility is adequately supplied throughout the year.	3.76	0.96	Favorable
The health facility where I work has adequate computer/laptop facilities.	3.90	1.07	Favorable
My workplace has reliable internet connectivity.	3.06	1.32	Favorable
<b>Total average</b>	<b>3.66</b>	<b>0.72</b>	<b>Favorable</b>
<b>Accommodation</b>			
I feel the availability of staff quarters can encourage HAs to stay in the PHC facilities.	4.15	1.08	Favorable
I feel that having access to safe and clean water at home can encourage HAs to stay in rural areas.	3.92	1.11	Favorable
I feel that having access to electricity at home can encourage HAs to stay in rural areas.	3.93	1.12	Favorable
<b>Total average</b>	<b>4.00</b>	<b>1.00</b>	<b>Favorable</b>
<b>Workload</b>			
The workload is manageable.	3.56	1.07	Favorable
My job is stressful.	2.29	1.16	Unfavorable
<b>Total average</b>	<b>2.92</b>	<b>0.84</b>	<b>Unfavorable</b>

The family and community aspect variable was measured by four subdomains (work environment, technology & medical supplies, accommodation, and workload) and 14 items. Given the Likert scale scores ranging from 1 to 5, and considering two interval scales of measurement; higher mean score of more than 3 and lower mean

scores of 3 or less, 14 items had mean scores of more than 3 indicating favorable working and living conditions, whereas, one item had mean scores of less than 3, as shown in Table 7. Three subdomain scales; work environment, technology & medical supplies, and accommodation were reported to have higher mean scores whereas the workload subdomain score had a mean score lower than 3 indicating higher work related stress among the rural female PHC workforce. After the reversed rating of negative items, the highest score mean among the items in this variable was “I always have a good working relationship with my co-worker(s) and the caretaker” ( $\bar{x} = 4.53$ ,  $SD \pm 0.69$ ) and the lowest mean was “My job is stressful” ( $\bar{x} = 2.29$ ,  $SD \pm 1.16$ ).

**Table 8 Number and percentage (%) of Working and Living Conditions on Retention of Female PHC Workforce in PHC Facilities (N=165)**

Level	Number	%
Unfavorable working and living conditions (1-3.0)	9	5.5
Favorable working and living conditions (3.01-5) $\bar{x} = 3.83$ , $SD=0.53$ , min-max (2-5)	156	94.5

Table 8 illustrates the description of family and community aspects. Among the total of 165 participants, 94.5% of them were having favorable working and living conditions, whereas 5.5% reported having unfavorable working and living conditions. The scores ranged from 2 to 5 with 5 being highly influential in retention. The mean score of this variable was 3.83 with  $SD = \pm 0.53$ , indicating favorable working and living conditions in rural health facilities.

**Table 9 Mean, Standard Deviation (SD), and Interpretation of Career-related Aspects Among the Participants**

Career-related	$\bar{x}$	SD	Interpretation
<b>Continuing education opportunities</b>			
I am thinking of upgrading my qualification	4.20	0.96	Adequate
I have an opportunity to advance my career as Assistant District Health Officer (ADHO)/District Health Officer (DHO)/Program Officer	3.52	1.25	Adequate
I work in this health facility because I will be entitled to a 5% preferential weightage for academic interviews for serving in rural areas.	2.89	1.27	Limited
<b>Total average</b>	<b>3.54</b>	<b>0.87</b>	<b>Adequate</b>

<b>Professional development courses</b>			
I am given a fairer opportunity to attend training/workshops/meetings.	3.93	0.93	Adequate
By working in this health facility, I can acquire adequate continue medical education credit to update my professional license.	3.68	0.90	Adequate
When working in rural areas, I get more time to gain clinical experience.	3.38	1.16	Adequate
<b>Total average</b>	<b>3.66</b>	<b>0.75</b>	<b>Adequate</b>
<b>Supervision</b>			
My DHO/ADHO makes a visit to PHC for supportive supervision periodically.	3.55	1.00	Adequate
I get a fair review of work progress from my supervisor.	3.76	0.93	Adequate
My supervisor is a suitable role model for me.	3.65	0.97	Adequate
<b>Total average</b>	<b>3.56</b>	<b>0.83</b>	<b>Adequate</b>
<b>Personal recognition system</b>			
I feel that the government system of recognition for service excellence motivates me to work harder.	3.71	1.04	Adequate
I receive praise for my good work from the supervisor.	3.39	1.00	Adequate
I receive praise for my good work from the community.	3.98	0.89	Adequate
<b>Total average</b>	<b>3.69</b>	<b>0.75</b>	<b>Adequate</b>
<b>Job satisfaction</b>			
I would recommend others to consider becoming HA.	3.33	1.25	Adequate
Given the opportunity, I would still become a HA.	3.35	1.23	Adequate
I am satisfied with my job as HA.	3.77	1.10	Adequate
<b>Total average</b>	<b>3.48</b>	<b>1.06</b>	<b>Adequate</b>

The career-related variable was measured by five subdomains (continuing education opportunities, professional development course, supervision, personal recognition system and job satisfaction) and 15 items. Given the Likert scale scores ranging from 1 to 5, and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, 14 items had mean scores of more than 3 indicating adequate career-related support, while one item had a mean score of less than 3, as shown in Table 9. On average, the participants reported having adequate continuing education opportunities, professional development courses, supervision, and a personal recognition system and were satisfied with their job. The highest score of mean among the items in this variable was “I am thinking of upgrading

my qualification” ( $\bar{x} = 4.20$ ,  $SD \pm 0.96$ ) and the lowest mean score was “I work in this health facility because I will be entitled to a 5% preferential weightage for academic interviews for serving in rural areas” ( $\bar{x} = 2.89$ ,  $SD \pm 1.27$ ).

**Table 10 Number and percentage (%) of Career-Related Support on Retention of Female PHC Workforce in PHC Facilities (N=165)**

Level	Number	%
Limited career-related opportunities (1-3.0)	32	19.4
Adequate career-related opportunities (3.01-5) $\bar{x} = 3.61$ , $SD=1.06$ , min-max (2-5)	133	80.6

Table 10 illustrates the description of career-related opportunities. Among the total of 165 participants, 80.6% of them were having adequate career-related opportunities, whereas 19.4% reported having limited career-related opportunities. The scores ranged from 2 to 5 with 5 being highly influential in retention. The mean score of this variable was 3.61 with  $SD = \pm 0.59$ , indicating adequate career-related opportunities.

**Table 11 Mean, Standard Deviation (SD), and Interpretation of Financial Aspects Among the Participants**

Financial aspects	$\bar{x}$	SD	Interpretation
<b>Salary</b>			
I think HA is a profession with good pay.	3.08	1.05	Adequate
I am satisfied with the current salary I draw as HA.	3.19	1.05	Adequate
My salary is always paid on time.	4.50	0.74	Adequate
My salary is periodically revised.	3.58	1.00	Adequate
<i>Total average</i>	<b>3.59</b>	<b>0.71</b>	<b>Adequate</b>
<b>Allowance and benefits</b>			
I feel the allowances (difficulty area allowance/altitude allowance if entitled/ travel allowance daily allowance) are paid adequately.	3.39	1.16	Adequate
I feel the housing allowance is fair enough.	3.79	0.97	Adequate
I feel that working in rural areas is financially beneficial.	3.10	1.24	Adequate
<i>Total average</i>	<b>3.43</b>	<b>0.92</b>	<b>Adequate</b>

The financial aspect variable was measured by two subdomains (salary, allowance, and benefits) and seven items. Given the Likert scale scores ranging from 1 to 5 and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, all the seven items had mean scores of more than 3 indicating adequate financial aspects as shown in Table 11. The participants reported having an adequate salary, allowance, and benefits. The highest score of mean among the items in this variable was “My salary is always paid on time” ( $\bar{x} = 4.50$ ,  $SD \pm 0.74$ ) and the lowest score was “I think HA is a profession with good pay” ( $\bar{x} = 3.08$ ,  $SD \pm 1.05$ ).

**Table 12 Number and percentage (%) of Financial Incentives on Retention of Female PHC Workforce in PHC Facilities (N=165)**

Level	Number	%
Limited financial support (1-3.0)	43	26.1
Adequate financial support (3.01-5) $\bar{x} = 3.52$ , $SD = 0.74$ , min-max (2-5)	122	73.9

Table 12 illustrates the description of financial incentives. Among the total of 165 participants, 73.9% of them were having adequate financial support, whereas 26.1% were not. The scores ranged from 2 to 5 with 5 being highly influential in retention. The mean score of this variable was 3.52 with  $SD = \pm 0.74$ , indicating adequate financial support.

**Table 13 Mean, Standard Deviation (SD), and Interpretation of Bonding or Mandatory Service Among the Participants**

Bonding or mandatory service	$\bar{x}$	SD	Interpretation
<b>Obligatory rural services</b>			
I feel that the government’s policy of compulsory rural posting is helping to retain HAs in rural areas.	3.54	1.11	Adequate
Because of the type of training I received during my HA training course, I feel compelled to serve in rural areas.	3.60	1.06	Adequate
I feel that giving certain privileges to those students from rural areas to undergo HA training could help them return and work for their communities.	3.30	1.17	Adequate

<b>Bonding or mandatory service</b>	$\bar{x}$	<b>SD</b>	<b>Interpretation</b>
I feel that training obligations with the Royal Civil Service Commission can help HAs to serve in rural areas.	3.41	0.98	Adequate
<b>Total average 3.46 0.82 Adequate</b>			

The bonding or mandatory service variable was measured by four items. Given the Likert scale scores ranging from 1 to 5 and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, all the four items had a mean score of more than 3 indicating adequate bonding or mandatory support among the female PHC workforces of rural health facilities in Bhutan as shown in Table 13. The highest mean score among the items in this variable was “Because of the type of training I received during my HA training course, I feel compelled to serve in rural areas” ( $\bar{x} = 3.60$ ,  $SD \pm 1.06$ ) and the lowest mean score was “I feel that giving certain privileges to those students from rural areas to undergo HA training could help them return and work for their communities” ( $\bar{x} = 3.30$ ,  $SD \pm 1.17$ ).

**Table 14 Number and percentage (%) of Bonding or Mandatory Support Services on Retention of Female PHC Workforce in PHC Facilities (N=165)**

<b>Level</b>	<b>Number</b>	<b>%</b>
Limited bonding or mandatory support (1-3.0)	57	34.5
Adequate bonding or mandatory support (3.01-5)	108	65.5
$\bar{x} = 3.46$ , $SD = 0.82$ , min-max (1-5)		

Table 14 illustrates the description of bonding or mandatory support. Among the total of 165 participants, 65.5% of them were having adequate bonding or mandatory support, whereas 34.5% reported having limited bonding or mandatory support. The scores ranged from 1 to 5 with 5 being highly influential in retention. The mean score of this variable was 3.46 with  $SD = \pm 0.82$ , indicating adequate bonding or mandatory support.

