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Optimizing the Community Health Worker (CHW) Program in Belize and Understanding its
Unique Intermediary Position within the Health System: Perspective from the World Health
Organization (WHO) Health Systems Approach

by

Andrei R. Chell

A Dissertation

Submitted to the University at Albany, State University of New York

In Partial Fulfillment of
the Requirements for the Degree of
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ABSTRACT

Human resources for health (HRH) are the backbone of a well-functioning and resilient health system. Issues related to HRH recruitment, retention, planning, leadership and governance have been amplified by the coronavirus disease 2019 (COVID-19) pandemic and have posed additional and unprecedented challenges in many countries. Community health workers (CHWs) in particular, are uniquely positioned to be frontline health care workers (HCWs) that are considered a vital link between communities and the formal health system. Globally, the benefits of CHW programs have been well documented, and there is substantial evidence of the efficacy and effectiveness of these programs. However, countries are still working to formalize, sustain and embed CHWs into the wider health workforce and system.

In Belize, much of the country's health gains can be attributed to CHWs who continue to support and link formal health services to the broader community. As a significant element of the primary health care (PHC) initiative, the national community health worker program, established in 1982, aims to improve population health and access to essential health services. With over 40 years after the launch of the CHW program, and a decade since the last revision, there has been no published systematic assessment of the CHW program and its intermediary position within the Belizean health system. The overall objective of this study was to assess the national CHW program in Belize and to provide specific recommendations on how to optimize the program, within the context of the World Health Organization (WHO) health systems approach.

The building blocks of the WHO Health Systems Framework and the programmatic components of the Community Health Worker Assessment and Improvement Matrix (CHW AIM) are two tools integrated into the conceptual framework that guided this research study. An exploratory qualitative case study using a health policy and systems research (HPSR) approach

was conducted through an extensive desk review and semi-structured key informant interviews (KIIs). The content analysis method was used to analyze all data. The study was conducted in 2023 and 2024 after the approval from the dissertation committee and the Institutional Review Boards (IRB) of both the Ministry of Health and Wellness (MOHW) in Belize and the University at Albany, State University of New York.

The findings of this study indicate that Belize's health system has significantly influenced the CHW program through strategic structural changes, policy directives, service delivery models, and resource allocation, as part of the broader health sector reform aimed at improving primary health care. This research also elucidates the influence of the WHO health system building blocks on the core components of the CHW program. Evidence suggests that these building blocks have positively influenced the program by providing a necessary framework and strategic direction for the MOHW. They have facilitated the integration of the program into various health policies and plans, while also fostering community ownership and partnerships. Despite these positive impacts, setbacks remain in several of the building blocks, including budget allocation, the availability of medications and supplies, the referral system and coordination with local health facilities, health workforce planning, and the utilization of community-level data. Additionally, findings emphasize the need for developing and implementing dedicated community health policies and plans to better support the program. These findings highlight opportunities for enhancements and underscore the complex and multifaceted influence of the health system on the CHW program in Belize. Consequently, they inform targeted recommendations to optimize the functionality and performance of the program, with the aim of creating a more effective, integrated, and resilient health system.

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CHAPTER I: INTRODUCTION

1.1 Background

Human resources for health (HRH) are the backbone of a well-functioning and resilient health system. In the past decade, health systems around the globe have been grappling with issues related to access to care and service delivery, including concerns pertaining to health workforce development. Issues related to HRH recruitment, retention, planning, leadership and governance have been amplified by the coronavirus disease 2019 (COVID-19) pandemic and have posed additional and unprecedented challenges in many countries as they respond to the health needs of their population (Tomblin Murphy et al., 2023). Community health workers (CHWs) in particular, are uniquely positioned to be frontline health care workers (HCWs) that are considered a vital link between communities and the formal health system (Scott et al., 2018; World Health Organization [WHO], 2020; Zulu, 2015).

The International Labour Organization (ILO) defines CHWs as lay members of the community “who provide health education, referral and follow-up, case management, basic preventive health care and home visiting services to specific communities. They provide support and assistance to individuals and families in navigating the health and social services system” (International Labour Organization, 2012, p. 192). This cadre of human resources receives lower levels of formal education and training than professional HCWs and creates a bridge between health providers, social services and populations that may have difficulty in accessing health services (WHO, 2018b). They operate in a challenging role, navigating the complex health system and intricate communities they serve. Over the years, CHWs have built a reputation of trusted liaisons who share deep understanding of language, culture, socioeconomic status, and

life experiences with members of their community (Agarwal et al., 2019; National Institutes of Health, 2014; Simen-Kapeu et al., 2021).

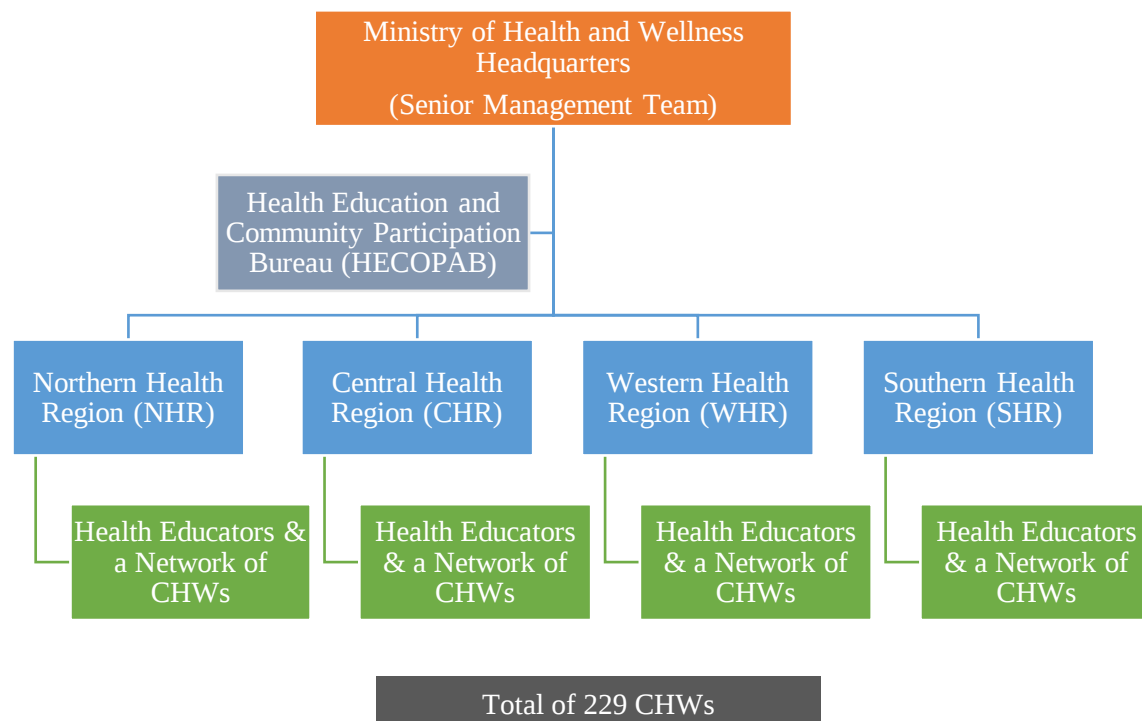
In low- and middle-income countries, CHW programs have been used for decades to improve access to health services in both rural and urban settings (Naimoli et al., 2014; Zulu, 2015). These programs have been instrumental in supporting comprehensive primary health care (PHC), strengthening health systems, and improving health outcomes. Globally, the benefits of CHW programs have been well documented and there is substantial evidence of the efficacy and effectiveness of these programs (Scott et al., 2018; Wahl et al., 2020). However, countries are still working to formalize, sustain and embed CHWs into the wider health workforce and system. In addition, programs face a range of implementation challenges, such as limited policy directives, restricted CHW career pathways, and inadequate or unsustainable funding, among other institutional limitations (Jhpiego Corporation, 2014; Robertson, 2015; Steppe, 2020).

In Belize, much of the country's health gains can be attributed to CHWs who continue to support and link formal health services to the wider community (Castillo, 2013). Belize's health system is based on a primary health care model that relies heavily on public funding, with approximately 90% of the population accessing care through the public health system (Ministry of Health and Wellness [MOHW], 2016). With the leading causes of death being lifestyle-related chronic diseases, the model of care focuses predominantly on health education and health promotion and prevention, rather than the curative approach to medicine (WHO, 2018c). In this context, the PHC model plays a pivotal role for the country's National Community Health Worker Program.

The National Community Health Worker Program in Belize was established in 1982 as a significant element of the Primary Health Care Initiative (Castillo, 2013). The program received

technical and financial support from the United Nations Children’s Fund (UNICEF) to improve population health and access to basic health services in rural areas (Castillo, 2013). The Health Education and Community Participation Bureau (HECOPAB), the health promotion arm of the Ministry of Health and Wellness (MOHW), provides general oversight of the program and is tasked with the planning, coordinating, and implementing of health promotion programs countrywide. District health educators (DHE) in each of the four health regions provide training, monitoring, and supervision to approximately 200 CHWs in Belize (MOHW, 2023) (Figure 1). Despite progress made in health workforce development, lessons on how to successfully scale the CHW program in Belize as part of the national health system are not widely available (Castillo, 2013; MOHW, 2019). Furthermore, best practices are sometimes not adequately replicated and policy options for which there is evidence of success are not uniformly implemented.

Figure 1. Organizational Structure of the CHW Program in Belize



Notes: The Senior Management Team of the Ministry of Health and Wellness includes the Minister of Health and Wellness, Chief Executive Officer (CEO), Director of Public Health and Wellness, Director of Hospital Services and Allied Health and other Directors and Deputy Directors. The Health Education and Community Participation Bureau is led by a Technical Advisor. Each health region has one or two health educators that oversee the network of CHWs in that respective district/region. As of April 2023, there were 229 CHWs in Belize.

1.2 Statement of Problem

Imbalances and challenges in health workforce development have been a major concern for Belize. CHWs, being at the core of PHC and an integral part of Belize's health workforce, continue to face many challenges in human resource management, capacity building, support, and linkage to the wider health system, making it difficult for the national CHW program to work in harmony with the Belizean health system (Castillo, 2013; MOHW, 2019). Additionally, research suggests that community support towards CHWs and their role in the wider health system is uneven across the four health regions in Belize (Castillo, 2013; Inter-American Development Bank [IADB], 2014; MOHW, 2019). Moreover, in many settings, the role and responsibilities of CHWs may not be considered in relation to other health care workers, hindering the overall functionality and performance of the CHW program (Castillo, 2013; MOHW, 2019).

With over 40 years after the launch of the CHW program, and a decade since the last revision, there has been no published systematic assessment of the CHW program and its intermediary position within the Belizean health system. Therefore, the need for an in-depth assessment has become crucial to determine the current position of the CHW program and the role the health system plays in its success. Such analysis would also elucidate strengths and weaknesses, identify gaps and bottlenecks in the health system, and highlight challenges in health policy and system support to ideally improve program performance.

Given the ongoing challenges in health workforce development and the pivotal role CHWs have in the delivery of PHC, a robust and well-implemented CHW program should be considered a viable and imperative approach for health systems strengthening and the attainment of better health outcomes (Wahl et al., 2020). As Belize aims to achieve health for all, the need for evidence-based guidance on optimal health policy and system support to improve the functionality and performance of Belize's CHW program has never been more urgent.

1.3 Study Goal and Aims

In order to address the critical issues highlighted above, the goal of this study was to assess the current status of the National Community Health Worker Program in Belize and to provide specific recommendations on how to optimize the program, within the overall context of the WHO health systems approach. The specific aims of this study are:

Aim 1: To examine the influence of Belize's health system on the functionality and performance of the CHW program in the last 10 years (2013-2023).

Aim 2: To describe the influence of the WHO health system building blocks¹ on the different programmatic components of the CHW program in Belize.

Aim 3: To propose specific recommendations for optimizing the CHW program in Belize based on the findings from Aims 1 and 2.

1.4 Research Questions

With growing recognition of the role of a well-functioning and robust CHW program in health system strengthening, this study was guided by the following research questions to address the study aims:

¹ WHO Health System Building Blocks: leadership/governance, health workforce, health information systems, access to essential medicines and technologies, financing, service delivery, and community ownership and partnership.

1. How has the health system influenced the functionality and performance of the National CHW Program in Belize in the last 10 years (2013-2023)?
2. To what extent have the WHO health system building blocks influenced the different programmatic components of the CHW program in Belize?
3. Given the findings from research questions 1 and 2, what are the specific recommendations for optimizing the CHW program in Belize?

1.5 Significance of Study

Primary health care has been highlighted as a foundation for achieving universal health and the UN SDGs by 2030 (Agarwal et al., 2019). Since the declaration of Alma Ata in 1978, CHWs have been recognized as a fundamental component of primary health care. Forty-five years since the Alma Ata Declaration,² there is now compelling evidence highlighting the significant contribution of CHWs in delivering essential life-saving primary health care services (Agarwal et al., 2019; Ndambo et al., 2022; Simen-Kapeu et al., 2021; Wakida et al., 2019). As a signatory country to the declaration, Belize has the global commitment to ensure that its citizens receive an optimal quality of primary health care services. For decades, CHWs have played a critical role in public health efforts in Belize and are viewed as an integral part of the health system (IADB, 2014).

Globally, countries have recently reaffirmed their commitment and need for collective action to address HRH challenges through the Global Strategy for Human Resources for Health-Workforce 2030 (WHO, 2016). In 2019, this momentum was further amplified at the Seventy-second World Health Assembly (WHA) where member states supported the resolution to endorse the WHO Guideline on Health Policy and System Support to Optimize Community

² Alma Ata Declaration: major milestone in public health that identified PHC as the key to achieve health for all.

Health Worker Programs (WHO, 2018b, 2019). In the Region of the Americas, countries have also reasserted their commitment through the Strategy on Human Resources for Universal Access to Health and Universal Health Coverage, the Sustainable Health Agenda for the Americas 2018-2030, and at the sub-regional level, the Caribbean Roadmap on Human Resources for Universal Health 2018-2022 (Pan American Health Organization [PAHO], 2017, 2018, 2022; Tomblin Murphy et al., 2023). At the national level, this agenda has been revitalized through the Belize Human Resources for Universal Health Strategic Plan 2019-2024 which also aims to create a more efficient and robust health workforce to support national development (MOHW, 2014, 2019). These guiding documents heavily emphasize the need for evidence-based guidance on optimal health policy and system support to strengthen Belize's CHW program and by extension, the wider health system.

This dissertation research contributes to the field of public health by providing insight on health system and program-level factors influencing the CHW program in Belize. Findings from this project will contribute to understanding how the CHW program in Belize is functioning and performing within the overall health system. Additionally, results can also contribute to the PHC agenda and the movement towards universal health in Belize and the region. The researcher will present a broad overview of facilitators and barriers influencing the CHW program in Belize; and thus, findings obtained from this study may help with the implementation, monitoring, and evaluation of the guiding documents highlighted above and may inform future health policy and system support to optimize the CHW program in Belize.

1.6 Overview of Next Chapters

The subsequent chapters of this dissertation give readers a better understanding of the CHW program in Belize and its unique intermediary position within the national health system.

Chapter 2 describes findings from relevant literature regarding the historical development of CHW programs, the human resources for health situation in Belize and the region, health systems strengthening and primary health care, and the relationship between the health system and its workforce, particularly looking at CHWs. Chapter 3 discusses the conceptual frameworks and theoretical constructs that guided and supported the development of this study. Chapter 4 delves into the methodology and highlights key Doctor of Public Health (DrPH) Foundational and Concentration Competencies addressed through this dissertation. Chapter 5 presents a comprehensive analysis and synthesis of the data collected, providing an in-depth exploration of the research questions and objectives. The final chapter begins with a discussion of all three research questions, including formal recommendations to optimize the CHW program in Belize. This dissertation concludes with a review of the study's strengths and limitations, implications for research, policy, and practice, and final conclusions.

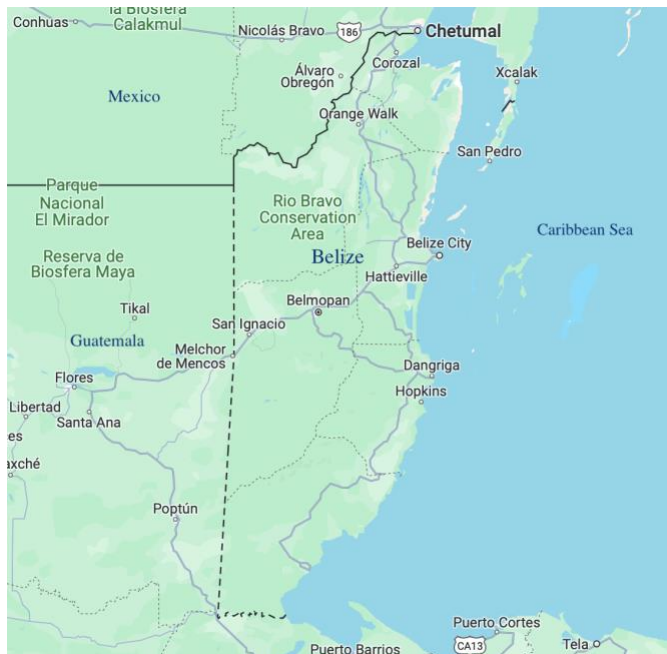
CHAPTER II: REVIEW OF THE LITERATURE

2.1 Belize Country Profile

Geography

Belize is a small, upper-middle income country located on the Caribbean coast of northern Central America (Figure 2). The country has a territory of 8,867 square miles (22,970 sq km) and borders Mexico, Guatemala, and the Caribbean Sea. The inner coastal waters are protected by the longest barrier reef in the Western Hemisphere and consist of approximately 450 small islands and atolls that extend almost the entire length of the country (The Commonwealth, n.d.). Belize is home to a highly dense ecosystem, with over 60% of the country covered in lush tropical rainforest (Food and Agriculture Organization [FAO], n.d.). The country's unique British colonial history and geographical location makes Belize the only English-speaking country in Central America.

Figure 2. Map of Belize

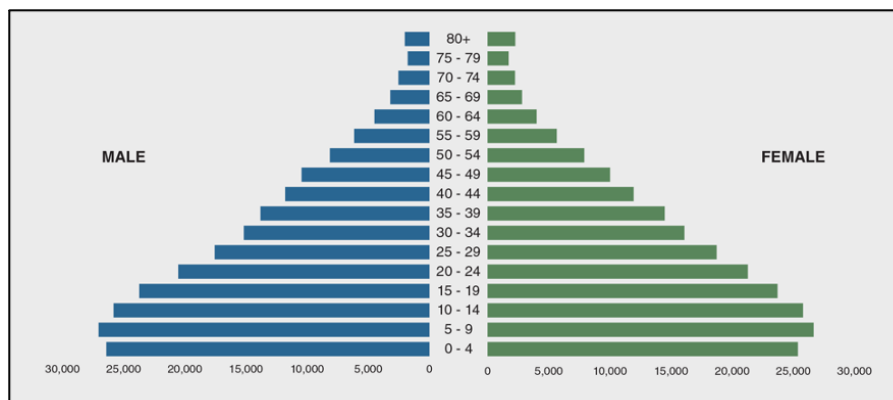


Note. Google Maps. (2024). [Adapted map by Andrei Chell showing the location of Belize]. Retrieved June 27, 2024, from <https://www.google.com/maps/@17.1864907,-89.6396149,8z?entry=ttu>

Demographic Trends

In 2021, the total mid-year population estimate was 430,191 (49.9% females), with over half (55%) of the country's population living in rural areas (Statistical Institute of Belize [SIB], 2022). Belize has a predominantly young population, but like most countries in the region, it is undergoing a demographic transition that is causing a rapid growth in its aging population (MOHW, 2022). According to the Statistical Institute of Belize (SIB), the percentage of the total population under the age of 15 years decreased from 31.8% in 2015 to 28.2% in 2021, while the population of people above the age of 65 years increased from 4.3% to 5.1% (SIB, 2022). It is also important to note that the total fertility rate has been steadily declining, with reports showing a decrease from 2.6 births per woman in 2015 to 2.24 in 2021 (SIB, 2022). Over the past decade, the life expectancy in Belize has increased steadily to its highest age of 73.9 years in 2019 (71.1 for males and 77.2 for females). However, with the emergence of the COVID-19 pandemic, life expectancy decreased to 70.5 years in 2021 (67.1 for males and 74.3 for females) (PAHO, 2021). For the same year, the SIB reported a crude birth rate of 15.3 per 1,000 population and a crude death rate of 5.79 per 1,000 population (males 6.88, females 4.69) (SIB, 2022). Figure 3 illustrates the population age and sex structure in Belize for 2021.

Figure 3. Population Pyramid of Belize, 2021



Note. From *Census Resources* [Population of Belize], by the Statistical Institute of Belize, 2022 (<https://sib.org.bz/census-resources/>). In the public domain.

Along with its eco-diversity, Belize is known for being a melting pot of cultures. The largest ethnic group is comprised mainly of Mestizo/Hispanic (50.6%), followed by the Afro-descendant Creoles (23.9%), the indigenous Maya (11.8%), and the Garifuna (4.5%) (SIB, 2022). Other ethnic groups such as German Mennonites, Chinese, Taiwanese, Arabs, and Africans make up a small percentage of the population. Christianity is the dominant religion in Belize with Roman Catholic constituting about 40.1%. Data from the last census also notes that 14.2% of the total population is foreign born, with the vast majority being from neighboring Guatemala (MOHW, 2014).

Political, Macroeconomic and Social Context

Political Determinants

Belize is a sovereign state which obtained its independence from Britain in 1981. The country continues to have a government structure based on the principles of the British Westminster parliamentary democratic system (The Commonwealth, n.d.). The head of state is His Majesty King Charles III, represented by a Governor-General. The Prime Minister is the head of government and holds executive power along with the Cabinet. The National Assembly, consisting of 31 elected members in the House of Representatives and 13 members in the Senate who are appointed by the Governor-General, form a bicameral legislature. The Cabinet consists of appointed Ministers who oversee relevant ministries that define the national mechanisms for development and social policies (PAHO, 2009).

Belize is geopolitically and historically unique as it forms part of two subregional bodies: The Central American Integration System (SICA), and the Caribbean Community (CARICOM). In November 2020, general elections were held, resulting in a change of administration and

political leadership. There are six administrative districts in the country: Corozal, Orange Walk, Belize, Cayo, Stann Creek and Toledo, with the capital city being Belmopan.

Economic Determinants

Over the past two decades, Belize has undergone significant economic transformation due to its growing tourism industry and the discovery of commercial oil in 2005. The tourism industry is the single largest sub-sector, with a total contribution of USD \$766.8M in 2018, which is approximately 41.3% of the Gross Domestic Product (GDP). This percentage is forecasted to rise to almost 55% of GDP by 2028 (SIB, 2022). Tourism is also the largest source of foreign currency and employs approximately 30% of the population (FAO, n.d.). Belize's exports have traditionally been agricultural goods, ranging from sugar, citrus, bananas, papayas, and more recently, marine products. In recent years, petroleum extraction has quickly expanded, generating significant revenue for the nation. The country has seen more employment opportunities and has benefited from a stronger negotiating position in the region due to the CARICOM Single Market and Economy (CSME)³ (PAHO, 2021). During the pre-pandemic period in 2019, Belize reported a stable GDP per capita of USD \$6,210.57 (The World Bank, 2022). However, the pandemic heavily impacted the Belizean economy, especially in sectors such as tourism, agriculture, forestry, and fishing (SIB, 2022).

Social Determinants

The population of Belize is very diverse and multicultural due to its proximity to neighboring countries in Central America and its historical link to the English-speaking Caribbean. Even though English is the official language of Belize, a large majority of the

³ CARICOM Single Market and Economy (CSME): the implementation office in the Caribbean which assists Member States in fulfilling the requirements of the Revised Treaty of Chaguaramas. The Treaty encompassed clauses aimed at establishing a Common Market within the Caribbean region.

populace is bilingual, with approximately 60% who also speak Spanish and close to 45% of the population who speak Creole (SIB, 2022). In 2021, Belize reported an unemployment rate of 8%, which was three times higher among youth and women. Approximately 40% of the population live below the poverty line (SIB, 2022).

In recent years, the country has made significant strides in social development. Current data show that 99.5% of the population have access to potable drinking water and 91% have access to proper sanitation facilities. In addition, more than half of the country is covered by a modern, environmentally sound solid waste disposal system (SIB, 2022). Education is compulsory for children between the ages of 6 and 14, with government and government-aided primary and secondary schools being tuition free for everyone (PAHO, 2021). According to available data, the net enrollment at the primary education level increased significantly in recent years reaching a high of 96% (SIB & UNICEF, 2017). The literacy rate among the adult population is estimated at 84.1% for women and 75.2% for men (SIB & UNICEF, 2017).

While crime is a serious problem in Belize, it is mostly concentrated in Belize City and tends to be drug and gang related. When compared to neighboring countries like Mexico and Honduras, Belize has been able to better control violent crimes and mitigate the destruction it causes. In 2022, the country reported a homicide rate of 25 per 100,000 population, ranking the sixth highest in the region (Belize Crime Observatory, 2022). Additionally, human trafficking remains an ongoing concern since Belize is a source, transit, and destination country for men, women, and children subjected to sex trafficking and forced labor (PAHO, 2017). As migration continues to transform Belize's population, the government has been taking vital steps in regulating foreigners and improving the management of immigration. Current data shows that immigrants in Belize account for approximately 15% of the total population (SIB & UNICEF,

2017). With the country also reporting a similar emigration rate, Belize faces costs related to reduced capabilities, inadequate resources, limited workforce, and social disintegration (PAHO, 2009).

Climate and Environmental Determinants

Given its geographic location, Belize is extremely vulnerable to the effects of climate change and natural disasters such as hurricanes, tropical systems, flooding, rising sea levels, and drought. In 2019, Belize reported the worst dry season in four decades, costing the government USD \$25 million in agricultural losses (CARICOM, 2020). In addition, 2020 broke the record for being the most active Atlantic hurricane season which forced Belize to withstand the effects of four tropical systems in that year alone (PAHO, 2021a). Due to the severity of the storms, Belize had to undertake massive repairs to the most damaged areas of Belize and Cayo districts, and many islands. In addressing the multi-faceted challenges of climate change, the government anticipates using a USD \$2.5M loan from the Caribbean Development Bank (CDB) to help support the financing of emergency restoration of critical infrastructure throughout the country (Amandala Belize, 2021).

2.2 The Health System in Belize

Epidemiological Profile

Similar to other countries in the region, Belize is undergoing an epidemiological transition in which non-communicable diseases (NCDs) have become increasingly prominent in the disease profile of the country (PAHO, 2017a). During the pre-pandemic era, cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases were responsible for approximately 40% of deaths annually. In 2021, the country reported 2,493 deaths with the five leading causes being COVID-19 (360; 14.4), diseases of the heart (357, 14.3%), malignant neoplasms (272;

10.9%), diabetes mellitus (164; 6.6%) and homicide (148; 5.9%) (Table 1) (SIB, 2022). While the leading causes of death among females were all NCD and COVID-19 related, males on the other hand were significantly affected by unintentional injuries and homicide.

Table 1. Leading Causes of Death in Belize, 2021

	Total	%
Total	2,493	100.0
COVID-19	360	14.4
Diseases of the heart	357	14.3
Malignant neoplasms	272	10.9
Diabetes mellitus	164	6.6
Assault (homicide)	148	5.9
Unintentional injuries	136	5.5
Cerebrovascular diseases	117	4.7
Influenza and pneumonia	110	4.4
Human immunodeficiency virus (HIV) disease	71	2.8
Certain conditions originating in the perinatal period	60	2.4
Signs, symptoms, and ill-defined causes	36	1.4
All other diseases (residual)	265	10.6
Total Other Causes	397	15.9

Note. Data are from the “Abstract of Statistics 2021,” by the Statistical Institute of Belize, 2022, p. 30 (http://sib.org.bz/wp-content/uploads/2021_Abstract_of_Statistics.pdf). In the public domain.

In the context of maternal and child health, the maternal mortality ratio (MMR) per 100,000 live births peaked at 134.2 in 2018 and fell to 57.0 in 2020 (SIB, 2022). The neonatal mortality rate per 1,000 live births showed a steady decrease from 11.6 in 2015 to 8.8 in 2021 while the infant mortality rate was 12.24 per 1,000 live births in that same year (SIB, 2022). The under-five mortality rate also indicates a decreasing trend from 23 per 1,000 live births in 2009 to 15.38 in 2020. The leading causes of deaths in infants are conditions originating in the perinatal period, congenital malformations, and chromosomal abnormalities while influenza and

pneumonia, unintentional injuries and malignant neoplasms are the leading causes of death among children under five (SIB, 2022).

Communicable Diseases

Like countries globally, the COVID-19 pandemic created unprecedented challenges to the Belizean health system and services. On March 23, 2020, Belize recorded its first COVID-19 case and introduced early measures such as a country lockdown, closure of schools, borders, airport, and declaration of a state of emergency. In addition, a multi-sectoral National COVID-19 Task Force with multiple sub-committees was established by the government to ensure coordination in preparedness and response to the pandemic (PAHO, 2021a). As of December 2022, and after five waves of the virus, Belize had recorded close to 70,000 confirmed cases of COVID-19 with 688 deaths. Most of the deaths occurred among the older population who had underlying comorbidities. By November 2022, close to 65% of the Belizean population had received at least 1 dose of a COVID-19 vaccine (PAHO, 2022).

The delivery of health services was significantly affected during the pandemic and was reflected in the steady decrease in routine vaccination coverages in 2020. According to country indicators, vaccination coverage for Bacillus Calmette-Guerin (BCG)⁴ declined from 95% in 2019 to 76% in 2020, DTP3⁵ from 98% to 79%, MMR1⁶ from 96% to 82% and Polio 3 from 98% to 79% in 2020 (PAHO, 2021b).

Data from the Belize Health Information System indicates that HIV prevalence among adults is 1.1 with no difference between males and females (UNAIDS, 2021). The country reported 130 newly diagnosed HIV cases in 2020, close to 50% less than in 2018 and 2019 (SIB,

⁴ BCG: a vaccine primarily used against tuberculosis.

⁵ DTP3: diphtheria, tetanus toxoid, and pertussis vaccine.

⁶ MMR1: measles, mumps, and rubella vaccine.

2022). In 2022, Belize applied for validation of elimination of mother-to-child transmission of HIV and congenital syphilis. Similarly, the tuberculosis (TB) mortality rate decreased from 5.5 per 100,000 population in 2013 to 0.7 in 2021 (PAHO, 2021b).

Noncommunicable Diseases

Noncommunicable diseases (NCDs) continue to affect the quality of life in Belize and place a heavy economic and social burden on families, communities, and the health system. In 2017, NCDs accounted for 67% of all deaths, with cardiovascular diseases (CVD) being the leading cause of NCD deaths at 25.5%, followed by cancer at 14.3%, and diabetes at 7.9% (PAHO, 2017a). An estimated 47.5% of NCD deaths occurred in people under the age of 70 years. Between 2017 and 2021, the MOHW reported 1,479 cancer cases in Belize (641 male, 838 female). Data for those years indicate that the top three cancer types in females were breast cancer (36%), cervical cancer (30%), and cancer of unspecified nature (16%). On the other hand, the top three cancer types in males were prostate cancer (32%), cancer of unspecified nature (25%), and lung cancer (18%) (SIB, 2022).

In the context of mental health, mental, neurological, substance use disorder and suicide (MNSS) accounted for 15% of all disability-adjusted life years (DALYs) and 33% of all years lived with disability in 2020 (PAHO, 2021b). According to the mental health unit in the MOHW, common disorders (anxiety, depression, self-harm, and somatic symptom disorder) account for the highest burden of 41% in people around the age of 20 years, followed by substance use disorders (20%), headaches (20%) and severe mental disorders at 8% (PAHO, 2021b).

Vector-borne Diseases

Due to the country's geographic location, vector-borne diseases pose a continuous threat to communities. The highest record of dengue cases was reported in 2019 with an outbreak of 8,359

confirmed cases and 10 dengue-related deaths (SIB, 2022). In 2021, the country reported 1,251 cases with zero deaths. In the last 25 years, Belize has made significant strides in the control and prevention of malaria from a peak of approximately 10,000 cases in 1994 to zero indigenous cases since December 2018 (PAHO, 2021b). The country has been receiving financial aid from the Inter-American Development Bank (IDB) through the Regional Malaria Elimination Initiative (RMEI) and is guided by the National Malaria Strategic Plan for the Elimination and Prevention of the Re-establishment of Malaria 2018-2022. After three consecutive years without indigenous cases, WHO has recently certified Belize as a malaria-free country, making it the second Central American country to be certified malaria-free (WHO, 2023). Belize's success is attributed to strong surveillance, access to diagnosis, and effective vector-control methods. Additionally, trained CHWs have also played a vital role in education, prevention and the timely diagnosis and treatment of the disease. On the other hand, the magnitude of neglected tropical diseases (NTDs) is not fully known in the country. Available data on Chagas and Leishmaniasis is limited, and there is the need to enhance countrywide surveillance (PAHO, 2021b). With 19 positive cases of Chagas identified in 2019, the MOHW drafted a set of guidelines for the surveillance and management of the disease in 2020 (PAHO, 2021b).