**Table 15 Mean, Standard Deviation (SD), and Interpretation of Retention Among the Participants**

<b>Retention</b>	<b><math>\bar{x}</math></b>	<b>SD</b>	<b>Interpretation</b>
I would prefer very much to continue working in this primary health care facility.	3.38	1.17	High
I scan newspapers and the internet in search of alternative job opportunities.	3.73	1.20	High
I am willing to accept another job at the same salary level should it be offered to me.	3.27	1.39	High
I am thinking of starting my own business.	3.70	1.19	High
<b>Total average</b>	<b>3.52</b>	<b>0.92</b>	<b>High</b>

The dependent variable, retention in this study was measured by four items. Given the Likert scale scores ranging from 1 to 5 and considering two interval scales of measurement; higher mean score of more than 3 and lower mean scores of 3 or less, all the four items regarding the dependent variable “retention” had a higher score of mean more than 3, as shown in Table 15, indicating higher intention to stay in the rural health facilities among the female PHC workforce. After reversed ratings, the highest mean score among the items in this variable was “I scan newspapers and the internet in search of alternative job opportunities” ( $\bar{x} = 3.73$ ,  $SD \pm 1.20$ ) and the lowest score was “I am willing to accept another job at the same salary level should it be offered to me” ( $\bar{x} = 3.27$ ,  $SD \pm 1.39$ ).

**Table 16 Number and percentage (%) of Retention among Female PHC Workforce in Rural Health Facilities (N=165)**

<b>Level</b>	<b>Number</b>	<b>%</b>
Low intention to stay (retention) (1-3.0)	58	35.2
High intention to stay (retention) (3.01-5)	107	64.8
$\bar{x}=3.52$ , $SD=0.92$ , min-max (1-5)		

Table 16 illustrates the information on the dependent variable (retention) among the female HAs in rural Bhutan. Among the total of 165 participants, 64.8% of them were having higher intention to stay, whereas 35.2% reported having a lower intention to stay in the current workstation. The mean score of this variable was 3.32 with  $SD = \pm 0.92$ , indicating a higher tendency to stay in rural health facilities.

### 4.3 PART III Analysis of Associations Between Independent Variables and Retention of Female PHC Workforce at PHC Facilities in Bhutan

**Table 17 Factors Associated with Retention of Female PHC Workforce at PHC Facilities in Bhutan**

Factors	b	95% CI for b	$\beta$	t	$\rho$
Age	0.088	0.020-0.157	0.196	2.550	0.012*
Monthly income	0.0002	0.000054-0.000250	0.234	3.067	0.003*
Married (reference group = Single, widowed, divorced, or separated)	-0.072	-1.334-1.191	-0.009	-0.112	0.911
Number of years in service	0.091	0.029-0.154	0.221	2.897	0.004*
Duration at the current workstation	0.129	-0.014-0.271	0.138	1.783	0.077
Rural work experience	0.057	-0.020-0.134	0.113	1.450	0.149
Personal origin and values	0.251	0.139-0.364	0.326	4.397	<0.001*
Family and community aspects	0.172	0.090-0.254	0.308	4.129	<0.001*
Working and living conditions	0.181	0.115-0.247	0.388	5.383	<0.001*
Career-related aspects	0.152	0.092-0.212	0.364	4.987	<0.001*
Financial aspects	0.303	0.203-0.402	0.426	6.012	<0.001*
Bonding or mandatory service	0.254	0.085-0.424	0.226	2.966	0.003*

b = unstandardized coefficient;  $\beta$  = standardized coefficient; CI = confidence interval

\*significant values < 0.05, tested by simple linear regression analysis

The association between the independent variables and the dependent variable, retention was carried out by analyzing simple linear regression. All the 12 independent variables (age, monthly income, marital status, number of years in service, duration at the current workstation, rural work experience, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, and bonding or mandatory service) were analyzed. In order to enable the researchers to carry out the linear regression analysis, the data which was in the nominal scale (marital status) was converted to a dummy variable as shown in Appendix I. The result showed that nine independent variables, which include age ( $\rho=0.012$ ), average monthly income ( $\rho=0.003$ ), number of years in service ( $\rho=0.004$ ), personal origin and values ( $\rho<0.001$ ), family and community aspects ( $\rho<0.001$ ), working and living conditions ( $\rho<0.001$ ), career-relates ( $\rho<0.001$ ), financial aspects ( $\rho<0.001$ ), and bonding or mandatory service



( $p < 0.001$ ) were positively statistically significantly associated with the retention of female PHC workforce at PHC facilities in Bhutan as shown in table 17.

#### 4.5 PART IV Analysis of Factors Influencing Retention of the Female at PHC Workforce in Bhutan

**Table 18 The Predictive Factors Influencing the Retention Among Female PHC Workforce at PHC Facilities in Bhutan**

Variables	b	95% CI for b	$\beta$	t	$\rho$
Constant	3.007				
Financial aspects	0.215	0.096-0.334	0.303	3.517	<0.001*
Working & living conditions	0.100	0.022-0.178	0.216	2.542	0.012*
$R^2 = 0.213$ , Adjusted $R^2 = 0.203$ , $F = 21.906$ , $p < 0.001$ *					

b = unstandardized coefficient;  $\beta$  = standardized coefficient; CI = confidence interval

\*significant values  $< 0.05$ , tested by multiple linear regression analysis

Stepwise multiple regression analysis was performed to assess the ability of independent variables (age, marital status, monthly income, number of years in service, remote work experience, duration at the current place of posting, personal origin and values, family and community aspect, working and living condition, career-related factors, financial aspects, and bonding or mandatory service) to predict the retention of female PHC workforce in PHC facilities.

Preliminary analyses were conducted to ensure no violations of the assumptions of linearity, multicollinearity, autocorrelation, homoscedasticity, and normality. The analysis of linear regression requires either interval ratio or ratio scale data. Therefore, before conducting the analysis, the nominal variable (marital status) was converted to continuous data '0' as single, divorced, widowed, or separated (reference) and '1' as married. Other variables were all collected in the form of interval ratios or ratio scales as shown in Appendix I. The tolerance and variance inflation factor (VIF) was calculated to determine multicollinearity between the independent variables. There was no multicollinearity between independent variables because the tolerance values for this study were 0.20 or higher and all VIF values were less than 10.0 (Appendix J). The correlation coefficient matrix ratings for the variables ranged from 0.693 to 0.159 and considering the recommended value of less than 0.8, no

multicollinearity between the variables exists (Hair et al., 1995) (Appendix K). The analysis revealed that the Durbin-Watson value was 1.987, which falls within the 1.50 to 2.50 range, implying that no extreme outlier exists or no auto-correlation of residuals (Appendix L). P-P-Plot showed the data were distributed normally on the diagonal line indicating normality of residuals (Appendix M). The scattered plot was analyzed and ruled out for any homoscedasticity of residuals. The pattern of data showed symmetrical distribution indicating no homoscedasticity of residuals (Appendix N).

In the final model, it was revealed that two independent variables, financial aspects, and working and living conditions were statistically significant at a  $p < 0.05$ . The explanatory power (Adjusted  $R^2$ ) by financial aspects and working and living conditions was 20.3%, as shown in Table 18. The unstandardized and standardized regression equation was created based on the results in Table 18.

The predictive equation in the unstandardized score:

$$\gamma (\text{Retention}) = 3.007 + 0.215 (\text{financial aspects}) + 0.100 (\text{working \& living conditions}).$$

The predictive equation in the standardized score:

$$\gamma (\text{Retention}) = 0.303 (\text{financial aspects}) + 0.216 (\text{working \& living conditions}).$$

The equation above shows that the financial aspect is the factor that can influence the retention of the female PHC workforce at the PHC facilities in Bhutan. The correlation was positive and the regression correlation coefficient was 0.215 and it can be interpreted as; when other variables remained stable if the financial aspects increase by one unit, the intention to retain in rural areas increases by 0.215 units.

Similarly, working and living conditions can influence the retention of the female PHC workforce at the PHC facilities in Bhutan. The correlation was positive and the regression correlation coefficient was 0.100 and it can be interpreted as; when other variables remained stable if the working and living conditions increase by one unit, the intention to retain in rural areas increases by 0.215 units.

## CHAPTER V

### DISCUSSION

Chapter five discusses the findings of the study. In the first part, the findings of the summary of chapter four were presented into socio-demographic characteristics, followed by WHO recommended factors related to health workforces' decisions to relocate to, stay in or leave rural and remote areas (WHO, 2010). Then the analysis summary of the association between independent variables, and finally a section on the analysis of factors influencing retention of the female PHC workforce. The next part comprises of a discussion of the correlation between the intention to stay its factors which were found significant in this study as sequenced: retention, age, monthly income, work experience in rural areas, personal origin and values, family and community aspect, career-related, bonding or mandatory service, financial aspect, and working and living conditions. The final part discusses the recommendations to relevant agencies and authorities to enhance the retention of the female PHC workforce in PHC facilities of Bhutan. This section also recommends some possible related studies in the future. The last part of this chapter explains the limitations of this study followed by the conclusion.

#### 5.1 Summary

This study was designed to identify the “factors influencing the retention of female primary healthcare workforces at the primary health care facilities in Bhutan”. Quantitative cross-sectional research was conducted amongst all 165 female PHC workforce deployed in all the PHC facilities across Bhutan at the time of the study. The research instruments were collected through the employment of questionnaires based on the WHO framework “the factors related to health workers' decision to relocate to, stay in or leave rural and remote areas”. It was divided into eight sections: socio-demographic characteristics, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, bonding or mandatory service under the independent variables section, and retention under the dependent variable section. Content validity scores for each item ranged from 0.67 to 1

(Appendix F), whereas Cronbach's alpha for this study was 0.827 (Appendix H). Data collection of the study was carried out in the month of June 2022. The data were collected through a self-administered questionnaire via a google form. All the results were processed using the software SPSS version 22.0. The statistical findings from the data analysis were presented in descriptive statistics and inferential statistics and primarily presented in frequency, percentage, mean, and standard deviation, minimum and maximum, and linear regression to determine correlation and the predictive factors, as summarised hereunder:

### **5.1.1 Part I: Socio-demographic characteristics**

Section 1: Socio-demographic characteristics were age, marital status, average monthly income, number of years in service, remote work experience, and duration at the current workstation. The analysis showed that most of the female HAs were aged less than 30 years (N = 165, 48.5%) and they ranged from 22 to 56 ( $\bar{x} = 32.92$ , S.D  $\pm 8.9$ ). More than half (92, 55.8%) of the participants had a monthly income of less than Nu. 25,000 per month (USD 321.13). Among the participants, 72.1% (119) were married and 37% (61) of them had work experience as HA for six months to 5 years. The duration of work experience ranged from six months to 35 years ( $\bar{x} = 10.31$ , S.D  $\pm 8.9$ ) and 72.1% (119) of them reported having worked in rural health facilities for less than 10 years ( $\bar{x} = 8.30$ , S.D  $\pm 7.32$ ) ranging from six months to 32 years. Lastly, 50.9% (84) of the participants had been working at the current workplace for 3 years or less ( $\bar{x} = 4.53$ , S.D  $\pm 3.94$ ).