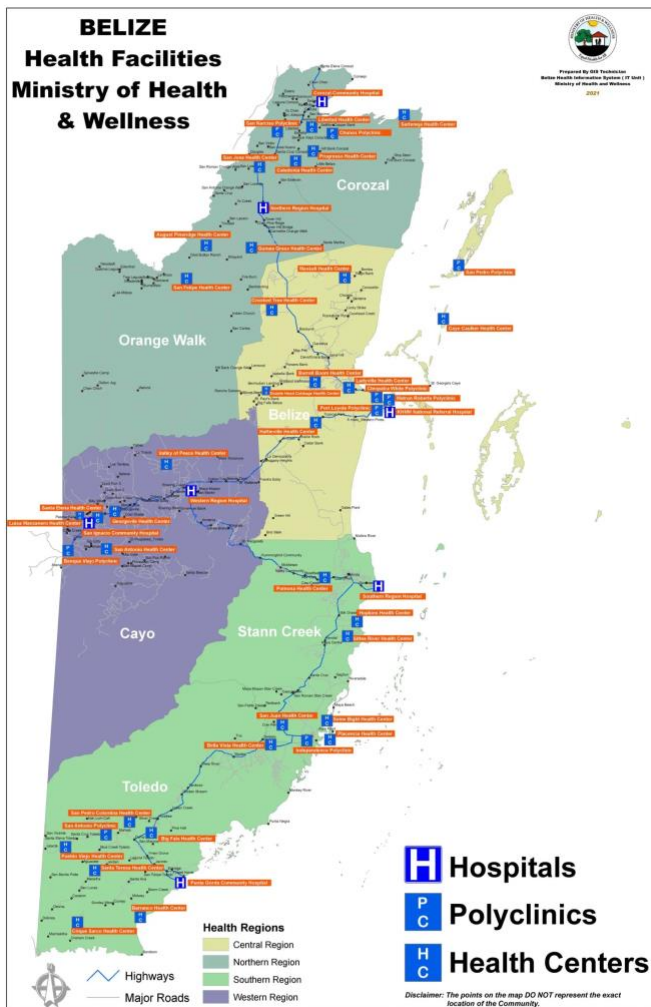
Overview of the Health Sector

In the early 2000s, Belize began to implement a health sector reform program with the aim of modernizing the country's health system. The initiative was developed to address the health needs of the population based on equity, efficiency, long-term sustainability, and accountability in the use of all resources (MOHW, 2014). The three components that guided the health sector reform focused on sector restructuring, services rationalization and improvement, and the reorganization of health financing and paying mechanisms. As part of the reform, four health

regions headed by Regional Health Managers were formed from the six administrative districts (Figure 4). The four health regions, Northern Health Region (NHR), Central Health Region (CHR), Western Health Region (WHR), and Southern Health Region (SHR), all provide primary and secondary care.

Regional hospitals provide urban-based secondary care, while tertiary care is provided at the country's sole tertiary hospital, the Karl Heusner Memorial Hospital (KMH), located in Belize City in the Central Health Region. Primary care services are provided at the community level through a network of health posts, health centers, and community hospitals. Outreach community services include dental health, mental health, and the prevention and control of communicable diseases. Additionally, prenatal care, immunization, and other health services are also provided in mobile clinics to remote villages. The health system of Belize is based on a primary health care model with approximately 90% of the population accessing care through the public health system (MOHW, 2014).

Figure 4. Administrative Regions and Public Health Facilities in Belize



Note. From *Contact Us* [Belize Health Facilities], by the Ministry of Health and Wellness, 2024 (<https://www.health.gov.bz/contact-us/>). In the public domain.

As a result of the reform, Belize launched a National Health Insurance (NHI) scheme in 2001 with the goal of improving financing and purchasing mechanisms of primary health care services. The NHI, which is governed by the Social Security Board (SSB), provides a package of health services to underserved populations and prioritized geographical areas based on income level (SSB, 2021). Initially, coverage was limited to the poorest regions in Belize City but has progressively expanded to the southern and northern regions of Belize. The NHI currently provides coverage to about 40% of the population. Extending the NHI scheme to a cross-national

level is a key priority of the government and was noted as a focus area in national health plans. Shortly before the COVID-19 pandemic, a costing and forecasting study for the national roll-out of the NHI was conducted, presenting implications for three different packages and scenarios for the phased roll-out in the years ahead (PAHO, 2022). On the other hand, the private health sector in Belize has grown exponentially over the last few years offering a wide range of comprehensive secondary and tertiary healthcare (MOHW, 2022).

Steering Role: The Ministry of Health and Wellness

The health sector envisions a healthy, empowered, and productive population supported by an effective network of quality health services and effective partnerships for wellness. The Ministry of Health and Wellness (MOHW) is the government agency responsible for overseeing the entire health sector and has the legal mandate for the safety and protection of the health of all Belizeans (Hughes, 2015). The overall mission of the MOHW is “to provide quality, affordable, comprehensive health services within a resilient environment that promotes equal health and wellbeing for all” (MOHW, 2023a). The Ministry delivers on its mandates by collaborating with a broad spectrum of national, regional, and international stakeholders and by engaging in technical cooperation and bilateral agreements with partners and countries globally.

Guided by the Belize Health Sector Strategic Plan 2014-2024 (HSSP), the national health system is currently in transformation as it seeks to create a safer and healthier Belize. The HSSP provides an overall framework for the country’s health priorities and strategies and calls for multisectoral collaboration as it aims to achieve the country’s health goals (MOHW, 2014). In addition, the plan seeks to create an integrated health services delivery network that is based on an enhanced PHC approach towards universal health. With the HSSP concluding this year, the MOHW is currently evaluating the plan and preparing to develop and launch an updated Health

Sector Strategic Plan in 2025 to guide the country's health agenda for the future. Through its Health Care Policy Plan 2020, the current government emphasized that it would promote health as a basic human right under the basis of universal health coverage for all Belizeans (The People's United Party (PUP), 2020). Currently, the reorganization of governance and functional structure of the MOHW is underway via the MOHW/PAHO/European Union (EU) 'Health Sector Support Program Belize Project'. In early 2022, three Director positions were introduced: Director of Public Health and Wellness, Director of Hospital Services and Allied Health, and Director of International Cooperation. As the MOHW aims to further strengthen the national health system and improve health outcomes, additional improvements are expected to take place under multiple projects.

Health Financing

The health system in Belize is dependent on public funding with health services being subsidized by the Government of Belize through general revenues. Over the past decade, between 11 to 13% of the government budget was allocated to health (PAHO, 2017a). WHO recommends a public health expenditure of 6% of GDP as a benchmark for health systems strengthening towards achieving universal health coverage (PAHO, 2020). While Belize has not met the recommended number, the country has gradually been increasing public health expenditures over the years and as of 2019, it stood at 4.2% of GDP (MOHW, 2022). The 2019 out-of-pocket (OOP) health expenditure was reported at 21.8% of the total health expenditure (PAHO, 2021a). This presents a risk since OOP health expenditures above 20% can put households below the poverty line or further impoverish those who are already vulnerable (PAHO, 2021a).

Over the past years, the increase in financial resources for health has not led to an equitable distribution at the district level. According to a fiscal space study of 2020, per capita public health expenditures at the district level do not match per capita poverty gaps at the country level (PAHO, 2020). As a response to the economic and social constraints on the public budget due to the COVID-19 pandemic, the Ministry of Finance reduced the NHI 2020 Annual Budget by 25%, causing a temporary reduction in purchasing of services for NHI members (SSB, 2021). With the economy improving over the last year, the NHI annual budget has returned to pre-COVID levels. In the midst of COVID-19, the MOHW had to ensure the continuation of essential health services through extensive resource mobilization and collaboration with outside donors. In this regard, the government was able to receive 500,000 Euros that was reprogrammed from a PAHO/EU grant (PAHO, 2021c).

Health Information Systems

The Belize Health Information System (BHIS), which has been implemented at most public health facilities, allows for the recording of patient data and integration of data sources to facilitate data analysis and reporting of health information (MOHW, 2014). The BHIS provides functionalities to support clinical, programmatic, policy and administrative functions. According to a 2017 rapid assessment of the BHIS, several recommendations were proposed to optimize and adapt the system, including the development of a governance framework for the BHIS, and an updated functional model with a sustainable investment plan (PAHO, 2017a). Recently, an upgrade to the BHIS was completed through direct technical assistance from the EU (PAHO, 2021c).

While the BHIS is the national health information system for public health facilities, the NHI utilizes a separate system known as the Registry and Activity Web Application (RAWA).

Future plans are in place to establish coordination between the two systems in order to generate robust information for decision-making and for the strengthening of the Ministry's monitoring and evaluation system (MOHW, 2014). In the context of COVID-19, the NHI developed a proposal for a Tele-Consult Platform that would facilitate tele-consultations at the primary care level for virtually effective patient management (PAHO, 2022).

2.3 Human Resources for Health Situation in Belize

Health care workers (HCWs) play a fundamental role in the provision of health services and in the overall strengthening of the health system. With increasing concern about the limited supply of HCWs in Belize, there is a need to improve country-level coordination for the proper recruitment, deployment, and retainment of the health workforce (MOHW, 2019). Having an adequate supply of HRH is critical for Belize to achieve its national goals and universal health coverage. In 2016, WHO established a new recommended level of 44.5 doctors, nurses, and midwives per 10,000 population to meet the evolving health needs of individuals and to achieve the UN SDGs (WHO, 2016). Belize, like most countries in the region, has been unable to meet WHO's recommended number of HRH for a number of reasons including the limited production and training capacities of HCWs, migration of the health workforce within and across countries, and demographic imbalances (MOHW, 2019). As of 2018, Belize had a ratio of 10.8 physicians per 10,000 and 20.8 nurses per 10,000 population (PAHO, 2019).

To respond to the health needs of the population, the MOHW launched the Human Resources for Universal Health Strategic Plan 2019-2024 to ensure the equitable distribution of appropriately skilled and motivated HRH (MOHW, 2019). The implementation of the strategic plan is amplified by the increasing concern for the need to further scale up HRH globally and regionally to support the achievement of improved health outcomes. Despite the many strides

and improvements over the past years, Belize still faces significant challenges in health workforce development which severely impact the country's ability to deliver accessible, quality, and efficient health services (MOHW, 2019). With the Human Resources for Universal Health Strategic Plan concluding this year, the MOHW is currently evaluating the plan and taking the next steps in developing an HRH policy to guide future health workforce development in the country.

The overall shortage of HCWs at the primary care level is a major challenge and the geographical maldistribution in favor of urban areas contributes to the inequitable access of health services for rural/remote populations. To address the HRH shortage in Belize, the government recruits medical professionals from other countries given the absence of an in-country medical school where physicians can be trained. Longstanding bilateral agreements with countries such as Cuba have helped to fill coverage gaps in rural/remote areas in the past years. Belize has medical students trained in Cuba in addition to receiving Cuban health personnel from the medical brigade to work in the public health system (MOHW, 2019). While country to country cooperation has helped to address HRH shortage and maldistribution, closer attention is required in the succession planning of the health sector needs.

The University of Belize (UB), being the only public higher education institution in the country, offers training in nursing, midwifery, medical laboratory sciences, pharmacy, and social work (University of Belize, 2023). Continuing education for HCWs is offered in the form of workshops, seminars, and other educational courses. Over the years, there has been a high turnover rate of health professionals as many leave the country to find jobs in the United States, Canada, or the United Kingdom. As a result, the MOHW continuously needs recurrent expenditures to hire and train new HCWs.

During the COVID-19 pandemic, guidelines were introduced that included innovative strategies to strengthen the health workforce in Belize (Bustamante Izquierdo et al., 2023). Lessons learned from the pandemic may inform HRH policies that target challenges such as shortages, uneven distribution, training, and gaps in skills and competencies (PAHO, 2022b). As a priority in the MOHW's agenda, the need to invest in HRH development is critical to strengthen the availability, quality, and accessibility of the health workforce and to support the achievement of universal health coverage and the UN SDGs by 2030.

2.4 Historical Development of National CHW Programs

Modern-day CHW programs have their origins in Ding Xian, China and date back to the 1920s (Perry, 2013). According to research, the first group of CHWs were illiterate and received no more than three months of training (Perry, 2013). Their scope of work included the recording of births and deaths, vaccinating against smallpox and other disease, giving first aid, and conducting health promotion campaigns in rural communities (Perry, 2013; Zulu, 2015). These CHWs were the predecessors of the “barefoot doctor” program in China that grew rapidly in the 1950s (Perry et al., 2014). By 1975, approximately one million barefoot doctors were serving a rural community of 800 million people in remote areas of China (Perry, 2013). This concept gained much attention around the world as countries were addressing the health needs of rural and poor populations. Soon after, CHW programs emerged in many countries, including Guatemala, Honduras, Venezuela, India, and Indonesia (Perry et al., 2014). By the mid 1980s, there was an increase in small and large scale CHW programs operated mainly by Non-Governmental Organizations (NGOs) in low-and-middle income countries (Zulu, 2015).

The 1978 International Conference on Primary Health Care (PHC) at Alma-Ata, Kazakhstan, established comprehensive primary health care as an integral part of a country's

national health system (WHO, 1978). Since then, CHWs were cemented as a cornerstone of this effort. The conference, which was sponsored by WHO and UNICEF, was attended by official government representatives from all WHO member states, making it the “first truly global health conference” (Harvard Medical School, 2018; Perry et al., 2014). The conference resulted in the Declaration of Alma-Ata, with Article VII.7 clearly establishing the vital role of CHWs in the provision of PHC:

“Primary health care relies, at local and referral levels, on health workers, including physicians, nurses, midwives, auxiliaries and community workers as applicable, as well as traditional practitioners as needed, suitably trained socially and technically to work as a health team and to respond to the expressed health needs of the community” (WHO, 1978, p. 2).

Following the Declaration of Alma-Ata, many government CHW programs proliferated at the national scale globally. However, in the late 1980s, many large-scale programs in developing countries were challenged due to insufficient financing and incentives for CHWs, inadequate training, lack of leadership and supervision, and logistical support for medical supplies (Zulu & Perry, 2021). Additionally, these programs were greatly affected by the poor harmonization with the health system, and lack of acceptance by communities (Perry et al., 2014). By the early 1990s, global economic and political forces, along with conceptual and implementation issues, led to the termination of many large-scale CHW programs and a loss of momentum for the PHC movement (Perry et al., 2014). In many countries, priority was given to secondary and tertiary levels of care, which mainly benefitted urban and privileged populations. Over the years, this led to a decline in support and interest for CHW programs among donor organizations and ministries of health (Perry, 2013). In recent years, there has been a resurgence of interest in CHW programs as countries strive to tackle the persistent challenges in health workforce development. With new

research findings demonstrating the effectiveness of CHW programs, many countries have begun to reinvest in and fortify their national CHW program (Hodgins et al., 2021). On a global scale, nations are propelled by the momentum to achieve universal health coverage and the UN SDGs by 2030 (Hodgins et al., 2021; Masis et al., 2021). To accomplish these aims, enhancing PHC is essential, and this, in turn, requires robust and effective support for CHW programs (Lewin et al., 2021; Masis et al., 2021). Successes in CHW programs are documented in many countries around the globe. Studies from Brazil, Indonesia and India show the significant role that CHW programs play in engaging families and communities and helping them to navigate the complex health and social systems (Javanparast et al., 2018; Pallas et al., 2013). Past research highlights the effectiveness of CHW programs in preventive services such as breast and cervical cancer screening, health education and advocacy, and chronic disease management such as diabetes and hypertension (Javanparast et al., 2018; Pallas et al., 2013).

2.5 Belize National Community Health Worker Program

As a significant element of the Primary Health Care Initiative, the National Community Health Worker Program was launched in Belize in 1982 to improve population health and access to basic health services in rural areas (Castillo, 2013). The program received technical and financial support from the United Nations Children’s Fund (UNICEF) to optimize health promotion activities at the community level throughout Belize (Castillo, 2013). The National CHW Program is spearheaded by the Health Education and Community Participation Bureau (HECOPAB), the health promotion arm of the Ministry of Health and Wellness. The bureau’s main purpose is “to contribute to the improvement of the health of individuals and communities and to the attainment of acceptable levels of equity and justice in health through health promotion, health education, and community mobilization” (MOHW, 2023b). HECOPAB

provides general oversight of the program and is tasked with the planning, coordinating, and implementing of health promotion programs, community outreach, projects, interventions, and educational activities countrywide. There are six district health educators (DHEs) located throughout the four health regions, providing training, monitoring, and supervision to approximately 200 CHWs in Belize (MOHW, 2023).

At the very local level, the implementation of primary health care (PHC) is based on the construction of health posts, deployment of rural health nurses, and recruitment of community health workers to achieve the goals and objectives of the program. Since nearly every village in Belize has at least one CHW, they are envisaged to be the first point of contact between these communities and the health system. CHWs are trained by the MOHW to engage in disseminating preventative health messages and to provide basic curative services to the communities they serve (Castillo, 2013). The duties, responsibilities, and obligations of a CHW are outlined in a Ministry of Health Manual and are reinforced in regular training sessions conducted by HECOPAB. In Belize, a typical CHW is a female member of the community who has obtained at least a primary level education and has an above average family size of 4.4 (IADB, 2014). In recent years, the program has been focusing on improving training for CHWs to greater support the country's primary health care efforts. While CHWs currently receive a monthly stipend of BZD\$100 (USD\$50), the MOHW is considering the greater formalization of financial incentives, such as increasing the monthly stipend and providing other benefits. Despite progress made in health workforce development, lessons on how to successfully scale the CHW program in Belize as part of the national health system are not widely available (Castillo, 2013; MOHW, 2019). Furthermore, best practices are sometimes not adequately replicated and policy options for which there is evidence of success are not uniformly implemented (Kok, 2015).

2.6 The Health System and its Workforce

There has been increasing evidence suggesting that greater and more effective investment in health systems is needed to achieve universal health coverage and the UN SDGs by 2030 (Henning et al., 2015; Kok, 2015; Kok et al., 2016). To strengthen health systems, WHO published a “Framework for Action” in 2010 that defined a health system as “all organizations, people, and actions whose primary intent is to promote, restore, and maintain health” (WHO, 2010). According to this framework, in order for health systems to be strengthened, six essential building blocks need to be addressed in an integrated manner. The six building blocks include: leadership/governance, financing, health workforce, health information systems, medicines and technologies, and service delivery. According to Kok (2015), these building blocks can be seen as sub-systems of the health system, with an array of other structures embedded in each element (Kok, 2015; WHO, 2010). Due to the multiple, complex relationships and interactions among these six building blocks, it is vital for health programs and interventions to be implemented within the dynamic architecture of this framework.

Central to the health systems framework is the “health workforce” building block. The importance of human resources indicate that the health system is driven by human interaction, i.e., from political factors to the relationships among actors and stakeholders involved in delivering and receiving health care (Karim et al., 2022; WHO, 2010). As reiterated before, an adequate health workforce is needed to reach more people and achieve greater health gains. Globally, there is a massive shortage of HCWs, with WHO estimating a projected shortfall of 10 million health workers by 2030, mostly in low-and middle-income countries (WHO, 2016). In light of this global crisis, WHO has urged governments to scale up the recruitment and retention of HCWs to meet present and future health needs. Matching population health needs with an

adequate supply of competent and motivated HCWs is necessary to achieve universal health coverage and health systems strengthening (Kok, 2015).

2.7 CHW Programs, Communities, and the Health System

Community health workers form a vital point of interconnection between communities and the rest of the health system (Kok et al., 2016). They act as mediators between communities and the health system as they understand the sociocultural norms of the population they serve. Research indicates that the unique intermediary position of CHW programs is fundamental in strengthening health systems (Hodgins et al., 2021; Kok et al., 2017). This unique position requires CHWs to have trusting relationships with both their communities and key actors in the health system. Furthermore, elements of CHW program design such as funding, management, accountability, and communication can influence these relationships, and in turn affect the functionality and performance of CHW programs (Kok, 2015; Zulu & Perry, 2021). Despite the evidence on factors influencing CHW programs, exact mechanisms and interactions on health system and program-level factors remain understudied (Kok, 2015; LeBan et al., 2021).

Over the past years, multiple studies have documented how fragmented and weak health systems have contributed to poorly functioning CHW programs (Cometto et al., 2018; Kok, 2015; Perry et al., 2021). As a result, this has led to an urgent need for policy alignment and harmonization of CHW programs globally. Health systems are complex and have many dynamic elements that are interconnected. As such, CHW programs should be designed and implemented within the dynamic and adaptive nature of the health system in which it operates. LeBan and colleagues (2021) suggest that to achieve universal health coverage, governments should utilize a systems perspective approach to widen the focus from a cadre of CHWs to the health system as a whole. The authors further emphasize the need for well-defined interactions between CHWs and

actors in the national health system to enhance CHW performance and formalize their role at the community level and within the wider health system (LeBan et al., 2021). While the unique position of CHWs provides a useful platform to improve community health, a major challenge is the establishment of ongoing interactions with key actors in both the health system and community in which they serve. This makes CHWs key players in health systems strengthening as they are accountable to both the health system and communities (BM & Muraleedharan, 2007; Chen et al., 2021; LeBan et al., 2021).

CHW programs require well-structured support from health systems in order to be fully effective and functional. A plethora of studies discuss the need for robust leadership, funding, training, and adequate supervision to ensure maximum outcomes and high performance of CHW programs (Ashaba et al., 2022; Kok et al., 2016; LeBan et al., 2021; WHO, 2018). The sound and feasible harmonization of CHW programs into the wider health system ensures that programs remain functional during times of political unrest or loss of external donor funding. Moreover, it also fosters strong collaboration and communication between CHWs and the communities they serve. This in turn leads to acceptability and credibility of the CHW program within the wider health system (Cometto et al., 2018; LeBan et al., 2021).

2.8 Summary

Overall, the literature shows that CHW programs have played a fundamental role in advancing primary health care and in achieving universal health coverage. Past research has shown that whilst CHW programs have significantly contributed to health systems strengthening, there are still challenges and barriers in fully embedding them into national health systems. Research has been heavily focused on the performance of CHWs, with little data on the functionality and effectiveness of CHW programs and their unique position within the health

system in which they operate. More exploration of CHW programs and their interaction with the health system is needed to better understand the dynamics and interplay of factors influencing these programs. Based on the literature review conducted, it is necessary to investigate health system and program-level factors influencing the CHW program in Belize. Key themes have emerged from the assessment of multiple CHW programs globally. These studies have highlighted the importance of partnership and collaboration with national and international stakeholders, investment in the health workforce, financing mechanisms, policy alignment, leadership and governance, and the overall interactions of CHW programs with communities and the national health system (Hodgins et al., 2021; Masis et al., 2021; Zulu & Perry, 2021). Greater understanding of these interactions is needed, particularly in countries like Belize where the movement towards universal health coverage and the achievement of the UN SDGs by 2030 have taken precedent in recent years.

In recent years, countries have reaffirmed their commitment and need for collective action to address HRH challenges through a set of global, regional, and national documents. These important documents further amplify the momentum for HRH development and emphasize the need for evidence-based guidance on optimal health policy and system support to strengthen Belize's CHW program. Table 2 below provides a summary of key global, regional, and national guiding HRH documents that are pertinent to Belize and the region. Some of these documents were the start point of the desk review. Part of the process was to identify new documents and determine their relevance in answering the first research question of this dissertation. A complete list of documents included in the desk review can be found in Table 4 of the findings chapter.

Table 2. Global, Regional, and National Guiding HRH Documents

Document	Overall Objective	HRH/CHW Relevance
Global Strategy for Human Resources for Health-Workforce 2030 (WHO, 2016).	Outlines policy options on how to optimize the health workforce to accelerate progress towards UHC and the UN SDGs.	- Focuses on the need to streamline and rationalize the categorization of CHWs. - Renewed focus on a more diverse skills mix and a greater role of CHWs.
WHO Guideline on Health Policy and System Support to Optimize Community Health Worker Programs (WHO, 2018).	To assist national governments and partners to improve the design, implementation, performance, and evaluation of CHW programs.	- Primarily focused on policy options for CHW programs - Follows a health system approach to identify policy and system enablers required to optimize the design and performance of CHW programs.
Strategy on Human Resources for Universal Access to Health and Universal Health Coverage (PAHO, 2017c).	To guide national policies on HRH, considering that the availability, accessibility, acceptability, relevance, and competence are key components for achieving UHC.	- Strategic line of action 2: Focuses on the need to develop conditions and capacities in HRH. - Emphasizes the need to maximize skills mix and competencies and to better define the role of CHWs in health teams.
Sustainable Health Agenda for the Americas 2018-2030 (PAHO, 2018b).	Seeks to promote the health and wellbeing of all individuals, families, and communities in the Americas. It represents the health sector response to commitments endorsed in the 2030 Agenda for Sustainable Development.	- Goal 3 focuses on HRH. - Aims to strengthen the management and development of HRH with skills that facilitate a comprehensive approach to health.
Caribbean Roadmap on Human Resources for Universal Health 2018-2022 (PAHO, 2018a).	To enable the Caribbean subregion to have timely and quality access to an optimal and stable health workforce.	- Focuses on HRH governance and leadership, education and training, access with quality and equity, finance, and HRH information systems. - A key objective is to establish inter-

		professional PHC teams through task sharing.
Belize Health Sector Strategic Plan 2014-2024 (MOHW, 2014).	Provides an overall framework for health priorities in the country. Aims to contribute towards the national development goals for the Government of Belize.	- Strategic objective 4 focuses on HRH: Aims to strengthen capacity for HRH planning to meet present and future health sector needs.
Belize Human Resources for Universal Health Strategic Plan 2019-2024 (MOHW, 2019).	To ensure the equitable distribution of appropriately skilled and motivated HRH to support the achievement of health outcomes in Belize.	- Five strategic objectives that focus on HRH leadership, policy, finance, education, and partnerships for all cadres of HCWs. - A priority intervention focusing on the training, remuneration, and incentives for CHWs.

As demonstrated by the literature, little is known about the unique intermediary position of the CHW program in Belize within the national health system (Castillo, 2013; Cometto et al., 2018). To bridge the gap in community health, it has become common practice for researchers, policy makers, and practitioners to refer to the traditional way of how CHW programs function (Kok, 2015). However, as noted in multiple studies, the intricacies of the health system and of the program itself must be considered for future planning and improvements in all settings (Jerome & Ivers, 2010; Kok, 2015; LeBan et al., 2021; Zulu & Perry, 2021). With health system and program-level factors often being overlooked when implementing CHW programs, this dissertation aims to provide insight on the factors influencing the CHW program in Belize. Lastly, there is an urgent need for future research to inform and optimize ongoing CHW programs in a way that they work in harmony with national health systems. In this regard, this study aimed to contribute to the gap in knowledge by providing the outcome of an in-depth

assessment of the CHW program in Belize and by sharing insights on how the health system has been influencing the functionality and performance of the national CHW program.

CHAPTER III: CONCEPTUAL FRAMEWORK

3.1 Introduction

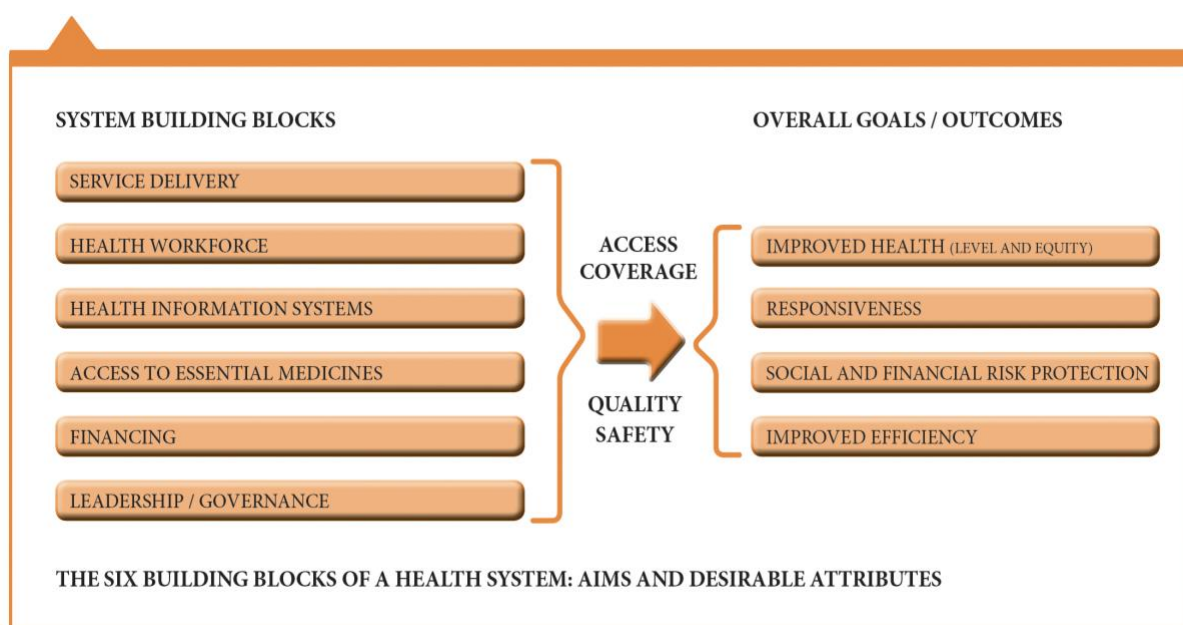
To guide and support the development of this study, the researcher integrated a set of evidence-based frameworks to provide a visual representation of the theoretical constructs of interest. Firstly, the researcher utilized the WHO Health Systems Framework as the basis for health systems strengthening. The Community Health Worker Assessment and Improvement Matrix (CHW AIM) and Kok's (2015) Conceptual Framework on CHW Performance were also applied to understand the programmatic components of a CHW program. These have been demonstrated to be effective in health systems strengthening and in understanding the unique position of CHW programs and the health system in which they operate (Kok, 2015; The United States Agency for International Development [USAID], 2013; WHO, 2010). Based on these three frameworks, the researcher developed a conceptual framework for this study that incorporates key elements from all three framework/models to guide the assessment of the CHW program in Belize. The last section of this chapter presents the conceptual framework for this study, tailored to Belize's unique perspective of the national CHW program.

3.2 The WHO Health Systems Framework

Health systems and services globally continually seek more effective and sustainable approaches to meet the health needs of their population. In the Region of the Americas, health systems strengthening is vital to achieve universal health, the UN SDGs, and the Sustainable Health Agenda for the Americas 2018-2030 (SHAA2030) (PAHO, 2018). In support of this agenda, the WHO Health Systems Framework aims to promote common understanding of what a health system is and what constitutes health systems strengthening (Figure 5). Central to the framework are six building blocks of a health system: (1) Leadership/Governance, (2) Financing,

(3) Health Workforce, (4) Access to Essential Medicines, (5) Health Information Systems, and (6) Service Delivery. For this study, a seventh building block, (7) Community Ownership and Partnership, was included on the basis of the recommendations of the Ouagadougou Declaration on Primary Health Care (Simen-Kapeu et al., 2021). For over a decade, countries around the world have been utilizing the WHO Health Systems Framework as a guiding tool to strengthen health systems and improve health outcomes. In Belize, this framework has been particularly relevant as it has provided a foundational and structured approach to addressing the unique health challenges faced by the country. The WHO Health Systems Framework also guided the development of both the health sector and HRH strategic plans, ensuring a comprehensive focus on all aspects of the health system. Additionally, multiple studies recommend the framework as a catalyst for achieving universal health and the UN SDGs by 2030 (Karim et al., 2022; Kok et al., 2016; Manyazewal, 2017). Strengthening health systems require improving these seven building blocks and managing their interactions in ways to achieve more equitable and sustained gains in health (Sacks et al., 2019; Stockton et al., 2021; WHO, 2010).

Figure 5. The WHO Health Systems Framework



Note. Reproduced from “Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies,” by the World Health Organization, 2010, p. vii (<https://iris.who.int/bitstream/handle/10665/258734/9789241564052-eng.pdf>). Copyright 2010 by the World Health Organization. Reproduced with permission.