### **5.1.2 Part II: Factors related to health workforces' decisions to retain in rural areas**

Section 2: A total of 137 (83%) participants reported having higher personal origin and values. In both the subdomains; personal origin and values and altruism, the participants had a higher score of more than 3. The overall mean score for this variable was 3.77 with SD  $\pm 0.68$  and the scores ranged from 2 to 5.

Section 3: A total of 131 (81.2%) participants reported having higher family and community support. Among the subdomains, a sense of community spirit and family conditions, participants had higher scores of more than 3, however, the participants reported having limited community facilities ( $\bar{x} = 2.56$ , S.D  $\pm 0.91$ ). The

overall mean score for this variable was 3.51 with  $SD \pm 0.55$  and the scores ranged from 2 to 5.

Section 4: A total of 156 (94.5%) participants reported having favorable working and living conditions. On average, the participants reported having a favorable work environment, technology, medical supplies, and accommodations, however, they reported having a high workload. The overall mean score for this variable was 3.83 with  $SD \pm 0.53$  and the scores ranged from 2 to 5.

Section 5: A total of 133 (80.6%) participants reported having adequate career-related opportunities. On average, the participants reported having adequate continuing education opportunities, professional development courses, supervision, personal recognition system, and are satisfied with their current job. The overall mean score for this variable was 3.61 with  $SD \pm 0.59$  and ranged from 2 to 5.

Section 6: A total of 122 (73.9%) participants reported having adequate financial support. On average, the participants reported having an adequate salary, allowance and benefits. The overall mean score for this variable was 3.52 with  $SD \pm 0.74$  and ranged from 2 to 5.

Section 7: A total of 108 (65.5%) participants reported having adequate bonding or mandatory service. On average, the participants reported having adequate bonding or mandatory service. However, it had the lowest mean score among all the determinants at 3.46 with  $SD \pm 0.82$  and ranged from 1 to 5.

### **5.1.3 Part III: Analysis of association between independent variables and the retention of female PHC workforce in PHC facilities**

This study also proclaimed that the correlation between the dependent variable (retention) and the independent variables such as age ( $\rho < 0.012$ ,  $b = 0.088$ ), monthly income ( $\rho < 0.003$ ,  $b = 0.001$ ), number of years in service ( $\rho < 0.004$ ,  $b = 0.091$ ), personal origin and values ( $\rho < 0.001$ ,  $b = 0.251$ ), family and community aspects ( $\rho < 0.001$ ,  $b = 0.172$ ), working and living conditions ( $\rho < 0.001$ ,  $b = 0.181$ ), career-related ( $\rho < 0.001$ ,  $b = 0.152$ ), financial aspects ( $\rho < 0.001$ ,  $b = 0.303$ ) and bonding or mandatory service ( $\rho < 0.001$ ,  $b = 0.254$ ) were positively statistically significant. There was no correlation between married, duration at the current workstation, and rural work experience with the retention. This section is further elaborated on in the following part.

#### **5.1.4 Part IV: Analysis of factors influencing retention of the female PHC workforce**

The result of the stepwise multiple linear regression analysis revealed that two predictors namely financial aspects and working and living conditions influence the retention of female PHC workforce working at PHC facilities in Bhutan with explanatory power (Adjusted R<sup>2</sup>) of 20.3%. Accordingly, the unstandardized and standardized regression equation was generated from the analysis of a multiple linear regression as follows:

The predictive equation in the unstandardized score:

$$\gamma (\text{Retention}) = 3.007 + 0.215 (\text{financial aspects}) + 0.100 (\text{working \& living conditions}).$$

The predictive equation in the standardized score:

$$\gamma (\text{Retention}) = 0.303 (\text{financial aspects}) + 0.216 (\text{working \& living conditions}).$$

## **5.2 Discussion**

This study was carried out based on the World Health Organization (2010) conceptual framework, detailed to address the shortage of health workforce in rural areas. The results of this study demonstrated that retention among the female PHC workforce to stay in the current health facility was 65%. This is consistent with the findings of a study conducted among Malawian midwives (Berman et al., 2021). The study reported that 70.2% of the respondents reported having either ‘very likely’ or ‘likely’ to work in rural areas. The factors vary and the intention of the health workforce to retain in rural health facilities is multifactorial and complex.

The analysis of the data unearthed the significance of all the domains (personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects and bonding or mandatory service) recommended by the WHO. Besides these six factors, the study also found other socio-demographic characteristics such as age, monthly income and number of years in service are equally significant with the retention of female PHC workforce in rural areas of Bhutan. The RGoB has adopted various HRM strategies to encourage the public health workforce

to continue working in remote areas. More than 62% of Bhutanese live in rural areas (NSB, 2018), and according to the World Health Organization (2020) therefore, rural development has always been the focus of the country's development policy. The government has undertaken various reforms to improve the equality of healthcare services and the retention of female HA is one part of the strategies. To improve the retention of the rural health workforce in rural Bhutan, strategies were adopted and categorized into education, regulation, financial incentives, and professional and personal support (WHO, 2020). However, Thinley et al. (2017) reported that these strategies are central-level policies that are not rural-specific. It should be noted that this study was conducted among rural FHAs, and assume that most of the FHAs who intended to work in urban areas were already transferred there. Thus, retention of the female PHC workforce in rural areas has been pervasive for much of the past decades (Thinley et al., 2017). In addition to this, very little is known about the impact of these strategies (Zapata et al., 2020). Moreover, one-third of the participants have low retention intention probably due to poor community facilities and high work-related stressful. Therefore, the government should be aware of these problems and if these issues are neglected, there may be higher turnover of FHAs from rural to urban areas.

According to the findings of the present study, factors influencing the retention of the female PHC workforce at the PHC facilities in Bhutan, are discussed as follows.

The findings of this study highlighted the importance of recognizing all of the different factors highlighted in the WHO conceptual framework considering the influences on the female PHC workforce's intention to stay in rural areas of Bhutan. The result of the study demonstrated socio-demographic characteristics such as age, monthly income and number of years in service, personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, and bonding or mandatory service increase the likelihood of female PHC workforce choosing to stay in rural areas. The multivariate analysis revealed that financial aspects and working and living conditions were independent predictors for female PHC workforce retention at the PHC facilities in Bhutan. It can be further elaborated as follows.

### 5.2.1 Age

The current study report analysis showed a significant positive correlation between the age of the participants and the intention to stay, indicating that as age increases, the tendency to stay in rural areas also increases.

To date, no study had been conducted to find out the correlation between the age and intention of female PHC workforces to stay in rural areas in Bhutan. However, this may partially be explained by the findings of another study which reported that the influence on an individual's decision-making is frequently ambiguous and may change throughout a person's life and career cycle (Siebert et al., 2021). Fredrick (2018) reported that when compared to other age groups, the health workforce aged 31 to 40 years was highly probable to leave their workplace; simultaneously, those aged 51 and older demonstrated stability in staying at the PHC facility of Kakamega county in Kenya. Similarly, a study among health workers in Ghana reported that respondents aged 40 years or older were having a considerable decrease in the likelihood of leaving the rural health facilities compared to those younger than 30 years of age (Bonenberger et al., 2014a). It was also reported that the intention to stay is attributed to their life stage, unlike older people, younger people are more likely to have the intention to pursue their career ambitions to have access to modern amenities to provide better schools for children and lead a comfortable family life in urban areas (Fredrick, 2018). Likewise, a study in Yemen, Jordan, Lebanon, and Qatar found that many nurses were young and tend to leave their job after marriage (Fadi El-Jardali et al., 2013). A similar finding was reported among the PHC workforce in Nigeria, the rationale for leaving the rural health facilities was that the older respondents were burdened with family obligations and valued job security more than their younger colleagues who are looking for better opportunities in the urban areas Kadiri-Eneh et al. (2018).

Agreeing with the consistent findings elsewhere, it can be concluded that age does influence the retention of the female PHC workforce in PHC facilities in Bhutan. Since the analysis revealed that the older female PHC workforce are more likely to demonstrate a higher tendency to stay (retain) in rural areas when compared to younger ones. This issue among younger female HAs can likely exacerbate the depletion of already limited female HAs in rural areas, which can jeopardize equitable access to



PHC services, particularly for those mothers and children living in remote and hard-to-reach places.

### **5.2.2 Monthly Income**

The current study report analysis showed a significant positive correlation between the monthly income of the participants and the intention to stay, indicating that as the monthly income increases, the tendency to stay in rural areas also increases.

Remuneration or financial benefit is considered as one of the important determinants in ensuring a higher retention rate among the health workforce in rural areas. In the study, findings by Haskins et al. (2017), a higher proportion of health professionals working in the South African province of KwaZulu Natal expressed that they would move to a rural area for money. At the same time, Mbemba et al. (2016) also reported that improved remuneration in rural areas could attract health having a large impact on the decision of the health workforce to remain employed in rural areas. Furthermore, (Berman et al., 2021) indicated that an increase in the salary of 25% is estimated to lead to a 14.3% point increase in rural job uptake. A study among nurses in Qatar revealed that the intention to stay was to help their families and was found financially driven (Fadi El-Jardali et al., 2013). At the same time, according to Bonenberger et al. (2014b), higher remuneration can influence employees' commitment and job satisfaction and in turn influence staff retention. Correspondingly, considering the importance of its role, the WHO recommended providing a suitable financial package to the rural health workforce as one of the key elements of rural health workforce retention strategies (WHO, 2020; Zapata et al., 2020).

Therefore, monthly income significantly influences the retention of female HAs in PHC facilities in Bhutan.

### **5.2.3 Number of Years in Service**

The current study report analysis showed a significant positive correlation between the number of years in service of the participants and the intention to stay, indicating that as the number of years in service increases, the tendency to stay in rural areas also increases.

A study by Fadi El-Jardali et al. (2013) reported that the nurses in Lebanon, Jordan and Yemen with longer years of experience were more likely to have the intention to stay in rural areas than nurses with fewer years of experience. Similarly, in

Bhutan, HAs are the only category of health workforce trained to work in rural areas. According to our findings, 69.1% of female HAs were in the service for more than 3 years. Thus, their desire to work in rural areas may have given them opportunities to get good rural work experience. As cited by Fadi El-Jardali et al. (2013) the other reasons may be attributed to the fact that age and years of experience go in parallel; more experienced nurses are typically older and choose to stay in rural areas. Similarly, Carson et al. (2015) carried out a study among doctors, nurses and allied health professionals and reported that those health professionals who had part of their professional training in rural areas were more likely to select to work in rural areas. Similarly, Berman et al. (2021) in their study among nurse midwives in Malawi reported that those nurse midwives with very good experience working in a rural area previously were 6.14 times as likely to show interest in working in rural areas as compared to those with a poor prior experience. Comparable findings were reported among health professionals by Haskins et al. (2017). The study also left an array of dilemmas on our findings that it is unclear why the majority of the senior female PHC workforce wanted to stay in rural areas despite various constraints such as poor transportation facilities, poor recreational facilities, and other basic social amenities. Nevertheless, further research should be considered to explore and confirm the rationale in this matter.