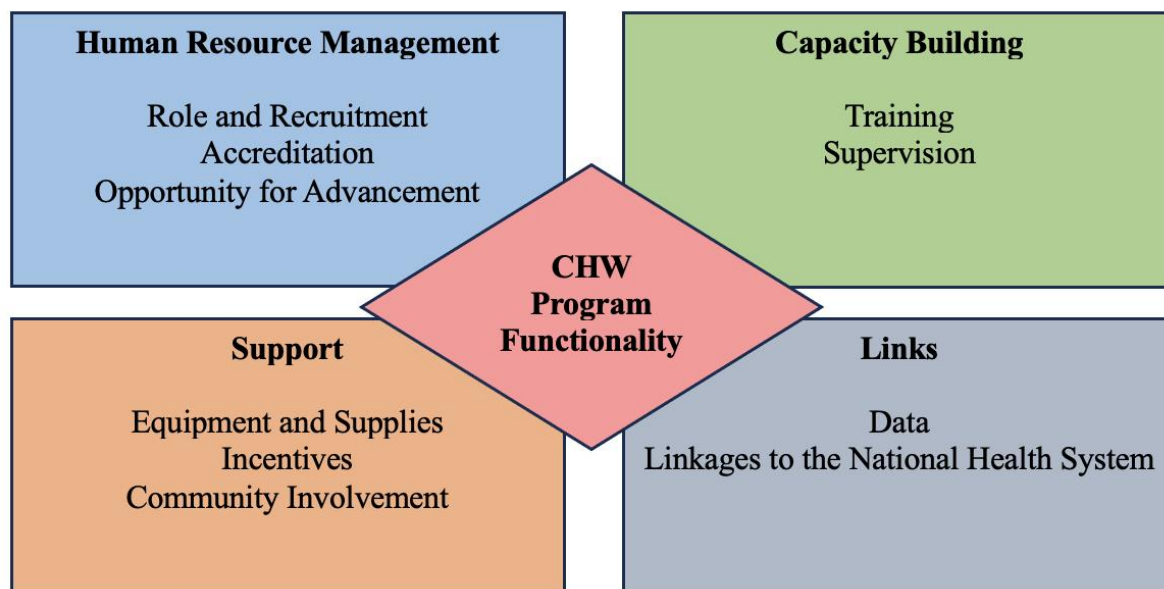
3.3 The Community Health Worker Assessment and Improvement Matrix (CHW AIM)

The Community Health Worker Assessment and Improvement Matrix (CHW AIM) is a multi-purpose tool developed by the United States Agency for International Development (USAID) and partners in 2011 to help assess CHW program functionality and improve performance (USAID, 2013). Since 2011, investment in CHW programs has continued to grow and evidence related to CHW program effectiveness has also expanded significantly (USAID, 2018). In response to this, USAID, UNICEF, and other partners updated the CHW AIM in 2018 to support the operationalization of robust CHW program design and implementation. The tool was updated by incorporating the most recent evidence on CHW program efficacy and effectiveness (USAID, 2018).

As with the original CHW AIM, the updated tool intends to enhance the capabilities of programmatic design, planning, assessment, and improvement. Moreover, the tool has the potential to identify design and implementation gaps in CHW programs, and bridge gaps in policy and practice (USAID, 2018). The updated version of the CHW AIM intends to complement the 2018 WHO guideline on health policy and system support to optimize CHW programs. Originally built around 15 evidence-based programmatic components, the updated CHW AIM now includes 10 programmatic components deemed essential for an effective CHW program. The 10 programmatic components of the updated CHW AIM are: (1) Role and Recruitment, (2) Training, (3) Accreditation, (4) Equipment and Supplies, (5) Supervision, (6) Incentives, (7) Community Involvement, (8) Opportunity for Advancement, (9) Data, and (10) Linkages to the National Health System (USAID, 2018). Essentially, these 10 programmatic

components, grouped in four overarching themes, are at the core of the CHW AIM (Figure 6) and guided the researcher in conducting a comprehensive assessment of the CHW program in Belize.

Figure 6. The CHW AIM Programmatic Components



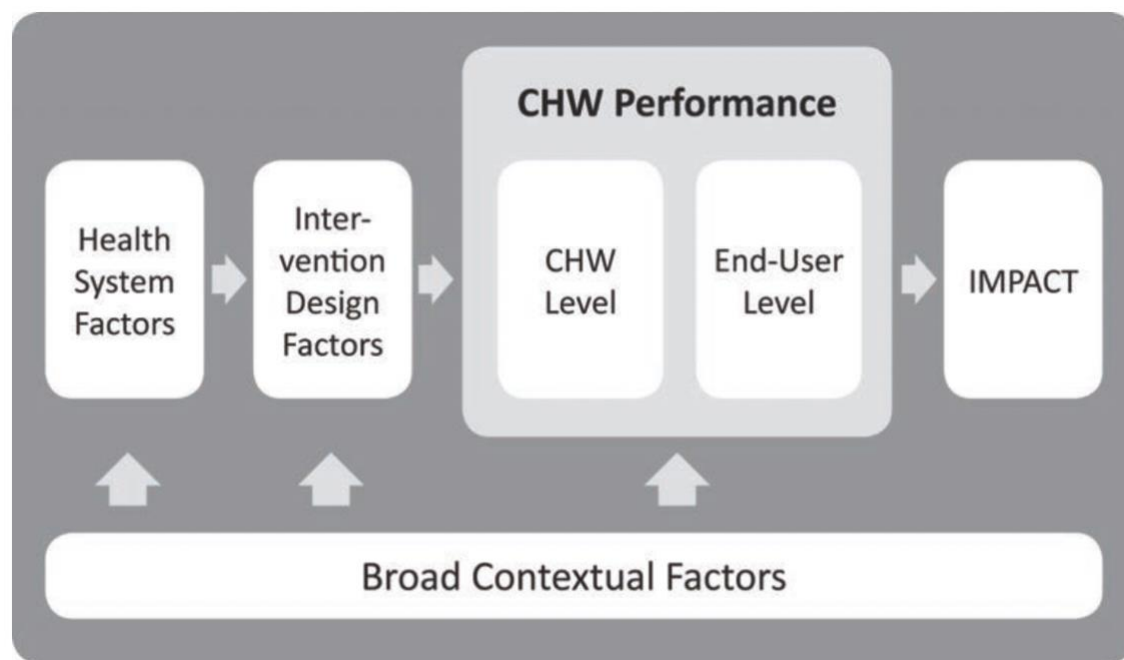
Note. Adapted from “Community Health Worker Assessment and Improvement Matrix (CHW AIM): Updated Program Functionality Matrix for Optimizing Community Health Programs,” by the United States Agency for International Development, 2018, p. 5 (<https://www.usaid.gov/document/community-health-worker-assessment-and-improvement-matrix>). In the public domain.

3.4 Kok’s Conceptual Framework on CHW Performance

Kok (2015) specifically conceptualizes CHW performance as a transactional social process that is embedded in a health system as a social construct (Kok, 2015). Kok implies that CHWs have a unique intermediary position between the communities they serve and the complexity of the health system in which they operate (Kok et al., 2017). Kok’s “Conceptual Framework on CHW Performance” suggests that multifaceted health system and program-level factors influence the performance of CHWs in low-and middle-income countries (Figure 7). Broad contextual factors such as political economy and community environment also play an

underlying role in this intricate process (Kok, 2015). Ideally, the framework suggests that highly functioning health systems enable and reinforce CHW programming and performance. By systematically assessing both health system and program-level factors, Kok's framework provides a solid basis for highlighting the multi-level and multi-dimensional challenges and complexity of enhancing the functionality and performance of CHW programs. Understanding the interplay of these factors and how the different elements affect each other could highlight the importance of relationships and power among diverse actors and could elucidate specific pathways for the strengthening of CHW programs (Kok, 2015; Kok et al., 2016, 2017).

Figure 7. Kok's Conceptual Framework on CHW Performance



Note. Reproduced from “Performance of Community Health Workers: Optimizing the benefits of their unique position between communities and the health sector [Doctorate Dissertation],” by Kok, 2015, p. 20 (https://www.kit.nl/wp-content/uploads/2018/08/5641fbb74cc7f_Kok-2015-Performance-of-CHWs.pdf). Copyright 2015 by Maryse Catelijne Kok. Reproduced with permission.

3.5 The Conceptual Framework for the Study

Based on the frameworks highlighted above, the researcher developed a conceptual framework (Figure 8) that integrates key constructs of interest to help answer the research questions of this study. For this study, the researcher utilized the seven (7) building blocks of the WHO Health Systems Framework and the ten (10) programmatic components of the CHW AIM to assess the national CHW program in Belize. The WHO Health Systems Framework provides an understanding of health system factors that may influence the effectiveness of the national CHW program, making it appropriate for this study. Additionally, because the building blocks continuously influence each other, the WHO Health Systems Framework provides a basis to understand how the 7 building blocks influence the CHW program in Belize. Similarly, Kok and colleagues (2017), utilized the WHO Health Systems Framework to examine hardware and software system elements to conceptualize the performance of CHW programs in Asia and Africa (Kok et al., 2017).

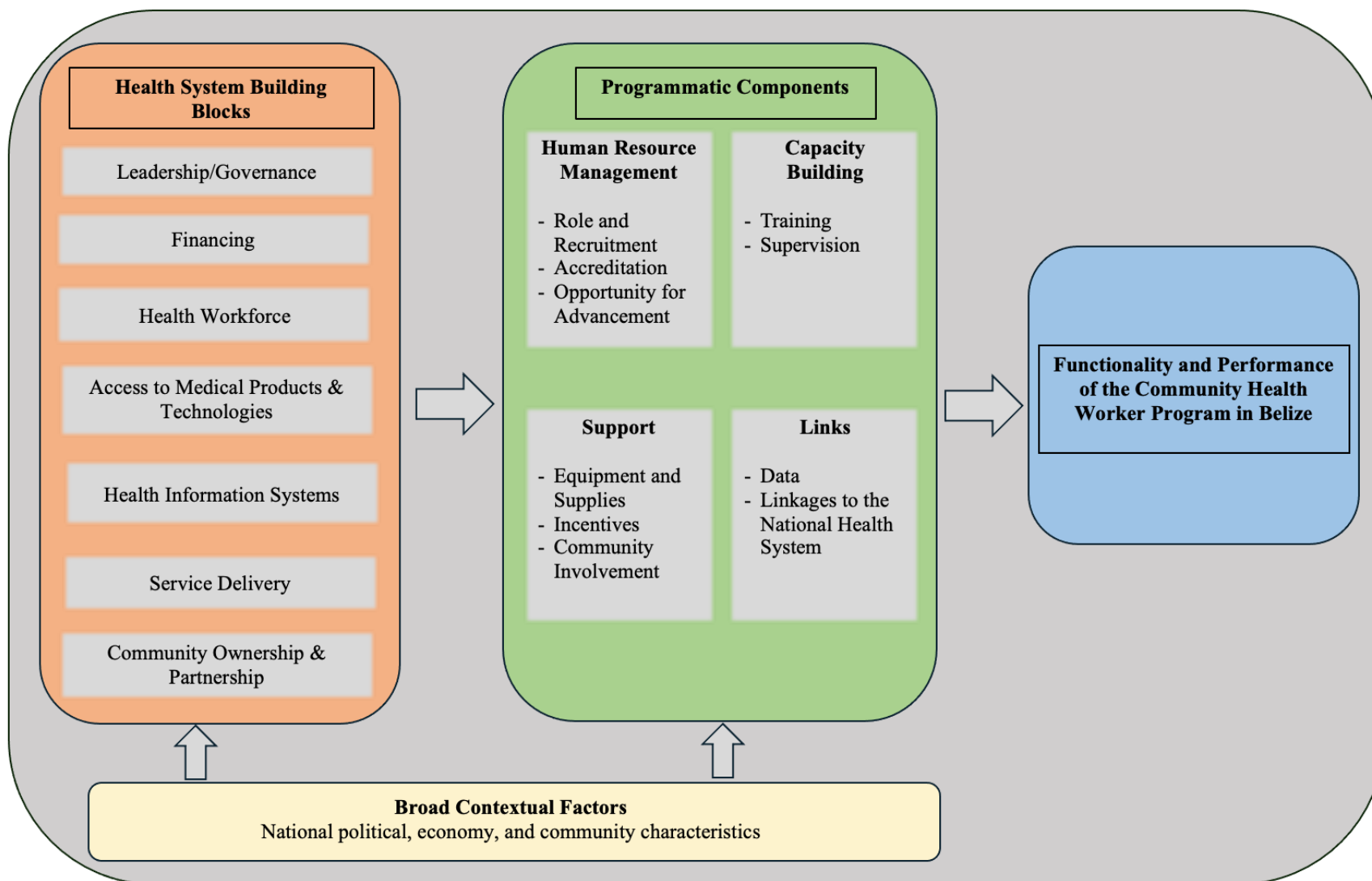
The CHW AIM complements the WHO Health Systems Framework by providing an understanding of key programmatic components that are essential to improve performance of CHW programs. Globally, countries have been utilizing this matrix to identify design and implementation challenges in national CHW programs to close gaps in policy and practice (USAID, 2013). Agarwal and colleagues (2019) examined these 10 programmatic components from two experiences in Rwanda and Zanzibar to identify facilitators and barriers in program design and implementation of CHW programs (Agarwal et al., 2019). Subsequently, their study informed key policies and practices to optimize CHW programs in the African region. In this regard, the WHO Health Systems Framework and the CHW AIM were selected as frameworks to guide this dissertation and to address the specific aims of the study. To facilitate the data

collection process, the interview guides were developed based on the constructs of the conceptual framework for this study. Questions aimed to uncover elements of both health system and program-level factors influencing the CHW program in Belize. Additionally, the framework guided the selection of participants to take part in this study. Specifically, key informants were recruited at different levels of the CHW program to ensure that all building blocks and programmatic components were targeted. For example, both the WHO Health Systems Framework and the CHW AIM allowed the researcher to consider the level at which the study participant worked and what specific questions were asked in order to gain more knowledge and insights on the first two aims of this dissertation. National program leadership personnel and DHEs were asked questions pertaining to the leadership, governance, and financial aspects of the CHW program, while CHWs were asked questions related to the service delivery and access to medicines building blocks, and more individual-level programmatic components such as incentives and support.

The conceptual framework also guided the researcher during the data analysis process by considering the professional levels of key informants and in determining codes and themes when analyzing data and making recommendations. For example, during the data analysis process, data were coded using inductive and deductive methods, and some codes in the code directory were based on the conceptual framework. All recommendations to optimize the CHW program in Belize are aligned to the 7 building blocks of the WHO Health Systems Framework and the 10 programmatic components of the CHW program. While the broad contextual factors, such as national political and economic conditions, were not specifically studied as part of this research, it is vital to note that they are critical considerations for the CHW program in Belize and were considered when interpreting the results and making recommendations. Ultimately, the

researcher intended to assess these constructs to understand how the health system building blocks have influenced the different programmatic components of the CHW program in Belize. The conceptual framework helped to create specific recommendations and guided the researcher in offering suggestions to optimize the CHW program in Belize.

Figure 8. Conceptual Framework to Optimize the CHW Program in Belize



CHAPTER IV: METHODOLOGY

4.1 Introduction

An exploratory qualitative case study was conducted using a health policy and systems research (HPSR) approach to address the following three research questions:

1. How has the health system influenced the functionality and performance of the National CHW Program in Belize in the last 10 years (2013-2023)? This research question was answered through a desk review of relevant documents and key informant interviews with the national program leadership and district health educators of the CHW program in Belize.
2. To what extent have the WHO health system building blocks influenced the different programmatic components of the CHW program in Belize? This research question was answered using key informant interviews with the national program leadership, district health educators and community health workers.
3. Given the findings from research questions 1 and 2, what are the specific recommendations for optimizing the CHW program in Belize? This final research question was answered through data analysis and synthesis from research questions 1 and 2, as well as a further review of relevant literature pertaining to the optimization of CHW programs.

4.2 Research Study Framing and Strategy

Qualitative research is a type of research methodology that aims to explore and understand complex phenomena by examining subjective experiences, perspectives, and interventions with multiple components (Busetto et al., 2020). According to Namey and Trotter (2017), qualitative research methods can generate richly detailed, personal- or public-level information through

selection of knowledgeable informants, open-ended questioning about their experiences and perspectives, and probing of their responses (Namey & Trotter, 2017). What helps to set qualitative research apart from other methods is the capacity to meet participants “where they are” by using plain, local language and phrasing to ensure that informants have clearly understood the questions (Namey & Trotter, 2017). Qualitative research follows an iterative process that involves the emergence of questions, procedures, and inductive data analysis methods. It starts with specific details and gradually builds towards identifying general themes. Throughout this process, the researcher actively interprets the meaning of the data, drawing insights and understanding from the collected information (Creswell, 2009). Additionally, qualitative studies offer a deeper understanding of the individuals involved, the intricacies of problems, and the timing of events (Namey & Trotter, 2017). In this study, the qualitative approach provided the opportunity to examine the CHW program in Belize and to understand its unique intermediary position within the health system in which it operates, making it an appropriate methodology for this dissertation.

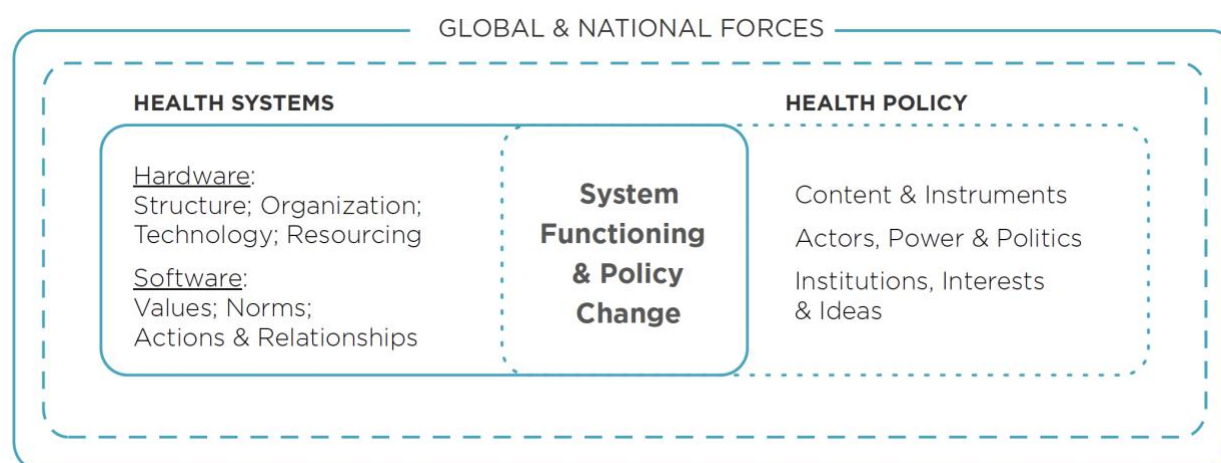
The overall objective of this study was to assess the National Community Health Worker Program in Belize and to provide specific recommendations on how to optimize the program, within the overall context of the WHO health systems approach. To achieve the aims of this study, the researcher conducted a qualitative case study that incorporated a Health Policy and Systems Research (HPSR) approach to assess the functionality and performance of the CHW program in Belize. Yin (2009) suggests that a case study design is appropriate in situations where: (a) the research aims to address “how” and “why” questions, (b) it is not possible to manipulate the behavior of the individuals involved in the study, (c) contextual conditions are considered relevant to the phenomenon being investigated, or (d) the boundary between the

phenomenon and the context is unclear (Yin, 2009). Furthermore, a case study is conducted in a manner that incorporates the experiences and perspectives of the individuals involved in the specific case being studied (Yin, 2009). These characteristics make a case study an ideal approach for examining the CHW program in Belize. An example of a qualitative case study investigating CHW programs is provided by Zulu (2015). In his research, Zulu effectively analyzed the integration processes of CHWs within the district-level health system in Zambia and explored factors that influenced the integration of these health care workers into the local health system (Zulu, 2015).

To complement the qualitative case study of this dissertation, the researcher also utilized a Health Policy and Systems Research (HPSR) approach to assess the functionality and performance of the CHW program in Belize (Figure 9). According to the Alliance for Health Policy and Systems Research, HPSR aims to understand and enhance how societies structure themselves to achieve collective health goals, and how various actors interact in the policy and implementation processes to shape policy outcomes (Alliance for Health Policy and Systems Research [AHPSR], n.d.). The main idea behind HPSR is that research should inform and influence policies and systems to achieve health goals (WHO, 2017). HPSR is a multidisciplinary and interdisciplinary field identified by the topics and scope of questions asked rather than by methodology (Sheikh et al., 2011). As stated by Sheikh and colleagues (2011), HPSR encompasses a wide range of research topics, including the assessment of international, national, and local health systems, their interconnectedness, and the policies formulated and executed across all levels of the health system. Research questions within HPSR vary based on the level of analysis, ranging from macro-level which analyzes the architecture and oversight of systems, meso-level which focuses on the functioning of organizations and interventions, and

micro-level which considers the roles of individuals involved in activities of health provision, governance, and utilization. Research questions can also be classified by their intent, which can be normative, evaluative or exploratory/explanatory in nature (Sheikh et al., 2011). In recent years, HPSR has been widely recognized as an important field that contributes to the attainment of universal health (WHO, 2012). By nature, HPSR is an approach that focuses on the upstream factors of health, organizations, and policies; it draws a comprehensive picture of how health systems respond and adapt to specific health policies, and how health policies can shape, and be shaped by health systems (AHPSR, n.d.; Langlois et al., 2018). An instance of utilizing the HPSR strategy to influence national health systems and policies is exemplified by Strachan and colleagues (2023). Their study aimed to demonstrate the value of HPSR in achieving universal health coverage and the UN SDGs in Mexico, Cambodia, and Ghana (Strachan et al., 2023). Study results from Strachan and colleagues demonstrated various ways in which HPSR can be used to influence health systems strengthening and effective health policy making under different circumstances (Strachan et al., 2023).

Figure 9. Interface of Health Policy and Systems Research



Note. From “Evidence Synthesis for Health Policy and Systems: A Methods Guide,” by Langlois et al., 2018, World Health Organization, p. 3 (<https://ahpsr.who.int/publications/i/item/2018-10-08-evidence-synthesis-for-health-policy-and-systems-a-methods-guide>). CC BY-NC-SA 3.0 IGO.

By utilizing the HPSR strategy in this dissertation, the researcher explored the health system building blocks and their overarching goal of promoting health systems strengthening in Belize. In doing so, the researcher was able to better conceptualize and analyze the inherent connections and dynamics among the different building blocks and programmatic components of the CHW program. Furthermore, this strategy facilitated the understanding of the health system and the CHW program and helped to illuminate what works, for whom, and under what circumstances. Therefore, the utilization of the HPSR strategy was highly suitable to assess the CHW program in Belize. As stated in research question 3, the findings of this analysis subsequently informed evidence-based recommendations to optimize the CHW program in Belize.

4.3 Study Design

An exploratory qualitative case study was conducted using a health policy and systems research approach to assess the status of the CHW program in Belize. A two-step analysis was incorporated, which included: (1) an extensive desk review, and (2) semi-structured interviews with key informants. The researcher conducted a desk review and semi-structured interviews to answer research question 1, while data from the different levels of the semi-structured interviews were used to answer research question 2. The analysis and synthesis of all data was subsequently used to answer research question 3. These methods were used to describe the status of the CHW program in Belize and to understand the program's intermediary position within the health system in which it operates.

An exploratory qualitative case study was deemed the most suitable design to acquire a comprehensive exploration of the CHW program and to understand the extent of how WHO's health system building blocks have influenced the different programmatic components of the

CHW program (Zulu, 2015). The case study design provided a platform for key informants to freely express their insights on the CHW program in Belize. In addition, it enabled an in-depth understanding of the dynamic interplay among health system and program-level factors that influence the functionality and performance of the CHW program in Belize.

4.4 Data Collection

4.4.1 Research Participants and Recruitment – Key Informant Interviews

The researcher conducted twenty-seven (27) semi-structured key informant interviews with individuals who are directly involved with the CHW program in Belize. Key informants were grouped into three categories: national program leadership, district health educators, and community health workers. At the highest level of national program leadership, three (3) participants were recruited to participate in this study. District health educators and community health workers from all four health regions were also recruited using purposive sampling to select a heterogenous group of participants with experience and knowledge of the CHW program in Belize. The researcher recruited one (1) district health educator per health region to capture perspectives from all four regions in the country. Similarly, five (5) CHWs per health region were also recruited. In total, the researcher recruited and interviewed twenty-seven (27) key informants: 3 from the national program leadership, 4 district health educators, and 20 CHWs. All interviews were conducted between January and March 2024. All key informants were required to have worked in the CHW program in Belize for at least one year and be at least 18 years of age.

At the beginning of the study, the researcher requested a list of all potential participants with names, titles, and contact information from the Health Education and Community Participation Bureau, the unit in the Ministry of Health and Wellness that oversees the CHW

program. From the list of potential participants, DHEs and CHWs were grouped and assigned a number. Subsequently, the researcher randomly selected key informants from each group based on the study's eligibility criteria and sampling strategy described above. This random selection was performed using a computerized random number generator to ensure impartiality and a representative sample. Key informants were recruited through an e-mail invitation (see Appendix 4) containing a description of the study, the purpose of the study, procedures detailing what the key informant will be asked to do, information on protecting participants and disseminating findings, and notification that research participants can withdraw from the study at any point in the research process. No incentives were offered to research participants. For respondents who agreed to participate, a follow-up e-mail/communication was sent to schedule interviews and to request research-related documents, including informed consent. All interviews were conducted via Microsoft Teams or telephone, depending on the availability of internet connection in rural/remote areas, and were videorecorded with consent. Additionally, an e-mail/communication reminder for the interview was sent two days before the call (see Appendix 5). Recruitment took place over a three-month period, from January to March 2024.

If no response was received within seven business days of the initial recruitment e-mail/call, a follow-up recruitment e-mail was sent. If the contact declined to participate, the researcher randomly chose another individual from the list of potential candidates and initiated contact with an invitation to participate in the study.

4.4.2 Key Informant Interviews

Given the effectiveness of semi-structured interviews in case studies, the researcher asked a set of pre-determined but flexible-worded questions to key informants using an interview guide (see Appendix 1, 2 and 3). Alongside these pre-established questions, the researcher also asked

follow-up questions designed to probe and delve deeper into the topic of interest. This approach can allow interviewees to express themselves openly, enabling them to shape their own perspective of the phenomena under study (Family Health International, n.d.).

Most semi-structured key informant interviews were conducted via Microsoft Teams, with two interviews conducted by telephone due to limited internet availability. All interviews were conducted in English. Key informants included personnel from the highest level of national program leadership, district health educators, defined as persons who oversee CHWs and coordinate health education and promotion activities within their respective communities, and community health workers from all four health regions in Belize. Three slightly different interview guides were used for the national program leadership, district health educators and community health workers. Interview guides varied based on the building blocks and programmatic components deemed appropriate for each level and included questions pertaining to the point of view of informants on health system and program-level factors influencing the CHW program in Belize. Questions were developed based on the 7 building blocks of the WHO health systems framework and the 10 programmatic components of the CHW AIM. These two frameworks, as part of the underlying conceptual framework for the study, guided the development of these data collection instruments and provided a systematic approach to data collection and analysis. The three interview guides can be found in Appendix 1, 2 and 3.

All interviews were conducted by the principal investigator, Andrei Chell, and took approximately one hour. Interviews were recorded with consent for an accurate report, and the researcher transcribed the interviews using Microsoft Teams' transcription feature. The researcher then double-checked and cleaned each recording's transcription to ensure accuracy. If deemed necessary, the researcher reached out to key informants following the interview to

address any potential clarifications. To foster a comfortable and fluid dialogue, the researcher employed a conversational interviewing style and ensured that all topics in the interview guides were covered.

4.4.3 Desk Review

For this study, an extensive desk review was conducted to complement the key informant interviews to answer research question one, exploring the influence of Belize's health system on the functionality and performance of the national CHW program in the last ten years (2013 to 2023). According to Namey and Trotter (2017), a desk review is an effective approach that entails examining various types of documents, such as books, reports, scientific journal articles, and gray literature (Namey & Trotter, 2017). Any document containing relevant text is a potential source for a desk review.

For this study, the desk review involved an extensive search for published peer-reviewed and gray literature on the CHW program in Belize. The search strategy included documents in English dated within the last 10 years, between 2013 and 2023, as part of the peak period of the Health Sector Strategic Planning in Belize. Resources were identified on the websites of and through official contacts with the Ministry of Health and Wellness, the Pan American Health Organization/ World Health Organization (PAHO/WHO), UNICEF, and on public databases such as PubMed and Google Scholar. Key search terms included Belize's community health worker program, health systems strengthening, health workforce, and primary health care, with a particular focus on Belize. The researcher also reviewed the citations of relevant documents to locate additional papers. In addition, after each KII, the researcher asked for any document that the interviewee may think is relevant to the study, and that is permitted for public dissemination, be shared. All documents were analyzed using the content analysis method as described in the

data analysis section. The list of selected documents that met the criteria for the desk review can be found in Table 4 in the findings chapter of this dissertation.

4.5 Data Analysis

This study utilized the content analysis method to analyze all data. Content analysis is a widely used method in qualitative studies to determine the presence of certain words, themes, or concepts within qualitative data (Namey & Trotter, 2017). In using content analysis, researchers can quantify and analyze themes and interactions that emerge from this method (Columbia Mailman School of Public Health, n.d.). Content analysis can comprise verbal and non-verbal communication, with sources of data such as articles, books, interviews, field notes, gray literature, or any communicative language (Namey & Trotter, 2017). Bardin (1977) outlines the two primary functions of content analysis: to explore content and discover new elements, and to facilitate the emergence of hypotheses to guide research back into the field (Bardin, 1977). This dissertation utilized the categorical content analysis approach, which involves a data reduction technique that uses coding and thematic grouping (Namey & Trotter, 2017). As summarized by Bardin (1997), categorical content analysis encompasses the following key steps:

1. Pre-analysis: involves carefully selecting the material to be analyzed, which may include articles, books, transcribed interviews, field notes, gray literature or other relevant sources. The selected material is then thoroughly read and examined.
2. Encoding: involves the transformation of original data from the material, utilizing a dataset that will be grouped in the future.
3. Categorization: involves the organization and classification of the material into numerous codes. This process involves sorting all the encoded material based on the pre-selected criteria.

4. Interpretation: involves a reasoning process that forms an integral part of the analysis. In this last step, the researcher draws meaningful insights and understanding from the categorized material.

The process of encoding and categorizing the contents of the material relies on two fundamental mechanisms: induction and deduction. These two mechanisms can be utilized in various combinations and variations, forming the foundation of the standard categorical content analysis process (Bardin, 1977; Namey & Trotter, 2017). According to Namey and Trotter (2017), when analyzing qualitative data, researchers have the option to employ predefined categories that facilitate the process of induction (Namey & Trotter, 2017). Prior to the coding process, these categories can be utilized to generate an initial start list of codes, which gets further refined during the subsequent step of the analysis. Similarly, this process was used in this study, where the creation of the initial set of codes was guided by the conceptual framework of this dissertation. The complementary side of coding and categorization is deduction (Bardin, 1977; Gondim & Bendassolli, 2014; Namey & Trotter, 2017). To some degree, the validity of induction can be tested through successful deduction (Gondim & Bendassolli, 2014). However, because the researcher initially encodes the raw data using inductive methods (data reduction), deductive elements must be employed to be able to identify the organization of these codes. This involves forming categories that further reduce the significant elements of the material. Thus, induction and deduction are interconnected (Gondim & Bendassolli, 2014; Namey & Trotter, 2017).

For this study, all documents from the desk review and interview transcripts were analyzed using the categorial content analysis method to answer research questions 1 and 2. The researcher utilized ATLAS.ti version 24, a qualitative data analysis software program, to

effectively organize and manage data. ATLAS.ti is a user-friendly and intuitive software suitable for various theoretical approaches and data analysis methods, such as the content analysis phases of Laurence Bardin, as described by Soratto and colleagues in 2020 (Soratto et al., 2020). To answer research question 3, the researcher carefully analyzed and synthesized the data collected from research questions 1 and 2. Based on the results from these two research questions, the researcher provided specific recommendations on what is needed to optimize the CHW program in Belize. Additionally, the further review of relevant literature also guided the development of recommendations. Recommendations are centered around the 7 building blocks and 10 programmatic components of the conceptual framework for the study as described in chapter 3. An in-depth description of these recommendations can be found in chapter 6 of this dissertation. Table 3 below provides supplementary information pertaining to the data source and analysis for this study, ensuring that each research question was adequately addressed using the appropriate methods and analysis plan.

Table 3. Summary of Research Questions, Data Sources and Analysis Plan

Research Question	Data Source	Analysis Plan
1. How has the health system influenced the functionality and performance of the National CHW Program in Belize in the last 10 years (2013-2023)?	• Key informant interviews with 3 program leadership personnel, and 4 district health educators. • Desk review of relevant documents.⁷	• Qualitative categorical content analysis of key informant interviews and selected documents from the desk review.
2. To what extent have the WHO's health system building blocks influenced the different programmatic components of the CHW program in Belize?	• Key informant interviews with the national program leadership, district health educators and community health workers (sample of 3 national program leadership personnel, 4 district health educators, and 20 community health workers).	• Qualitative categorical content analysis of key informant interviews.
3. Given the findings from research questions 1 and 2, what are the specific recommendations for optimizing the CHW program in Belize?	• Analysis and synthesis of findings from research questions 1 and 2. • Complemented with further literature review, including considerations for the optimization of CHW programs.	• Literature review of current public health recommendations for the strengthening of CHW programs. • Utilization of findings from research questions 1 and 2 to provide commentary on what is needed to optimize the CHW program in Belize.

4.6 Ethical Consideration

Upon dissertation committee approval of the proposal, a proposal was submitted to the Ministry of Health and Wellness Institutional Review Board (IRB) requesting permission to conduct the study in Belize. Once the MOHW approved the proposal, an IRB application was submitted to the University at Albany Office of Regulatory and Research Compliance and

⁷ Documents identified in Table 4 met the criteria for the desk review and were analyzed to answer research question 1.

received a determination of non-human subject research (reference numbers: 7957 and GEN/147/01/23).

Once all approvals were obtained, recruitment began, as discussed above. Written informed consent was obtained from all key informants and confidentiality was maintained. The researcher also ensured the protection of all participants throughout the research process.