It can be concluded that the more the number of years in service they have, the female HAs are more likely to express an intent to retain in rural areas.

#### **5.2.4 Personal Origin and Values**

The current study showed that personal origin and values were positively correlated to the intention to stay (retention), revealing that with the increase in personal origin and values scores, the tendency to stay in rural areas also increases.

This finding was not surprising, considering the fact that 83% of the respondents expressed having higher personal origin and values. The hypothesis might be that community vitality is one of the important domains of the GNH development philosophy. This aspect prevails to promote both the national and local policymakers to plan and implement activities on enhancing harmony in the communities, between households and individuals (RGoB, 2008). Moreover, the majority of the people in Bhutan are born and brought up in rural areas with close-knit family and community

ties. Thus, this might perceive higher respect and values towards their family and the community people that might trigger the likelihood of their retention in rural areas. However, further study is required to establish any association between this domain and its impact on retention in rural areas.

According to Carson et al. (2015) health professionals are more likely to choose to work in rural areas if their place of origin is from the rural area. Correspondingly, Honda et al. (2019) reported that the area of origin also plays a substantial influence on the decision to work in rural areas, with health professionals primarily from rural areas being significantly inclined to return there. Furthermore, Fadi El-Jardali et al. (2013) proclaimed that those who were brought up in rural areas were more inclined to work in such areas and those with higher altruism and values have considerably higher intentions of staying. Additionally, Haskins et al. (2017) claimed that midwives displayed a significant level of pride in their work and were enthusiastic about the care they provide to women and their families in hopes of saving lives. Correspondingly, Dotson et al. (2014) in their study among Registered Nurses reported that those nurses who were more altruistic reported higher job satisfaction and lower intention to leave their jobs.

Therefore, considering the above findings, it can be concluded that personal origin and values influence the retention of the female PHC workforce in PHC facilities in Bhutan.

### **5.2.5 Family and Community Aspects**

The descriptive statistics reported that 81.2% of the participants reported having higher family and community support. Further, the correlation analysis found that family and community aspects were positively correlated to the intention to stay (retention), revealing that when family and community aspects increase the tendency to stay in rural areas also increases.

Many studies reported having a sense of community belongingness, and positive intention to patients, parents, and relatives tend to significantly increase the intention of nurses to stay in rural areas. According to the World Health Organization (2020), a higher level of community bonding, higher level of values of health professionals in the community, support from the community and family, availability of amenities such as a market, decent school for their children, good transportation and

communication facilities were reported to be some of the reasons health workers choose to stay in rural areas. Further, Adegoke et al. (2015) also reported that the midwives in rural areas of Nigeria were found to be having increased rate of retention from helping women and children in the community and receiving recognition and appreciation from the communities they serve.

Similarly, a study among PHC workforces in Kenya also reported that having family and community support is related to living with family, enjoying the rural lifestyle, and establishing professional and community networks. Whereas a sense of social and personal isolation may lead to the decision to leave rural (Fredrick, 2018). Similar findings were reported from Tanzania (Shemdoe et al., 2016) and Niger (Belaid et al., 2017).

In this study, though the respondents had a higher sense of family and community aspects (Mean 3.51), it is a concern to see inadequate/ poor or lack of community facilities (Mean 2.56). This might be because, in Bhutan, all the PHC facilities are located in remote areas, and only a few of them are accessible to good shopping facilities, transportation, and recreational amenities. This is in line with the literature that the perceptions of life in rural areas are reported to be poor and inferior and are often associated with environmental factors such as schools, housing and safety (Haskins et al., 2017).

Therefore, considering the above findings, it can be concluded that family and community aspects influence the retention of female PHC workforce in PHC facilities in Bhutan. Furthermore, considering the poor score for community facilities the researcher felt that to enable the government to attract and enhance the retention of female HAs in rural areas, it is of paramount importance to have improved basic social amenities in the rural areas.

#### **5.2.6 Career-related**

The descriptive statistics reported that 80.6% of the participants reported having adequate career-related opportunities. Further, the correlation analysis found that career-related attribute is positively correlated to the intention to stay, revealing that favorable career-related opportunities increase the tendency to stay in rural areas.

A study among nurses in rural Lebanon corroborates this finding, where, Fadi El-Jardali et al. (2013) reported that career-related factors are vital for personal

development and access to professional development opportunities had a positive impact on job satisfaction and their intention to stay. The report also claimed that providing professional development courses through the conduct of seminars, workshops, and access to conferences may boost morale and dedication to the point where they are emotionally bonded to the organization and encouraged to stay. However, the health workforce in remote and rural areas suffers from professional isolation and requires a high travel cost of travel to acquire up-to-date knowledge (Fadi El-Jardali et al., 2013). According to Eadie and Sheridan (2017) midwives are required to have updated knowledge and skills to deliver safe maternal and child health services, thus, the study reported that opportunities for training are regarded as attributing factors to the propensity to stay in the area. Similarly, inadequate skills among health workers not only affect the quality of care rendered but also have a direct impact on the motivation and retention of health workers Ojaka et al. (2014).

In addition, the intention of PHC workforce to remain in rural areas was strongly associated with timely supportive supervision and praise at work; fair evaluation; and commitment and competence of the facility administrator (Fredrick, 2018). Simultaneously, Adegoke et al. (2015) reported that inadequate supervision, poor managerial support, lack of career structure, and poor job satisfaction were some of the contributors to the poor retention of midwives in rural areas. Often, midwives were mistreated and disrespected by policies that perpetuate their low position as professionals in the healthcare system and refuse to acknowledge their professional status (Hastings-Tolsma et al., 2021). Therefore, the relevant agencies or organization needs to pay greater attention both to investment and planning development activities that can promote and provide comprehensive and equitable continuing education opportunities, professional development courses, regular supervision and a personal recognition system that can lead to job satisfaction and a higher rate of staying in rural areas.

Considering the above findings, it can be concluded that career-related aspects influence the retention of the female PHC workforce in PHC facilities in Bhutan.

### **5.2.7 Bonding or Mandatory Service**

The descriptive statistics reported that 65.5% of the participants reported having favorable bonding or mandatory service. Further, the correlation analysis found

that bonding or mandatory service was positively correlated to the intention to stay, revealing that favorable bonding or mandatory service increases the tendency to stay in rural areas.

Bonding or mandatory service is a strategy to increase the number of the health workforce and ensure the continuity of healthcare services in rural areas. In Bhutan, all kinds of training, for instance, long-term training in community health diploma are carried out in the country under the government scholarship. In return, after their graduation, HAs in Bhutan are expected to serve in their initial place of posting for at least three years (WHO, 2020). This strategy is to enhance access to health services and reduce the gap of health inequality among the population. The presence of female HAs in rural areas can not only provide timely health services but also deliver quality health care services especially that related to maternal and child health.

On this note, there is overwhelming evidence in the literature that obligatory services can bring positive changes to both the communities and the health system. For instance, in Malawi, the services of nurse midwives were valued as a compulsory service program and reported to have brought positive changes in community health status (Berman et al., 2021). Similarly, in Sri Lanka, the obligatory assignment system of health workforces to rural areas has significantly addressed human resource maldistribution and the sustainability of rural health services (WHO, 2020).

It was also interesting to see that, in the current study, although the overall score for bonding and mandatory was high ( $\bar{x} = 3.46$ ) the score was the lowest among all the variables. The previous literature shows that the health workforce expressed their dissatisfaction with the bonding or mandatory service programs everywhere. The main reasons for dissatisfaction expressed were the absence of decent housing, inadequate transportation facilities, poor electricity connectivity, and inadequate water, followed by a lack of necessary equipment, medicines, and infrastructure (Adegoke et al., 2015; Berman et al., 2021; Mbemba et al., 2016).

However, there is a paucity of information on how well this mandate is being implemented and benefitted the rural communities in Bhutan, therefore, it warrants the requirement of further in-depth analysis to find out the factors influencing the bonding or mandatory service and its impact on the community people and the system as a whole.

Considering the above findings, it can be concluded that bonding or mandatory service influences the retention of the female PHC workforce in PHC facilities in Bhutan.

### **5.2.8 Financial Aspects**

The descriptive statistics reported that 73.9% of the participants reported having adequate financial support. Further, the multiple linear regression analysis revealed that the financial aspect can predict intention to stay (retention) in rural areas, revealing that the higher the financial incentives, the more likely the willingness to stay in rural areas.

There is an overwhelming body of evidence that financial incentives can have a substantial impact on the health workforce's intention to continue to stay in rural areas. According to Haskins et al. (2017), a higher proportion of health professionals expressed that they would move to a rural area for money, indicating a strong influence on the decision of health professionals to either stay or leave the rural areas. A similar statement was made by Mbemba et al. (2016), who reported that improved remuneration in rural areas tends to attract the health workforce. This evidence can be substantiated further, for instance, in rural Malawi, an increase in pay of 25% is estimated to lead to a 14.3% point increase in rural job uptake among nurse midwives (Berman et al., 2021). Furthermore, a study among the PHC workforce in three disparate regions in Kenya found that remuneration is a critical factor in motivation and retention and found that a high proportion of the PHC workforce particularly in Machakos reported that their remuneration is not fair, thus, the region had the highest rate of attrition. Similarly, a study by Adegoke et al. (2015) reported that another push factor for retention in rural areas was delayed payment and remuneration and highlighted the necessity to satisfy a decent standard of living before appealing to higher needs such as esteem and self-fulfillment, thus, the retention of midwives will increase if uniform compensation packages are provided. A study among nurses in Qatar found that the intention to stay was to help their families financially (Fadi El-Jardali et al., 2013). According to Bonenberger et al. (2014b), higher remuneration can influence employees' commitment and job satisfaction and in turn influence staff retention. Ojaka et al. (2014) also reported similar findings and argued that increased

financial benefits were found to help to pay off the loan and send children to a decent school.

On the contrary, a study among health professionals in rural Senegal found that financial incentives had little impact on retention. However, the report stressed that a little allowance is probably not going to make much of a difference, a larger allowance might (Honda et al., 2019). Likewise, Bonenberger et al. (2014a) indicated that remuneration alone does not appear to provide a sufficient prerequisite for health workers in Ghana to choose whether to stay or leave the rural areas because remuneration remains invariably the same between rural and urban health facilities.

Therefore, considering the importance of its role in the retention of the rural health workforce, the WHO recommended providing a suitable financial package to the rural health workforce as one of the key elements of rural health workforce retention strategies (WHO, 2020; Zapata et al., 2020). Financial incentives are provided in various forms. For instance, in Bhutan, according to the World Health Organization (2020) report, female HAs are entitled to various financial incentives. Besides salary, all female HAs are entitled to a professional allowance of 35% to 55% of the basic salary and a house rent allowance of 20% of the basic pay. They are also entitled to travel allowance and daily allowance to provide outreach health services such as ANC, PNC, family planning services, health promotion activities and so forth in remote areas which are often cited as a motivation to stay in rural areas. It was also reported that many HAs cited high living costs and an absence of rental housing in urban areas as reasons for continuing to serve in rural health facilities, however, the researcher could not find additional literature to back up this claim. Further, to encourage the retention of public servants in remote and rural areas, they are entitled to a range of financial packages such as a rural area allowance ranging from Nu. 2,000 to 10,000 and a high-altitude allowance of Nu. 2,000 to 3,000 as prescribed by the (MoF, 2019). By nature of roles and responsibilities; and PHC facilities being located in rural areas, on average HAs enjoy a fair amount of financial incentives (WHO, 2020).