Anticipated risks to research participants were minimal. Potential risks included breaches of confidentiality, infringement upon privacy, discomfort from addressing sensitive topics, and/or being observed by the interviewer (Namey & Trotter, 2017). It was vital to note that there was a potential risk of confidentiality issue since all key informants were part of the same organizational system. However, as highlighted above, the researcher ensured to minimize this risk from the start of the study by implementing a careful recruitment approach. Participants' contact information was securely stored on a password-protected computer. The researcher assigned each participant a unique identifier code which was used to identify participants on recordings and transcripts. If a participant revealed any identifying information, such information was removed from the transcript. In order to ensure confidentiality, the researcher also de-identified all electronic data before storing. All digital files were password-protected, and only the researcher and dissertation chair had access to this information. The names of the participants will not be included in any findings or publications resulting from this study; however, the researcher will use anonymous quotations with consent from participants. The researcher respected all study participants' rights, needs, values, and wishes and informed participants that questions, concerns, or complaints could be referred to the researcher or the University at Albany IRB. To ensure the protection of all participants, comprehensive information about the study aims, goals and procedures was shared. This information was conveyed verbally and in writing

to ensure maximum understanding of all aspects of this study. Informed consent was obtained from all participants, adhering to all protocols outlined by the IRB.

The researcher considers the insights provided by the national program leadership, district health educators, and community health workers to be valuable contributions to the research study aimed at optimizing the community health worker program in Belize. The anticipated benefit associated with participation in the study was the opportunity to increase general understanding of how the CHW program in Belize is functioning within the national health system. In addition, a high-level written summary of the findings from this study will be shared with all participants and the MOHW after the dissertation defense. This will contribute to a dissemination of knowledge regarding the CHW program in Belize. Lastly, a meeting with the senior management team of the MOHW will be held to disseminate the results and recommendations, and to discuss the steps for wider dissemination among potential service users.

4.7 Doctor of Public Health (DrPH) Foundational and Concentration Competencies

This DrPH dissertation represents a significant practice-based research project that aimed to address and synthesize the following five DrPH Foundational and Concentration Competencies:

- 1. Design a qualitative, quantitative, mixed methods, policy analysis or evaluation**

project to address a public health issue: As described in the methodology chapter of this dissertation proposal, an exploratory qualitative case study was conducted using a health policy and systems research approach to assess the status of the CHW program in Belize. The researcher designed a qualitative evaluation project to address the issues faced by the CHW program in relation to the health system in which it operates.

- 2. Integrate knowledge, approaches, methods, values and potential contributions from multiple professions and systems in addressing public health problems:** In assessing the CHW program in Belize, the researcher systematically analyzed and synthesized knowledge, values, and contributions from professions in different levels of the health system. As described in chapter 4, the researcher grouped key informants into three categories: national program leadership, district health educators, and community health workers. Perspectives, knowledge, values, and contributions from multiple professions at the highest level of national program leadership were integrated into this study. Additionally, insights from district health educators and community health workers across all four health regions were utilized to achieve the aims of this study.
- 3. Create organizational change strategies:** Based on the findings from research questions 1 and 2, the researcher proposed specific organizational change strategies to optimize the CHW program in Belize. These recommendations are in accordance with the health system building blocks and the different programmatic components of the CHW program.
- 4. Integrate scientific information, legal and regulatory approaches, ethical frameworks and varied stakeholder interests in policy development and analysis:** Based on the findings of this study, formal recommendations were developed. This process entailed the integration of scientific information from the literature review, legal and regulatory mechanisms pertaining to CHWs, and varied concerns from the three categories of key informants: national program leadership, district health educators, and community health workers. The researcher synthesized all the relevant information to inform sound and feasible policy recommendations.

- 5. Demonstrate proficiency in the use of a computer software for data entry, database management, data analysis and displaying and reporting results:** In the data management and analysis stage, the researcher had to demonstrate proficiency in ATLAS.ti version 24, a qualitative data analysis software program. ATLAS.ti was utilized to effectively organize and manage data from this study.

CHAPTER V: FINDINGS

5.1 Introduction

This chapter presents a comprehensive analysis and synthesis of the data collected, providing an in-depth exploration of the research questions and objectives. It incorporates the findings from the analysis of the desk review and the semi-structured key informant interviews with individuals who are directly involved with the CHW program in Belize. Interviews were conducted with program leadership personnel, district health educators and community health workers from each region in the country.

The following section of this chapter presents the dissertation findings organized by research questions, which include:

Research Question 1: How has the health system influenced the functionality and performance of the National CHW Program in Belize in the last 10 years (2013-2023)?

This research question was answered through a desk review of relevant documents and key informant interviews with the national program leadership and district health educators of the CHW program in Belize.

Research Question 2: To what extent have the WHO health system building blocks influenced the different programmatic components of the CHW program in Belize? This research question was answered using key informant interviews with the national program leadership, district health educators and community health workers.

Research Question 3: Given the findings from research questions 1 and 2, what are the specific recommendations for optimizing the CHW program in Belize? This final research question was answered through data analysis and synthesis from research

questions 1 and 2, as well as a further review of relevant literature pertaining to the optimization of CHW programs.

This chapter includes a set of tables that reflects examples of quotations from the interviews conducted and excerpts from documents included in the desk review. According to Cloutier and Ravasi (2021), tables containing quotations enhance trustworthiness by increasing transparency regarding data collection, methods, and findings of the study (Cloutier & Ravasi, 2021). Most importantly, using tables in qualitative research can help to organize and analyze data effectively, and provide illustrative examples to readers (Cloutier & Ravasi, 2021).

5.2 Findings by Research Question

5.2.1 Research Question 1: How has the health system influenced the functionality and performance of the National CHW Program in Belize in the last 10 years (2013-2023)?

For research question 1, interviews were conducted with 3 program leadership personnel, and 4 district health educators representing the 4 health regions, totaling 7 research participants. In addition, the desk review complemented the key informant interviews in answering research question 1. As described in chapter 4, part of the desk review process included the search and selection of relevant documents within the last 10 years (2013 to 2023). Ultimately, a total of 12 documents were included in the desk review to gather pertinent information on the CHW program in Belize. Of these 12 documents, 10 are publicly available, while 2 are technical documents shared by the MOHW leadership during the interviews. A complete list of these documents can be found below in Table 4. The purpose of research question 1 was to describe how Belize's health system has influenced the functionality and performance of the national CHW program in the last 10 years, from 2013 to 2023. This decade was deemed critical for the analysis as it represents a peak period in Belize's health sector strategic planning and the

transformation of its health system. Thus, this research question sought to provide a more general overview of how the health system influenced the CHW program in Belize during this period.

Table 4. Documents Included in the Desk Review for Analysis

Document Title	Source and Year	Document Objective
Belize Health Sector Strategic Plan (HSSP) 2014-2024	Belize Ministry of Health and Wellness, 2014	To provide an overall framework for health priorities in the country and to contribute towards the national development goals for the Government of Belize.
Belize Human Resources for Universal Health Strategic Plan 2019-2024	Belize Ministry of Health and Wellness, 2019	To ensure the equitable distribution of appropriately skilled and motivated HRH to support the achievement of health outcomes in Belize.
Belize Ministry of Health and Wellness Operational Plan 2022-2023	Belize Ministry of Health and Wellness, 2022	To serve as the guiding document for the Ministry of Health and Wellness in setting achievable targets to achieve universal health coverage and the sustainable development goals.
Terms of Reference (TOR) for Community Health Workers (CHW) in Belize	Belize Ministry of Health and Wellness, 2023	To define the role, responsibilities and structure of the CHW program in Belize.
Evaluation of the Community Health Worker Program in Belize 2013	Castillo, 2013	To evaluate the CHW program and ascertain its level of effectiveness, challenges and scope for improvement as an integral component of the health care system.
Belize Country Cooperation Strategy 2017-2021	Pan American Health Organization, 2017	To outline the medium-term vision of PAHO/WHO's work in Belize in support of the country's National Health Sector Strategic Plan 2014-2024.
Impact of COVID-19 on Human Resources for Health and Policy Response: The	Pan American Health Organization, 2022	To analyze the impact of COVID-19 on HRH, and the policy responses in Belize, Grenada, and Jamaica.

Case of Belize, Grenada, and Jamaica		
Community Health Workers (CHWs) in NCD Prevention and Control in the Caribbean: Profile, Roles, and Competencies	Pan American Health Organization, 2023	To identify and consolidate CHW profiles, roles, and competencies with a focus on NCD prevention and control in target Caribbean countries.
Universal Health and the Pandemic-Resilient Health Systems- Belize Annual Report 2020	Pan American Health Organization, 2021	An annual report reflecting PAHO's technical cooperation in the country for the period, implementing the Country Cooperation Strategy, and responding to the needs and priorities of the country.
Strengthening the Community Health Worker Program in Belize	Oladeji et al., 2023	To describe how Belize is strengthening its CHW program to address the gap in access to health services following the COVID-19 pandemic.
National Health Model of Belize	Belize Ministry of Health and Wellness, 2016	To provide a framework for the development of the National Health System and for the full implementation of the Health Sector Strategic Plan.
Quality Improvement of Health Care in Belize: Focusing on Results	Inter-American Development Bank, 2014	To describe the Salud Mesoamerica 2015 Initiative Project in Belize and to present its initial results in quality improvement of health services.

Findings indicate that over the past decade, Belize's health system has significantly impacted the functionality and performance of the CHW program. Notably, 4 main health system influences emerged during the analysis of all the study data for research question 1. These influences provide a broad perspective on how the health system, as a structure, has influenced the CHW program in the last decade.

Table 5 contains specific excerpts from the documents included in the desk review related to the influence of Belize’s health system on the CHW program within the last 10 years. The table presents the category “Influence of Belize’s Health System” and 4 main themes (structure and organization, policy and strategic planning, service delivery and quality improvement, and resource allocation). A comprehensive explanation of the health system’s influence on the CHW program follows the table.

Table 5. Examples of Health System Influences on the Functionality and Performance of the CHW Program in Belize in the last 10 years (2013-2023): Insights from the Desk Review

Category	Theme	Data Source	Examples
Influence of Belize's Health System	Structure and Organization	MOHW, 2016, pp. 7, 34, 41, 45	<i>"The MOH has made progress in the creation of health regions that, in a decentralized way, have gradually assumed responsibility for primary care through CHWs and rural health nurses...the national health model raises the possibility of having CHWs with adequate competencies for comprehensive care based on PHC...There is evidence that the implementation of IHSDN [Integrated Health Service Delivery Networks] based on PHC is an adequate strategy to address health services fragmentation...Another institutional facilitating aspect of the national health model is the existence of a CHW network, distributed in the communities of the regions, who have been trained and are committed to providing some health services in their own communities."</i>
		IADB, 2014, pp. 8, 34	<i>"Primary health care is addressed through a network of 3 polyclinics, 35 health centers, and 53 health posts, as well as through mobile units and community health workers...Belize began to implement the decentralization of the sector through the creation of the four health regions with some administrative and decision-making autonomy...There has been formal orientation for Health Educators into the HECOPAB structure to support the CHW program."</i>
		Castillo, 2013, pp. 11, 17, 24	<i>"The Ministry of Health's PHC program was amalgamated with HECOPAB, and units were established in each district. This undertaking enabled community health workers to be supported and supervised directly by district health educators and connected community health activities to the structured health system...A comprehensive package of health services is now delivered through these four administrative regions....These are supplemented by mobile health services, CHWs and traditional birth attendants working throughout the rural communities of the country...CHWs can be regarded as the base of Belize's primary health care system, since they are more widely dispersed than any other health professional."</i>
	Policy and Strategic Planning	MOHW, 2019, pp. 14, 35	<i>"Areas for Policy Intervention: Training of CHWs and non-formal care providers. Community health workers are tasked with many duties but little incentives for performance. These are issues that should be addressed."</i>
		MOHW, 2014, pp. 1,	<i>"The 2014-2024 National Health Sector Strategic Plan reflects an innovative approach in the organization and delivery of health and wellness services...the focus</i>

		8, 10, 49, 51, 56	<i>of this plan calls for the development of a health system that is based on primary health care... The HSSP provides an overall framework of health priorities, including community health... Strategic Objective 1: Integrated Health Services Based on Primary Health Care for Improved Health Outcomes... The PHC system is composed of a core set of functional and structural elements that guarantee universal health coverage and access to services that are acceptable to the population and that are equity-enhancing... Strategic Objective 4: Strengthen Capacity for Human Resource for Health Planning to Meet Present and Future Health Sector Needs”</i>
		MOHW, 2022, pp. 24–26	<i>“Strategic Objective 2: Strengthening the Organization and Management of Health Services... Activity: Strengthening of the CHW Program by training and certifying new cadre of CHWs and Integration of the CHW Program into the MOHW as permanent staff.”</i>
		Oladeji et al., 2023, p. 4420	<i>“Community health workers in Belize are recognized as part of the formal health system with policies and strategies in place that define their roles, tasks, and relationship to the health system.”</i>
		IADB, 2014, p. 7	<i>“This section highlights priority policy issues including quality improvement, expansion of coverage through human resource task-shifting to community health workers, and the wider use of results-based financing mechanisms.”</i>
	Service Delivery and Quality Improvement	Castillo, 2013, p. 17	<i>“Arguably, given the range of practical experiences of CHWs, they do possess primary health care competencies as it is envisaged that they are the first link between the community and the health system.”</i>
		MOHW, 2023, p. 2	<i>“CHWs are involved in a wide range of health care activities such as first aid, some types of health screening, health education, health promotion, community organization services and support to the health centers and mobile clinics.”</i>
		PAHO, 2021, pp. 18, 19, 23	<i>“Community Management of NCDs is a training course that was introduced for CHWs to develop skills for monitoring persons with diabetes and hypertension in their villages as a way of maintaining continuity of care within the context of COVID-19... Belize has made specific efforts in addressing diabetes through training for CHWs at the primary care level... With the support of a cadre of 230 CHWs, mobile outreach services included vaccination services that were integrated into the maternal and child health and family planning services package.”</i>
		PAHO, 2023, p. 59	<i>“CHWs coordinate health activities in the community, do health promotion, and treat communicable diseases... They do a 3-month training program for NCD services.</i>

			<i>Training is once a week with 72 hrs of practical sessions. After initial training, there is on-the-job training with continuous supervision throughout."</i>
		IADB, 2014, p. 11	<i>"The Salud Mesoamerica 2015 Initiative Project focuses on quality improvement of maternal, neonatal, child and reproductive health services...The quality improvement component includes an incentive arrangement through results-based financing to push quality improvements in health facilities. Part of the investment intends to revitalize the community health worker program and follow the literature recommendations by integrating non-financial incentives for the CHWs."</i>
		Oladeji et al., 2023, p. 4420	<i>"They support during mobile clinics and outreaches and perform simple diagnostic measures including rapid diagnostic test for malaria, nasal swab for collecting samples for COVID-19 test and contact tracing during COVID-19 pandemic and support patients in adherence to treatment."</i>
		PAHO, 2022, pp. 5, 10	<i>"Belize has an active CHW program, with 230 CHWs living in and serving defined communities. CHWs have been fundamental in reducing the gap in rural areas...Task delegation during COVID-19: In Belize, CHWs were drafted to assist the nurses with their duties, especially in rural communities. In addition, they were trained in areas of self-care management of chronic illnesses, maternal and child health, sexual and reproductive health, and other essential services."</i>
	Resource Allocation	PAHO, 2017, p. 23	<i>"Belize's health system is substantially dependent upon public financing. For the 2016/2017 financial year, Government budgeted approximately BZ\$126.4M to the MOH. This equates to approximately 11% of the national budget and 3.5% of GDP."</i>
		Castillo, 2013, pp. 5, 21	<i>"Perhaps the single greatest challenge facing CHWs is resource constraints... Additional financial resources are required to actualize this potential. Less than one percent of the MoH's budget is allocated to HECOPAB. This would undoubtedly have to increase if more training is required, as well as the provision of a specific medical equipment and medication to the CHWs."</i>
		PAHO, 2021, p. 8	<i>"Through the EU-funded Health Sector Support Program Belize Project, funds were reoriented for improving integrated health care at the community level during COVID-19. Two hundred and thirty CHWs received work kits containing noncontact thermometers, stethoscopes, glucometers with strips and lancets, and first-aid kits."</i>
		PAHO, 2022, p. x	<i>"In general, PAHO supported the selected countries [Belize] in most, if not all, of the above-mentioned areas [measures to support HRH in COVID-19 Response], providing technical cooperation, training, and logistical and financial support."</i>

		Oladeji et al., 2023, p. 4421	<i>“...should allocate adequate resources from domestic budgets and from a variety of sources for the successful implementation of the community health worker program and integration of community health workers into the health workforce in the context of investments in primary health care...”</i>
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As demonstrated in Table 5, the desk review identified key health system factors or “influences” that were organized into 4 main themes for analysis: (1) structure and organization, (2) policy and strategic planning, (3) service delivery and quality improvement, and (4) resource allocation.