According to the World Health Organization (2020), rural retention of HRH is multidimensional, and the use of financial incentives can be limited in motivating the rural health workforce, indicating that financial incentives without complementary non-financial incentives such as the provision of accommodation, improved social



amenities, adequate HR, ensured equipment and medicines also plays a major role in motivating the health workforce to choose to stay in rural areas. Nevertheless, in-depth analysis between different factors and retention in the rural area remains largely untested and poorly understood (Russell et al., 2021), thus, thorough research on this issue might be able to support policymakers in Bhutan to acquire detailed insights on its impact and effectiveness.

Therefore, considering the above findings, it can be concluded that financial incentives influence the retention of the female PHC workforce in PHC facilities in Bhutan.

### **5.2.9 Working and Living Conditions**

The descriptive statistics reported that 94.5% of the participants reported having favorable working and living conditions. Further, the multiple linear regression analysis revealed that the working and living conditions can positively and significantly predict intention to stay (retention) in rural areas, revealing that favorable working and living conditions increase the tendency to stay in rural areas.

As stated by the World Health Organization (2020), provision of accommodation, improved social amenities, adequate human resources, positive relationships with co-workers, and adequate equipment and medicines for patient care were found to be some of the complementary non-financial incentives that play a major role in motivating the health workforce to choose to stay in rural areas. According to Fadi El-Jardali et al. (2013), 62.5% of the rural nurses in Lebanon like to remain in the existing place because of a good work environment. Alameddine et al. (2016) asserted that the working and living conditions of employees at PHC facilities are essential for their effective retention. Similarly, Haskins et al. (2017) reported that although improved remuneration in rural areas may tend to attract health workers, factors such as poor work environment, poor job satisfaction, and poor living conditions negatively affect the retention of the health workforce in rural areas. Further, it was claimed that focusing more attention on creating a positive environment can enhance the view of Swedish midwives' perception of intention to stay in the workplace (Hildingsson & Fenwick, 2015). Similarly, Fadi El-Jardali et al. (2013) asserted that rural nurses in their study were generally content with their interactions with co-workers, such a relationship was reported to be a significant factor of motivation that improves rural

nurses' retention. Therefore, dimensions related to working and living conditions can be considered as one of the important factors that influence the retention of the female PHC workforce in rural areas.

Further, the availability of medical equipment and medicines was reported to be equally important for the health workers' decision to work in rural areas in Cameroon. It was reported that respondents avoided remote places owing to the shortage of supplies, medical equipment and medicines (Robyn et al., 2015).

Nevertheless, several studies pointed out that there is a direct relationship between the workload and retention of the health workforce in rural areas. The impact of higher workload among midwives was directly related to poor quality of patient care, leading to low morale and burnout, and concluded that they felt demoralized due to a chronic staff shortage (Matlala & Lumadi, 2019). In contrast, Fredrick (2018) described that having a manageable workload can enable health workforces to perform their jobs well and efficiently, where most of the time the administrators are unaware of the problem.

Fadi El-Jardali et al. (2013) argued that, in Jordan, the availability of housing for the rural health workforce was significantly associated with job satisfaction and their intention to remain in rural areas. Wakerman et al. (2019) in their study on the remote health workforce reported that 65% of them expressed their desire to continue working in rural areas due to the availability of accommodation. Similarly, Berman et al. (2021), in their discrete choice experimental study among midwives in Malawi concluded that respondents were 2.04 times more likely to choose a rural profession if good accommodation was provided than no accommodation.

As a result, the above evidence presents a wide range of determinants such as work environment, medical technology, medical supplies, accommodation, and workload that positively influence midwives' willingness to stay in rural areas. Therefore, this study also highlights the importance of improved working and living conditions in rural areas so that more female HAs are attracted to work there, however, an in-depth analysis is required to provide policymakers; both at the local and the central level for targeted initiatives aimed at retaining female HAs in rural health facilities. For instance, the Ministry of Health and District Health Officers may promote the formulation of programmes that strengthen teamwork and improve professional

collaboration. Such initiatives have been found to improve nurses' retention as well as enhance the quality of patient care (Fadi El-Jardali et al., 2013). Therefore, considering the above findings, it can be concluded that family and community aspects influence the retention of female HAs in PHC facilities in Bhutan.

However, this study pointed out that the job of female HAs in rural areas is stressful ( $\bar{x}=2.29$ , S.D  $\pm 1.16$ ). It may be because the HRH service standard mandates the posting of only one female HA in each PHC facility in addition to one or two male colleagues. Often due to a shortage of manpower, female HAs have to work alone in the PHC facility and manage both clinical and administrative works throughout the day and night.

They carry out basic laboratory testing, treatment and referral of patients besides carrying out public health activities and providing MCH services for all the catchment population, and also attending to emergencies day and night (WHO, 2020). Further, with the COVID-19 outbreak, their roles and responsibilities in the delivery of PHC services are stretched. On the other hand, since PHC facilities are considered as the only health institution located close to the communities, the MoH implements many health activities that the HAs have to carry out (MoH, 2021a). Thus, these are the probable reasons that might have led them to report having a stressful job among the female HAs working in rural Bhutan. However, a further in-depth study is required to ascertain the predictors of stressful job among female HAs in rural Bhutan.

Therefore, considering the above findings, it can be concluded that working and living conditions influence the retention of the female PHC workforce in PHC facilities in Bhutan. Thus, improved working and living conditions in rural areas increase the tendency of the female PHC workforce to stay in rural areas.

### **5.3 Recommendations**

The findings of the study have shown the significance of recognizing all the factors (personal origin and values, family and community aspects, working and living conditions, career-related, financial aspects, and bonding or mandatory service) recommended by the WHO besides socio-demographic factors such as age, monthly income, and the number of years in service. Based on the findings, the following recommendations were made to address the concerns if Bhutan is to achieve UHC and

enhanced health equality through improved retention of female HAs in rural health facilities.

### **5.3.1 Health policy**

1. Considering the poor score on community facilities, it is of paramount importance for the government to consider equitable development of basic amenities such as improved transportation and communication facilities, and schools among others to attract and retain the rural health workforce.

2. The findings from this study revealed having adequate financial benefit and is positively correlated with rural retention of female HAs. Therefore, the government should sustain the provision of financial incentives package as provided today.

3. Female HAs of rural health facilities reported that their job was stressful. After considering the context of their job and their responsibilities, the causes of this problem were assumed to be multifactorial. Thus, one of the remedies to this problem could be, unlike current practice, the number of female HAs in each PHC facility should be based on the workload. Increased investment in HRH is linked to increased productivity and performance. The WHO recommended HRM tool 'Workload Indicators of Staffing Need' can be applied in this context.

4. Those female HA recruits may be assigned to an experienced HA or a senior staff for at least six months. This is because according to the literature, the rural health workforce with good work experience tends to have high morale and confidence, which helps to enhance their tendency to stay in rural areas.

5. The government should encourage students from rural areas and encourage them to return and serve their communities for a certain number of years once completing HA training. This is because there is substantial evidence that those health professionals primarily from rural areas are significantly inclined to return to work for their community people.

6. On the above issue, another alternative could be by setting personal origin and values as one of the criteria during their recruitment interview, and also the Ministry of Health should facilitate the transfer of those willing to work in their hometown.

### **5.3.2 Health services**

1. Respective District Health Officers should intensify periodic supportive supervision in the rural health facilities to keep female HAs well updated and the office

should also formulate programmes to strengthen teamwork and improve professional collaboration. Previous literature reports that improved supportive supervision, teamwork, and professional collaboration increase the tendency of health workers to stay in rural areas.

2. Respective District Health Officers should provide equal training opportunities for all the female HAs and encourage them to put up their grievances by creating a friendly working environment. If any issues are unable to resolve locally, the cases can be forwarded to the MoH. This is to keep female HAs involved and encouraged and support female HAs to continue working in rural areas.

3. Respective District Health officers and facility managers should ensure continuous availability of medical equipment, medicines, and other basic essential items in health facilities to boost the confidence of female HAs by enabling them to provide quality health care services to their catchment population.

4. Female HAs should involve in social activities to enhance their bonding and improve recognition among the community people. It helps to improve trust and relationships between the health workforce and the community people and is proven to help retain the health workforce.

### **5.3.3 Academic implementation**

1. Future studies should apply other designs such as qualitative studies to explore the in-depth determinants that influence the retention of female HAs in rural areas.

2. Research areas should be broadened to include female HAs working in urban health facilities who had previously worked in rural areas to compare findings and resolve the issues and boost retention of female HAs in rural health facilities.

## **5.4 Limitations and Strengths**

1. This study was designed as a cross-sectional study, thus it provides only a snapshot of female HAs' perspectives at one point in time. The causal relationships between the retention of female HAs in rural areas and its determinants, therefore, cannot be further investigated. However, the recommendations are tailored to findings in the context of Bhutan and are expected to aid evidence-based planning for the RGoB

to improve the retention of FHAs in rural areas and contribute to improved quality of MCH services.

2. Further, findings from this study cannot be generalized to FHAs of urban areas since this study was conducted among the FHAs recruited in rural areas. However, involving the total population in the study minimizes the selection bias and the findings of this study are near to accurate and can be generalized to all the rural FHAs in Bhutan.

## **5.5 Conclusion**

Retention of female HAs in rural areas is pivotal in achieving sustainable development goals, particularly concerning maternal and child health. The policy mandates having at least one female HA in every PHC facility, despite the implementation of various strategies to encourage them to work in rural areas, Bhutan has struggled to achieve it. Currently, almost a quarter of the PHC facilities are functioning without female HA. Therefore, this study was carried out to explore the factors influencing the retention of female HAs at the PHC facilities in Bhutan. The study tools were developed based on the WHO conceptual framework on the factors influencing the health workforce's decision to stay or leave rural areas and explored the key predictors. The findings indicated several factors correlated with the retention of female HAs in PHC facilities. That includes age, monthly income, place of origin and values, family and community aspects, career-related factors, and bonding or mandatory services. The study also discovered that financial aspects and working and living conditions positively significantly influence the retention of the female PHC workforce in the PHC facilities in Bhutan. Thus, the findings from this study indicated factors influencing the retention of female PHC workforce are multifactorial. Therefore, addressing female PHC workforce shortages will require the development of a comprehensive approach. A particular focus should be given to creating a supportive working and living environment, and sustaining the provision of financial incentives as provided today to encourage the female PHC workforce to retain in rural areas and if the health of rural mothers and children is to improve.

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**APPENDIX**



## APPENDIX A NU-IRB ETHICAL APPROVAL CERTIFICATE

COA No. 205/2022 IRB No. P2-0118/2565		AF 08-09/5.0
<b>คณะกรรมการจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยนครสวรรค์</b> <b>99 หมู่ 9 ตำบลท่าโพธิ์ อำเภอเมือง จังหวัดพิจิตร 65000 เบอร์โทรศัพท์ 05596 8721</b>		
<b>หนังสือรับรองโครงการวิจัยครั้งแรก</b>		
คณะกรรมการจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยนครสวรรค์ ดำเนินการให้การรับรองโครงการวิจัยตามแนวทางหลักจริยธรรมการวิจัยในคนที่เป็นมาตรฐานสากล ได้แก่ Declaration of Helsinki, The Belmont Report, CIOMS Guideline และ International Conference on Harmonization in Good Clinical Practice หรือ ICH-GCP		
<b>ชื่อโครงการ</b>	Factors influencing the retention of female primary healthcare workforce at primary health care facilities in Bhutan: A cross-sectional study.	
<b>ผู้วิจัยหลัก</b>	: Karma Jurmin	
<b>สังกัดหน่วยงาน</b>	: คณะสาธารณสุขศาสตร์	
<b>วิธีทบทวน</b>	: การพิจารณาแบบเร่งรัด (Expedited Review)	
<b>รายงานความก้าวหน้า</b>	: ส่งรายงานความก้าวหน้าอย่างน้อย 1 ครั้ง/ปี หรือส่งรายงานฉบับสมบูรณ์ หากดำเนินโครงการเสร็จสิ้นก่อน 1 ปี	
<b>เอกสารรับรอง</b>	<ol style="list-style-type: none"> <li>1. AF 01-10 เวอร์ชัน 1.0 วันที่ 30 มีนาคม 2565</li> <li>2. AF 02-10 เวอร์ชัน 1.0 วันที่ 30 มีนาคม 2565</li> <li>3. AF 03-10 เวอร์ชัน 1.0 วันที่ 30 มีนาคม 2565</li> <li>4. AF 04-10 (For female primary healthcare workforce at the primary health care facilities in Bhutan) เวอร์ชัน 2.0 วันที่ 17 พฤษภาคม 2565</li> <li>5. AF 05-10 (For the group of volunteers over or equal to 20 years old) เวอร์ชัน 1.0 วันที่ 30 มีนาคม 2565</li> <li>6. สรุปโครงการเพื่อการพิจารณาทางจริยธรรมการวิจัยในมนุษย์ เวอร์ชัน 2.0 วันที่ 17 พฤษภาคม 2565</li> </ol>	

## APPENDIX B REBH APPROVAL LETTER



### EXEMPTION LETTER

**Protocol No:** PO2022020

**Protocol Title:** "FACTORS INFLUENCING THE RETENTION OF FEMALE PRIMARY HEALTHCARE WORKFORCE AT PRIMARY HEALTH CARE FACILITIES IN BHUTAN: A CROSS-SECTIONAL STUDY " dated 09/06/2022

**Principal Investigator:** Mr. Karma Jurmin  
**Institute:** Naresuan University, Thailand  
**Co-Investigator (s):** Dr. Wutthichai Jariya

This is to state that Research Ethics Board of Health (REBH) has determined that the above protocol, submitted to REBH for ethical approval, qualify for exemption from ethics review based on the criteria specified in the Standard Operating Procedures (SOP) of REBH.

Therefore, the need for REBH approval is exempted for the protocol. Nonetheless, the investigator(s) shall be responsible to:

1. Seek all other clearances/approvals required by law/policy including permission from the study sites before conducting the study/project,
2. Report any major changes on the protocol or related documents to REBH before implementation. The changes can be implemented only after receiving approval from REBH.
3. Submit Final Report of the study/project, at the end of the study/project, for review and protocol file closure.

Note: Technical and ethical soundness of protocols are not assessed by REBH for the protocols that qualify for exemptions of REBH review.

(Dr. Chhabi Lal Adhikari)  
**Chairperson**

**For further information please contact:** REBH Secretary: at Tel: +975-2-322602 or email at [rebhsecretary@gmail.com](mailto:rebhsecretary@gmail.com)

PABX: + 975-2-322602, 322351, 328091, 328092, 328093 (Extension 333) Fax: 324649

## APPENDIX C MOH ADMINISTRATIVE CLEARANCE



དཔལ་ལྷན་འབྲུག་གཞི་རིམ་  
གསོ་བ་ལྷན་ཁག་

ROYAL GOVERNMENT OF BHUTAN  
MINISTRY OF HEALTH  
THIMPHU BHUTAN  
P.O BOX: 726



MoH/PPD/ADM.CL/9/2022/015

Mr. Karma Jurmin  
Faculty of Public Health  
Naresuan University, Thailand

18/05/2022

Subject: **Administrative Clearance**

Dear Mr. Karma,

The Ministry of Health is pleased to issue Administrative Clearance for the study titled "**Factors Influencing the retention of female primary health care workforce (female health assistant) at primary health care facilities in Bhutan**", after reviewing its purpose, objectives, and intended outcome(s). However, the following conditions needs to be fulfilled in order for the clearance to be valid:

1. Obtain technical and ethical clearance from Research Ethics Board of Health (REBH) or KGUMSB Institutional Review Board (*if the sites of the study are confined to KGUMSB or its affiliated teaching hospitals*) prior to the conduct of study and ensure strict adherence to its requirements, terms and conditions.
2. Abide by national policies and laws applicable to the study; **and strictly adhere to the Protocols, rules and regulations for containment of Covid-19 during the study data collection and other field works**
3. Seek approval from work site(s) prior to the conduct of study;
4. Ensure no interference with routine delivery of health services at the study site(s);
5. Concurrence for movement of health staff (if any) for the purpose of the study from Department of Medical Services and study sites from the concerned authorities at least one month prior to the conduct of the study;
6. Respond within 10 working days to queries (if any) from the Ministry of health with regard to the implementation of the study; and
7. Share a signed copy of the report with the Planning and Policy Division, Ministry of Health.

Thanking you.

Yours sincerely,

*Tashi Penjor*  
Tashi Penjor

**Chief Planning Officer**

## APPENDIX D QUESTIONNAIRE

### SECTION 1: Socio-demographic characteristics

Item #	Question	Response
1.	District (choose one)	..... (dropdown)
2.	Facility name	..... (fill in the blanks)
3.	Age (in years)	.....year ( <i>completed years</i> ) (fill in the blanks)
4.	Monthly income (Ngultrum/month)	Nu.....per month (fill in the blanks)
5.	Marital status ( <i>choose one</i> )	<input type="checkbox"/> Married <input type="checkbox"/> Single (dropdown) <input type="checkbox"/> Widow <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Others...please specify)
6.	Are you allocated with the staff quarter?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.	Number of years in the service	.....years (fill in the blanks)
8.	Number of years in the current place of posting	.....years (fill in the blanks)
9.	Number of years you have worked in PHC facility and Sub-post.	.....years (fill in the blanks)

### SECTION 2: Personal origin and values

The following are statements about personal origin and values in encouraging the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item#	Statement	Response				
		SA	A	N	D	SD
<b>Values &amp; altruism</b>						
10.	I am happy to be called HA.					
11.	I became HA to help others (eg. patients, community people)					
12.	I enjoy caring for my patients unconditionally.					
13.	Other health professionals have a positive perception of HA.					
<b>Personal origin</b>						
14.	I feel that being born in rural areas can encourage HA to choose to work in rural areas.					

Item#	Statement	Response				
		SA	A	N	D	SD
15.	I feel that being brought in rural areas can encourage HA to choose to work in rural areas.					
16.	I feel that having spent the majority of school education in rural areas can encourage HA to choose to work in rural areas.					

### SECTION 3: Family and community aspects

The following are statements about family and community aspects in encouraging the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item #	Statement	Response				
		SA	A	N	D	SD
<b>Sense of community spirit</b>						
17.	I consider myself a part of the community.					
18.	I have a lot of trust and support from the community.					
19.	I feel patients respect me as a HA.					
20.	My professional work is being valued by the community.					
<b>Family conditions</b>						
21.	I feel that having chronic medical conditions within the family members that require frequent visits to the hospital can <i>discourage</i> a female HA to stay in the PHC facility.					
22.	I feel that living in the same place with one's spouse can encourage a HA to stay in the PHC facility.					
23.	I feel that having a decent school for the children in the community can encourage a female HA to stay in the PHC facility.					
<b>Community facilities</b>						
24.	The community where I live has good shopping facilities.					
25.	The commodities in the community where I live is affordable.					
26.	The community where I live has good recreational/ entertainment facilities.					
27.	The place where I live has a good mobile phone network connection.					

Item #	Statement	Response				
		SA	A	N	D	SD
28.	The community where I live has a good transportation facility.					

#### SECTION 4: Working and living conditions

The following are statements about personal working and living conditions in improving the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item #	Statement	Response				
		SA	A	N	D	SD
<b>Work environment</b>						
29.	I enjoy working in this health facility					
30.	When I come to work, I know what is expected of me.					
31.	At work, I always have a positive interaction with my co-worker(s) and Caretaker					
32.	At work, I have access to safe and clean drinking water.					
33.	At work, I have access to an electricity connection.					
34.	There is adequate office furniture in this health facility.					
<b>Technology &amp; medical supplies</b>						
35.	I have an adequate supply of medicines to do my job well and efficiently.					
36.	I have an adequate supply of medical equipment in the facility.					
37.	My workplace is adequately equipped with computer/laptop facilities.					
38.	My workplace has reliable internet connectivity.					
<b>Accommodation</b>						
39.	I feel the availability of staff quarters can encourage HAS to stay in the PHC facilities.					
40.	I feel that having access to safe and clean water at home can encourage HAS to stay in rural areas.					
41.	I feel that having access to electricity at home can encourage HAS to stay in rural areas.					
<b>Workload &amp; Stress</b>						
42.	The workload is manageable.					
43.	My job is stressful (reversed).					



### SECTION 5: Career-related

The following are statements about career-related in improving the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item #	Statement	Response				
		SA	A	N	D	SD
<b>Access to continuing education opportunities</b>						
44.	I am thinking of upgrading my qualification.					
45.	I have an opportunity to advance my career as Assistant District Health Officer (ADHO)/District Health Officer (DHO)/Program Officer					
46.	I work in this health facility because I will be entitled to 5% preferential weightage for academic interviews for serving in rural areas.					
<b>Professional development courses</b>						
47.	I have been given a fairer opportunity to attend training/ workshops/meeting					
48.	By working in this health facility, I have been able to acquire adequate continue medical education credit to update my professional license.					
49.	When working in rural areas, I get more time to gain clinical experience.					
<b>Supervision</b> *Supervisor refers to your facility in charge or if you are the facility in charge, please refer to it as your DHO/ADHO						
50.	My DHO/ADHO make a visit to PHC for supportive supervision periodically					
51.	I get a fair review of work progress from my supervisor.					
52.	My supervisor is a suitable role model for me.					
<b>Personal recognition system</b>						
53.	I feel that the government system of recognition for excellence in service motivates me to work harder.					
54.	I receive praise for my good work from the supervisor.					
55.	I receive praise for my good work from the community.					
<b>Job satisfaction</b>						

Item #	Statement	Response				
		SA	A	N	D	SD
56.	I would recommend others to consider becoming HA.					
57.	Given the opportunity, I would still become a HA.					
58.	I am satisfied with my job as HA.					

### SECTION 6: Financial aspects

The following are statements about the financial aspects of improving the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*

Item #	Statement	Response				
		SA	A	N	D	SD
<b>Salary</b>						
59.	I think HA is a profession with good pay.					
60.	I am satisfied with the current salary I draw as HA.					
61.	I feel, my salary is always paid on time.					
62.	I feel, my salary is periodically revised.					
<b>Allowance &amp; benefits</b>						
63.	I feel the allowances (difficulty area allowance/altitude allowance if entitled/ travel allowance daily allowance) are paid adequately.					
64.	I feel the housing allowance is fair enough.					
65.	I feel that working in rural areas is financially beneficial.					

### SECTION 7: Bonding or mandatory service

The following are statements about bonding or mandatory service in improving the retention of female Health Assistants in rural health facilities. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item #	Statement	Response				
		SA	A	N	D	SD
Obligatory services						
66.	I feel that the government's policy of compulsory rural posting is helping to retain HAs in rural areas.					
67.	Because of the type of training I received during my HA training course, I feel compelled to serve in rural areas.					
68.	I feel that giving certain privileges to those students from rural areas to undergo HA training could help them return and work for their communities.					
69.	I feel that training obligation with the Royal Civil Service Commission can help HAs to serve in rural areas.					

### SECTION 8: Retention in primary healthcare facilities

Please indicate your opinion on your intention to stay in the PHC facility. Please rate them on a five-point scale on the levels of *Strongly Agree (SA)*, *Agree (A)*, *Neutral (N)*, *Disagree (D)*, or *Strongly Disagree (SD)*.

Item #	Statement	Response				
		SA	A	N	D	SD
70.	I would prefer very much to continue working in this primary healthcare facility.					
71.	I scan newspapers and the internet in search of alternative job opportunities (reversed)					
72.	I am willing to accept another job at the same salary level should it be offered to me (reversed).					
73.	I am thinking of starting my own business (reversed)					



## APPENDIX F SCORES OF CONTENT VALIDITY

SI#	Item	Ex per t 1	Ex per t 2	Ex per t 3	SU M( x)	SU M( x)/n	Indi vid ual ite m rati ng
<b>SECTION 1: Socio-demographic characteristics</b>							
1	District	1	1	1	3	3/3	1.00
2	Health facility	1	1	1	3	3/3	1.00
4	Age	1	1	1	3	3/3	1.00
5	Monthly income	1	1	1	3	3/3	1.00
6	Marital status	1	1	1	3	3/3	1.00
7	Number of years in the service	1	1	1	3	3/3	1.00
8	Number of years in the current place of posting	1	1	1	3	3/3	1.00
9	The number of years you have worked in the PHC facility and Sub-post.	1	1	1	3	3/3	1.00
<b>SECTION 2: Personal origin and values</b>							
<b>Values and altruism</b>							
10	I deeply feel a calling to be a Health Assistant (HA).	1	1	1	3	3/3	1.00
11	I became HA to help others (eg. patients, community people)	1	1	1	3	3/3	1.00
12	I enjoy caring for my patients unconditionally.	1	1	1	3	3/3	1.00
13	Other health professionals have a positive perception of HA.	1	1	0	2	2/3	0.67
<b>Personal Origin</b>							
14	I feel, that being born in rural areas can encourage HA to choose to work in rural areas.	1	1	1	3	3/3	1.00
15	I feel, that being brought in rural areas can encourage HA to choose to work in rural areas.	1	1	1	3	3/3	1.00
16	I feel, that having spent the majority of school education in rural areas can encourage HA to choose to work in rural areas.	1	1	1	3	3/3	1.00
<b>SECTION 3: Family and community aspects</b>							
<b>Sense of community spirit</b>							
17	I consider myself a part of the community.	1	1	1	3	3/3	1.00

18	I have a lot of trust and support from the community.	1	1	1	3	3/3	1.00
19	I feel patients respect me as a HA.	1	1	0	2	2/3	0.67
20	My professional work is valued by the community.	1	1	0	2	2/3	0.67
<b>Family conditions</b>							
21	I feel that having chronic medical conditions within the family members that require frequent visits to the hospital can <i>discourage</i> a female HA to stay in the PHC facility.	1	1	1	3	3/3	1.00
22	I feel that living in the same place with one's spouse can encourage a female HA to stay in the PHC facility.	1	1	1	3	3/3	1.00
23	I feel that having a decent school for the children in the community can encourage a female HA to stay in the PHC facility.	1	1	1	3	3/3	1.00
<b>Community facilities</b>							
24	The community where I live has good shopping facilities.	1	1	1	3	3/3	1.00
25	The commodities in the community where I live are affordable.	1	1	1	3	3/3	1.00
26	The community where I live has good recreational/ entertainment facilities.	1	1	1	3	3/3	1.00
27	The place where I live has a good mobile phone network connection.	1	1	1	3	3/3	1.00
28	The community where I live has a good transportation facility.	1	1	1	3	3/3	1.00
<b>SECTION 4: Working and living conditions</b>							
<b>Work environment</b>							
29	I enjoy working in this health facility	1	1	1	3	3/3	1.00
30	When I come to work, I know what is expected of me.	1	1	1	3	3/3	1.00
31	At work, I always have a positive interaction.	1	1	1	3	3/3	1.00
32	At work, I have access to safe and clean drinking water.	1	1	1	3	3/3	1.00
33	At work, I have access to an electricity connection.	1	1	1	3	3/3	1.00
34	There is adequate office furniture in this health facility.	1	1	0	2	2/3	0.67
<b>Technology &amp; medical supplies</b>							
35	I have an adequate supply of medicines to do my job well and efficiently.	1	1	1	3	3/3	1.00

36	The medical equipment in this health facility is adequately supplied throughout the year.	1	1	1	3	3/3	1.00
37	The health facility where I work has adequate computer/laptop facilities.	1	1	1	3	3/3	1.00
38	My workplace has reliable internet connectivity.	1	1	1	3	3/3	1.00
<b>Accommodation</b>							
39	I feel the availability of staff quarters can encourage HAs to stay in the PHC facilities.	1	1	1	3	3/3	1.00
40	I feel that having access to safe and clean water at home can encourage HAs to stay in rural areas.	1	1	1	3	3/3	1.00
41	I feel that having access to electricity at home can encourage HAs to stay in rural areas.	1	1	1	3	1/3	1.00
<b>Workload &amp; stress</b>							
42	The workload is manageable.	1	1	1	3	3/3	1.00
43	My job is stressful.	1	1	1	3	3/3	1.00
<b>SECTION 5: Career-related</b>							
<b>Access to continuing education opportunities</b>							
44	I am thinking of upgrading my qualification	0	1	1	2	2/3	0.67
45	I have an opportunity to advance my career as Assistant District Health Officer (ADHO)/District Health Officer (DHO)/Program Officer.	1	1	1	3	3/3	1.00
46	I work in this health facility because I will be entitled to a 5% preferential weightage for academic interviews for serving in rural areas.	1	1	1	1	3/3	1.00
<b>Professional development courses</b>							
47	I have been given a fairer opportunity to attend training/ workshops/meeting	1	1	1	3	3/3	1.00
48	By working in this health facility, I have been able to acquire adequate continue medical education credit to update my professional license.	1	1	1	3	3/3	1.00
49	When working in rural areas, I get more time to gain clinical experience.	1	1	1	3	3/3	1.00
<b>Supervision</b>							
50	My DHO/ADHO make a visit to PHC for supportive supervision periodically	1	1	1	3	3/3	1.00

51	I get a fair review of work progress from my supervisor.	1	1	1	3	3/3	1.00
52	My supervisor is a suitable role model for me.	1	1	1	3	3/3	1.00
<b>Personal recognition system</b>							
53	I feel that the government system of recognition for service excellence motivates me to work harder.	1	1	1	3	3/3	1.00
54	I receive praise for my good work from the supervisor.	1	1	1	3	3/3	1.00
55	I receive praise for my good work from the community.	1	1	1	3	3/3	1.00
<b>Job satisfaction</b>							
56	I would recommend others to consider becoming HA.	1	1	0	1	2/3	0.67
57	Given the opportunity, I would still become HA.	1	1	1	3	3/3	1.00
58	I am satisfied with my job as HA.	1	1	1	3	3/3	1.00
<b>SECTION 6: Financial aspects</b>							
<b>Salary</b>							
59	I think HA is a profession with good pay.	1	1	0	2	2/3	0.67
60	I am satisfied with the current salary I draw as HA.	1	1	1	3	3/3	1.00
61	I feel, my salary is always paid on time.	1	1	1	3	3/3	1.00
62	I feel, my salary is periodically revised.	1	1	1	3	3/3	1.00
<b>Allowance &amp; benefits</b>							
63	I feel the allowances ( <i>difficulty area allowance/altitude allowance if entitled/ travel allowance daily allowance</i> ) are paid adequately.	1	1	0	2	2/3	0.67
64	I feel the housing allowance is fair enough.	1	1	1	3	3/3	1.00
65	I feel that working in rural areas is financially beneficial.	1	1	1	3	3/3	1.00
<b>SECTION 7: Bonding or mandatory service</b>							
<b>Obligatory services</b>							
66	I feel that the government's policy of compulsory rural posting is helping to retain HAs in rural areas.	1	1	1	3	3/3	1.00
67	Because of the type of training I received during my HA training	1	1	1	3	3/3	1.00



	course, I feel compelled to serve in rural areas.						
68	I feel that giving certain privileges to those students from rural areas to undergo HA training could help them return and work for their communities.	1	1	1	3	3/3	1.00
69	I feel that training obligation with the Royal Civil Service Commission can help HAs to serve in rural areas.	1	1	1	3	3/3	1.00
<b>SECTION 8: Retention in primary healthcare facilities</b>							
70	I would prefer very much to continue working in this primary healthcare facility.	1	1	1	3	3/3	1.00
71	I scan newspapers and the internet in search of alternative job opportunities.	1	1	1	3	3/3	1.00
72	I am willing to accept another job at the same salary level should it be offered to me.	1	1	1	3	3/3	1.00
73	I am thinking of starting my own business.	1	1	1	3	3/3	1.00

## APPENDIX G LIST OF EXPERTS INVOLVED IN THE ASSESSMENT OF IOC

1. Associate Professor Dr. Nithra Kiteerawutiwong (Ph.D.)  
Associate Dean for Administration, Planning and Research Development  
Faculty of Public Health  
Naresuan University  
Phitsanulok, Thailand
2. Assistant Professor Dr. Nidup Dorji (Ph.D.)  
Program Leader for Bachelors in Public Health and Health Assistant  
Department of Public Health  
Faculty of Nursing and Public Health  
Khesar Gyalpo University of Medical Sciences of Bhutan  
Thimphu, Bhutan
3. Mrs. Tashi Dema  
Senior Research Officer  
Health Management and Information System  
Policy and Planning Division  
Ministry of Health  
Thimphu, Bhutan

**APPENDIX H RELIABILITY TEST RESULTS**

<b>Section 2 Personal origin and values</b>	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's Alpha if Item Deleted</b>
I deeply feel a calling to be a Health Assistant (HA).	0.264	0.783
I became HA to help others (eg. patients, community people)	0.368	0.765
I enjoy caring for my patients unconditionally.	0.537	0.746
Other health professionals have a positive perception of HA.	0.368	0.768
I feel that being born in rural areas can encourage HA to choose to work in rural areas.	0.662	0.701
I feel that being brought up in rural areas can encourage HA to choose to work in rural areas.	0.703	0.689
I feel that having spent the majority of school education in rural areas can encourage HA to choose to work in rural areas.	0.621	0.713
<b>Cronbach's Alpha for the variable</b>		<b>0.770</b>
<b>Section 3 Family and community aspects</b>		
I consider myself a part of the community.	0.254	0.703
I have a lot of trust and support from the community.	0.426	0.686
I feel patients respect me as a HA.	0.273	0.701
My professional work is being valued by the community.	0.302	0.698
I feel that having chronic medical conditions within the family members that require frequent visits to the hospital can discourage a HA to stay in the PHC facility.	0.131	0.724
I feel that living in the same place with one's spouse can encourage a HA to stay in the PHC facility.	0.512	0.670
I feel that having a decent school for the children in the community can encourage a female HA to stay in the PHC facility.	0.499	0.667
The community where I live has good shopping facilities.	0.618	0.641
The commodities in the community where I live are affordable.	0.464	0.674
The community where I live has good recreational/entertainment facilities.	0.219	0.706

The place where I live has a good mobile phone network connection.	0.386	0.686
The community where I live has a good transportation facility.	0.173	0.729
<b>Cronbach's Alpha for the variable</b>		<b>0.710</b>
<b>Section 4 Working and living conditions</b>		
I enjoy working in this health facility	0.690	0.762
When I come to work, I know what is expected of me.	0.643	0.770
I always have a good working relationship with my coworker(s) and the Caretaker.	0.430	0.782
At work, I have access to safe and clean drinking water.	0.278	0.791
At work, I have a reliable electricity supply.	0.173	0.798
There is adequate office furniture in this health facility.	0.545	0.770
There is an adequate supply of medicines to do my job well and efficiently.	0.512	0.776
The medical equipment in this health facility is adequately supplied throughout the year.	0.456	0.779
The health facility where I work has adequate computer/laptop facilities.	0.400	0.783
My workplace has reliable internet connectivity.	0.269	0.795
I feel the availability of staff quarters can encourage HAs to stay in the PHC facilities.	0.485	0.775
I feel that having access to safe and clean water at home can encourage HAs to stay in rural areas.	0.47	0.777
I feel that having access to electricity at home can encourage HAs to stay in rural areas.	0.524	0.772
The workload is manageable.	0.466	0.777
My job is stressful.	0.127	0.821
<b>Cronbach's Alpha for the variable</b>		<b>0.794</b>

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<b>Section 5 Career-related</b>	<b>Corrected Item-Total Correlation</b>	<b>Cronbach's Alpha if Item Deleted</b>
I am thinking of upgrading my qualification	0.272	0.805
I have an opportunity to advance my career as Assistant District Health Officer (ADHO)/District Health Officer (DHO)/Program Officer	0.383	0.798
I work in this health facility because I will be entitled to a 5% preferential weightage age for academic interviews for serving in rural areas.	0.346	0.804
I am given a fairer opportunity to attend training/workshops/meetings.	0.430	0.795
By working in this health facility, I can acquire adequate continue medical education credit to update my professional license.	0.437	0.795
When working in rural areas, I get more time to gain clinical experience.	0.539	0.786
My DHO/ADHO visits PHC for supportive supervision periodically.	0.198	0.811
I get a fair review of work progress from my supervisor.	0.080	0.818
My supervisor is a suitable role model for me.	0.534	0.788
I feel that the government system of recognition for service excellence motivates me to work harder.	0.462	0.792
I receive praise for my good work from the supervisor.	0.550	0.786
I receive praise for my good work from the community.	0.605	0.788
I would recommend others to consider becoming HA.	0.465	0.793
Given the opportunity, I would still become a HA.	0.564	0.784
I am satisfied with my job as HA.	0.547	0.786
<b>Cronbach's Alpha for the variable</b>		<b>0.806</b>
<b>Section 6 Financial aspects</b>		
I think HA is a profession with good pay.	0.529	0.711
I am satisfied with the current salary I draw as HA.	0.476	0.724
I feel, my salary is always paid on time.	0.369	0.746
I feel, my salary is periodically revised.	0.371	0.745
I feel the allowances (difficulty area allowance/altitude allowance if entitled/ travel allowance daily allowance) are paid adequately.	0.780	0.641

I feel the housing allowance is fair enough.	0.452	0.729
I feel that working in rural areas is financially beneficial.	0.397	0.754
<b>Cronbach's Alpha for the variable</b>		<b>0.754</b>
<b>Section 7 Bonding or mandatory service</b>		
I feel that the government's policy of compulsory rural posting is helping to retain HAs in rural areas.	0.600	0.701
Because of the type of training I received during my HA training course, I feel compelled to serve in rural areas.	0.364	0.811
I feel that giving certain privileges to those students from rural areas to undergo HA training could help them return and work for their communities.	0.728	0.623
I feel that training obligation with the Royal Civil Service Commission can help HAs to serve in rural areas.	0.619	0.693
<b>Cronbach's Alpha for the variable</b>		<b>0.771</b>
<b>Section 9 Retention item</b>		
I would prefer very much to continue working in this primary health care facility.	0.367	0.868
I scan newspapers and the internet in search of alternative job opportunities.	0.704	0.730
I am willing to accept another job at the same salary level should it be offered to me.	0.787	0.678
I am thinking of starting my own business.	0.690	0.732
<b>Cronbach's Alpha for the variable</b>		<b>0.811</b>

**APPENDIX I VARIABLES AND THEIR MEASUREMENT LEVELS**

Variable	Variable measurement level
Age	Ratio scale
Monthly income	Ratio scale
Marital status	Nominal scale: Created as a dummy variable -Single, widowed, divorced, or separated (reference) -Married (Married=1, others 0)
Work experience	Ratio scale
Duration at the current workplace	Ratio scale
Rural work experience	Ratio scale
Personal origin and values	Interval scale
Family and community aspects	Interval scale
Working and living conditions	Interval scale
Career-related aspects	Interval scale
Financial aspects	Interval scale
Bonding or mandatory service	Interval scale
Retention	Interval scale

**APPENDIX J TOLERANCE AND VIF TEST FOR MULTI-COLLINEARITY****Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	6.626	1.267		5.231	.000		
Financial aspects	.303	.050	.426	6.012	.000	1.000	1.000
2 (Constant)	3.007	1.892		1.590	.114		
Financial aspects	.215	.060	.303	3.571	.000	.675	1.482
Working & living conditions	.100	.040	.216	2.542	.012	.675	1.482

a. Dependent Variable: Retention

**APPENDIX K THE CORRELATION MATRIX OF INDEPENDENT AND DEPENDENT VARIABLES**

	DV	IV1	IV2	IV3	IV4	IV5	IV6	IV7	IV8	IV9	IV10	IV11	IV12
DV. Retention	1												
IV1. Age	.196*	1											
IV2. Monthly income	.234**	.693**	1										
IV3. Marital status	-.009	.378**	.159*	1									
IV4. Work experience in the organization	.221**	.647**	.544**	.355**	1								
IV5. Duration at the current place of posting	.138	.489**	.176*	.268**	.473**	1							
IV6. Rural work experience	.113	.588**	.601**	.328**	.579**	.539**	1						
IV7. Personal origin & values	.326**	.098	.217**	-.007	.126	-.042	.022	1					
IV8. Family & community aspects	.308**	.097	.096	.066	.119	.101	.064	.520**	1				
IV9. Working & living conditions	.388**	.099	.174*	.078	.145	.033	.063	.585**	.647**	1			
IV10. Career-related attributes	.364**	.063	.161*	.000	.067	-.057	.047	.541**	.526**	.638**	1		
IV11. Financial aspects	.426**	.208**	.299**	.016	.232**	.015	.142	.528**	.472**	.570**	.664**	1	
IV12. Bonding or mandatory service	.326**	.006	.087	-.057	.014	-.129	-.018	.468**	.459**	.493**	.561**	.577**	1

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## APPENDIX L DURBIN-WATSON FOR AUTO-CORRELATION OF RESIDUALS

Model Summary<sup>c</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.426 <sup>a</sup>	.181	.176	3.331	
2	.461 <sup>b</sup>	.213	.203	3.277	1.987

a. Predictors: (Constant), Financial aspects

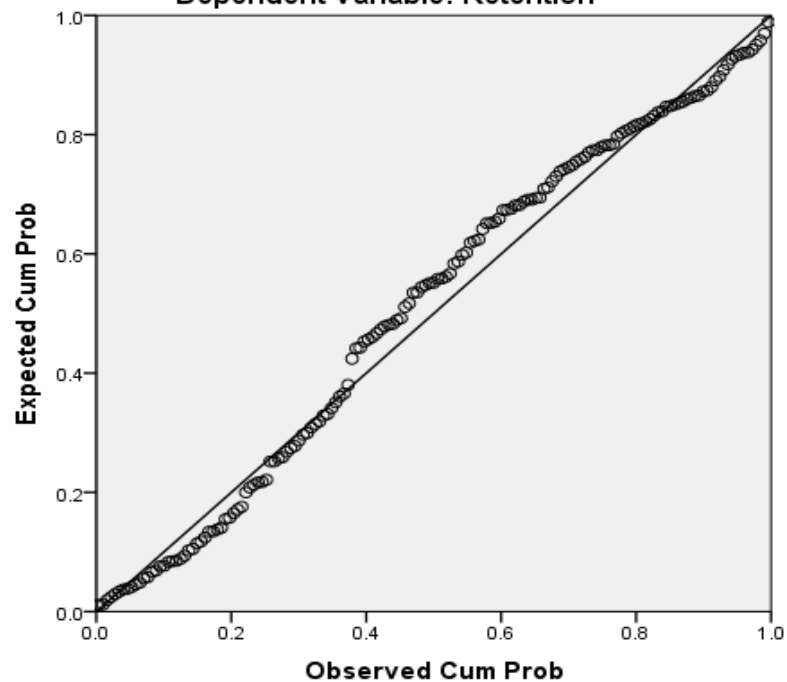
b. Predictors: (Constant), Financial aspects, Working & living conditions

c. Dependent Variable: Retention

## APPENDIX M P-P PLOT OF REGRESSION STANDARDIZED RESIDUAL

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Retention





**APPENDIX N SCATTERED PLOT FOR HOMOSCEDASTICITY OF RESIDUALS**