Factor 1: Health System Structure and Organization

According to the desk review, the structure and organization of Belize’s health system has been a critical factor in shaping the functionality and performance of the national CHW program over the past decade. The decentralization of the health system into four health regions has enhanced primary health care delivery through integrated health service delivery networks (IHSDN), positioning CHWs at the core of this structure (see Table 5, Theme: Structure and Organization). This is illustrated by an excerpt from the MOHW (2016), National Health Model of Belize document, which states: *“The MOH has made progress in the creation of health regions that, in a decentralized way, have gradually assumed responsibility for primary care through community health workers and rural health nurses... the national health model raises the possibility of having community health workers with adequate competencies for comprehensive care based on PHC.”* This decentralization has been crucial in enhancing local decision-making and responsiveness to community health needs through the CHW program.

Another example supporting this theme is provided by Castillo (2013), Evaluation of the CHW Program in Belize, which states: *“A comprehensive package of health services is now delivered through these four administrative regions....These are supplemented by mobile health services, CHWs and traditional birth attendants working throughout the rural communities... CHWs can be regarded as the base of Belize’s primary health care system, since they are more widely dispersed than any other health professional.”* Findings suggest that there has been

greater recognition and integration of the CHW program into the health system in the last decade. This cadre of health care workers has played a vital role in the primary health care model by promoting community participation, improving accessibility, reducing fragmentation, and increasing the overall effectiveness of the health system.

Factor 2: Policy and Strategic Planning

The desk review suggests that the policy direction and strategic planning initiatives of the MOHW have prioritized the CHW program by establishing key objectives and target indicators over the past 10 years. This approach has provided a clear vision and robust framework for primary health care service delivery (see Table 5, Theme: Policy and Strategic Planning). In particular, the MOHW Health Sector Strategic Plan (HSSP) 2014-2024, has been the overarching document that has provided the foundation for all policy and strategic planning efforts in the country. The plan emphasizes the vital role of CHWs in delivering primary health care services to remote and underserved areas, supporting universal health coverage, equity, and quality of care. This is illustrated by an excerpt from the MOHW (2014), Belize Health Sector Strategic Plan, which states: *“The 2014-2024 National Health Sector Strategic Plan reflects an innovative approach in the organization and delivery of health and wellness services...the focus of this plan calls for the development of a health system that is based on primary health care... The HSSP provides an overall framework of health priorities, including community health.”*

More recent efforts have been made to complement this national plan, as documented in the MOHW Operational Plan 2022-2023, which prioritizes policies and strategies pertaining to the strengthening of the CHW program through training and certification of new CHWs and the integration of the program into the wider MOHW: *“Strategic Objective 2: Strengthening the Organization and Management of Health Services... Activity: Strengthening of the CHW*

Program by training and certifying new cadre of CHWs and Integration of the CHW Program into the MOHW as permanent staff.” The Belize Human Resources for Universal Health Strategic Plan 2019-2024 has supported these efforts by providing a blueprint for the expansion of a more efficient and robust health workforce. Another recent document highlighting this influence is provided by Oladeji et al. (2023), *Strengthening the CHW program in Belize*, which states: “*Community health workers in Belize are recognized as part of the formal health system with policies and strategies in place that define their roles, tasks, and relationship to the health system.*” Clearly, the strategic planning and policy direction of the MOHW have facilitated the formalization of CHWs and defined their integration into the wider health system.

Factor 3: Service Delivery and Quality Improvement

The desk review also suggests that the service delivery and quality improvement initiatives have directly impacted the performance of the CHW program by expanding the roles and responsibilities of CHWs (see Table 5, Theme: Service Delivery and Quality Improvement). In Belize, CHWs are crucial for delivering primary health care services, particularly in rural and remote areas. They provide health education, disease prevention, basic health screenings, and referrals to health facilities. In recent years, the roles and responsibilities of CHWs have expanded far beyond maternal and child health services. This is illustrated by an excerpt from the MOHW (2023), *Updated Terms of Reference for CHWs*, which states: “*CHWs are involved in a wide range of health care activities such as first aid, some types of health screening, health education, health promotion, community organization services and support to the health centers and mobile clinics.*” In addition, the country has benefited from the Salud Mesoamerica 2015 Initiative Project (SM2015), which focused on quality improvement of MCH services through the strengthening of the CHW program, as documented by IADB (2014): “*SM2015 focuses on*

quality improvement of maternal, neonatal, child and reproductive health services...The quality improvement component includes an incentive arrangement through results-based financing to push quality improvements in health facilities. Part of the investment intends to revitalize the community health worker program.” This document also highlights quality improvement initiatives such as adherence to clinical guidelines and the continuous monitoring of service delivery, which have enhanced the effectiveness of the CHW program in Belize.

Findings from the desk review also indicate that CHWs played a vital role in pandemic response efforts during COVID-19. Most recently, CHWs in Belize have actively contributed to the prevention and control of NCDs and mental health, and played an instrumental role in Belize’s certification of malaria elimination. This is illustrated by an excerpt from PAHO (2021), Belize Annual Report, which states: *“Community Management of NCDs is a training course that was introduced for CHWs to develop skills for monitoring persons with diabetes and hypertension in their villages as a way of maintaining continuity of care within the context of COVID-19... Belize has made specific efforts in addressing diabetes through training for CHWs at the primary care level.”* Another example in support of this theme is provided by PAHO (2022) policy response document, which states: *“CHWs have been fundamental in reducing the gap in rural areas in Belize...Task delegation during COVID-19: In Belize, CHWs were drafted to assist the nurses with their duties, especially in rural communities. In addition, they were trained in areas of self-care management of chronic illnesses, maternal and child health, sexual and reproductive health, and other essential services.”*

Factor 4: Resource Allocation

According to the desk review, resource allocation has been a critical factor influencing the functionality and performance of the CHW program in the last 10 years. Belize’s health system is

heavily dependent on public financing, which has caused significant financial constraints over the years. With approximately 3.5% of the GDP spent on health and less than one percent of the MOHW budget allocated to HECOPAB, there has been limited ability to provide adequate remuneration, equipment and supplies to CHWs (see Table 5, Theme: Resource Allocation). This is illustrated by an excerpt from Castillo (2013), which states: *“Perhaps the single greatest challenge facing CHWs is resource constraints... Additional financial resources are required to actualize this potential. Less than one percent of the MoH’s budget is allocated to HECOPAB. This would undoubtedly have to increase if more training is required, as well as the provision of a specific medical equipment and medication to the CHWs.”* Another example in support of this theme is exemplified in the PAHO (2021), Universal Health and the Pandemic-Resilient Health Systems Belize Annual Report, which states: *“Through the EU-funded Health Sector Support Program Belize Project, funds were reoriented for improving integrated health care at the community level during COVID-19. Two hundred and thirty CHWs received work kits containing noncontact thermometers, stethoscopes, glucometers with strips and lancets, and first-aid kits.”* This collaboration and reallocation of funds were vital to enhance the capacity of CHWs to provide basic preventive management and self-care for NCDs.

Despite these financial challenges, HECOPAB has been innovative in providing non-financial incentives such as training and recognition to motivate and retain CHWs. Additional support from partners like PAHO/WHO was also crucial in supporting CHWs amidst the COVID-19 pandemic, as stated by PAHO (2022), policy response document: *“In general, PAHO supported the selected countries [Belize] in most, if not all, of the above-mentioned areas [measures to support HRH in COVID-19 Response], providing technical cooperation, training, and logistical and financial support.”* Evidently, support from external donors has been

extremely crucial in providing additional funding and resources for the strengthening of the CHW program, particularly in the area of capacity building.

Findings pertaining to research question 1 from key informant interviews

As highlighted in the beginning of this chapter, interviews were conducted with 3 program leadership personnel and 4 district health educators to complement the desk review in answering research question 1. During the interviews, the influence of the health system on the CHW program was discussed by all participants. Both leadership personnel and DHEs discussed the structure of the public health system, its organization, and health system factors that have influenced the CHW program in the last 10 years. Table 6 includes examples of quotations from the program leadership and DHEs related to the influence of Belize's health system on the CHW program within the last 10 years. The table presents the category "Influence of Belize's Health System" and 4 main themes (structure and organization, policy and strategic planning, service delivery and quality improvement, and resource allocation).

Table 6. Examples of Health System Influences on the Functionality and Performance of the CHW Program in Belize in the last 10 years (2013-2023): Insights from Key Informant Interviews with Program Leadership and District Health Educators

Category	Theme	Data Source	Examples
Influence of Belize's Health System	Structure and Organization	KI270321	<i>"Well, in terms of our health system, we have our system of prevention, our public health system, promotion of services, primary care, secondary and tertiary care and the health system has recently, even more so influenced the entire program because the community health workers are a part of our system. Initially, I feel that they did not feel like they were a part of the health system. Now that we are engaging more with them, we're meeting more with them and we're holding them accountable as well, for the duties and for the training that we have invested... Now, Belize, since we did the bifurcation of the directors, we have very much focused, on universal health access to care. As you know, coverage and access are two very different things. So the way that we have actually focused on ensuring that people have access is for us to really strengthen the outreach that we do through CHWs... In health, I think that's an area that we have made one of the widest leaps in terms of improving our outreach, ensuring that we have integrated networks and ensuring that the community health workers are available when the villages and when the areas need them."</i>
		KI010206	<i>"HECOPAB has existed from as far as the late 1980s. Over the years it has grown to this day. It is the entity responsible for the community health worker program in Belize, with district health educators to support each region. CHWs have been part of the system ever since... CHWs are now better acknowledged, they are recognized as a vital component of the primary health care system."</i>
		KI020206	<i>"The program itself has become an integral part of the primary health care system. We can't speak of primary health care without mentioning the CHW program."</i>
	Policy and Strategic Planning	KI010206	<i>"We are here at the policy level, and they are down there at the level of implementation. So putting it in another way, our policies have transformed and impacted their action."</i>
		KI270321	<i>"The EU health sector support project had about, I think, 3 or 4 objectives. The third objective was the essential public health functions and updating our strategic health plan, and the health sector reform, which is, of course, a buzzword forever. So we are integrating the essential public health functions, which we are utilizing right now to update our health sector strategic plan that comes to an end this year. So, definitely,</i>

			<i>CHWs form a part of our health system, so they'll be impacted by the this project... We don't have a specific Community Health Strategic Plan, but we have the national strategic plan and we have the plan against NCDs and then we have the sustain malaria elimination plan. So all these plans have the CHWs as a part of it.</i>
		KI190221	<i>"We need ensure that the strategic plan is operationalized at the community level in both urban and rural areas. The goals of the ministry are wide ranging and spread across several programs with the Ministry, but most programs would utilize the CHWs..."</i>
		KI020206	<i>"We use the Belize Health Sector Strategic Plan, but not all the objectives of this plan will encompass the CHW program... So the operational plan that we use is based on this plan. The Health Sector Strategic Plan is an example of the program being incorporated into policy. The CHW program is also included in other policies like the National Breastfeeding Policy... I can definitely say that this current administration did consider this program a priority. We managed to submit a Cabinet Paper for the increase in stipend from \$100 to \$500 a month... So for us, that showed us that the health system and the government prioritizes this program. We also have an updated terms of reference which we launched right after the increase in stipend and I only thought that was fitting because we needed to have more structure and a policy in place."</i>
		KI160221	<i>"For over the years that I've been working for the Ministry of Health and Wellness, the strengthening of the Community health Worker program has been our priority in our operational plan, because that is what keeps us here working."</i>
	Service Delivery and Quality Improvement	KI020206	<i>"They assist with malaria testing, they will assist with MCH, doing mobiles, and at the same time helping with education in schools, and do some of the surveillance if you have an outbreak. So we're cross-cutting, CHWs need to know a little bit of each of these health services, which can become too much."</i>
		KI010206	<i>"CHWs have moved away from only being for MCH, they have been trained in tuberculosis, in malaria, in dengue, in HIV, in syphilis, you name it; to the point that we have been at the level here at headquarters expressing concerns, as to how much they can absorb and how much they are working. During COVID they got significant training by PAHO in regard to NCDs, diabetes, hypertension... So when it comes to NCDs and taking vital signs, they have been properly trained. They are like the implementers of many activities at local level within the primary care setting... As we</i>

			<i>... speak, there is a project getting off the ground right now with the IDB whereby quality assurance and improvement is 50% of the component. Actually we are at the stage right now of designing what we call a national framework to guide us in improving quality issues across the board."</i>
		KI150220	<i>"CHWs have primary and secondary roles in service delivery. So they do 20 visits and they carry out at least five education in the schools, so they have to do school visits. They also do five community sessions with groups in the community and also one session in a clinic setting. During mobiles they help the nurse to weigh and measure the babies, fill out the cards, they participate in health fairs, wellness activities..."</i>
		KI270321	<i>"Of course, CHWs played a significant role in the elimination of malaria, and they have played a significant role in the EMTCT of HIV and syphilis. So those are areas that we have really been able to close the gaps with the help of CHWs. Now, they are very much involved with our NCD plan. We also started training our CHWs in two major areas. One is with the management of hypertension because this was signed on to the HEARTS initiative, which is a program through PAHO. We have rolled out HEARTS just in the Western Region, but this year we're doing all the other regions and a big part of this initiative is the help of the CHWs. They have also been trained in mhGAP, which is the mental health gap training for the community. So those are areas that we've expanded and we've also done training with our CHWs in HIV management and counselling as well."</i>
		KI160221	<i>"For example, in the elimination of malaria which Belize was recently certified as a zero malaria country. CHWs were very instrumental in this certification and it was recognized by WHO and the Government of Belize."</i>
	Resource Allocation	KI010206	<i>"The CHW program doesn't have a specific budget. There is a budget for HECOPAB, but HECOPAB works not only with CHWs. It's hard to say how much is used just on CHWs because that money is spent in health education and health promotion in general, for every topic, for every event, regardless if CHWs participate or not...I think a significant milestone was the approval to give them \$500.00 monthly, which was a request that was within the ministry for many, many years and it just never got approved and eventually as of last year's April 1st in the budget, it was approved... PAHO recently supported the CHW program significantly in the purchase of items."</i>
		KI270321	<i>"We focus on funding from outside partners, so we collaborate very closely with UNICEF and PAHO as well. CHWs get support with equipment and supplies through</i>

			<i>them. I think those would be the biggest funding partners. We do have the Malaria Salud Mesoamerica program as well. So we definitely can't do it without our partners, and that's really important for me to stress...A lot of equipment comes again from the national level. So the blood pressure machines and other equipment would come from the technical advisor collaborating and writing proposals and getting funding for those things."</i>
		KI160221	<i>"HECOPAB has partnered more with agencies, private NGOs, UN agencies. This has helped us integrate the CHW program more with other programs in the Ministry of Health...I am glad that we are pushing this approach of partnering more with agencies and also other ministries. For example, we are partnering with the Ministry of Education and the Ministry of Agriculture to promote backyard gardening and the banning of sweets in schools."</i>
		KI020206	<i>"We rely a lot on donations and projects for functioning equipment and supplies. We have the malaria elimination project, for example, that was an opportunity for them to get some supplies. If we have the EU coming on board, that's another opportunity for them to get equipment and supplies. It is challenging. The CHW program doesn't have a specific budget. I know last year the health budget was cut, so I am really not sure how much of the health budget goes to HECOPAB, but it's a small fraction compared to other programs that I can say. Really, the push comes from the collaboration that we have. That's where most of the requests or the advocacy would come in for us to get supplies, for us to do training, for us to get any kind of materials, it is through these collaborations and partnerships."</i>

As demonstrated in Table 6, findings from key informant interviews with leadership personnel and district health educators supported the analysis from the desk review, reiterating the significant influence of Belize's health system on the CHW program in the last decade.

Factor 1: Health System Structure and Organization

In terms of the first theme, key informant interviews emphasized the importance of the health system's structure in integrating CHWs into the primary health care model (see Table 6, Theme: Structure and Organization, Data Source: KI270321 and KI020206). In this instance, research participant KI020206 stated: *"The program itself has become an integral part of the primary health care system. We can't speak of primary health care without mentioning the CHW program."* This statement was complemented with participant KI270321 stating: *"The health system has recently, even more so influenced the entire program because the community health workers are now a part of our system. Initially, I feel that they did not feel like they were a part of the health system. Now that we are engaging more with them, we're meeting more with them and we're holding them accountable as well, for the duties and for the training that we have invested..."*

Findings also highlight the pivotal role CHWs have played in rural areas through integrated health networks and greater outreach efforts across the country. This is illustrated by participant KI270321, who stated: *"In health, I think that's an area that we have made one of the widest leaps in terms of improving our outreach, ensuring that we have integrated networks and ensuring that the community health workers are available when the villages and when the areas need them."* Furthermore, the structure and organization of the health system has amplified HECOPAB's role and position in the CHW program, as stated by participant KI010206: *"HECOPAB has existed from as far as the late 1980s. Over the years it has grown to this day. It*

is the entity responsible for the community health worker program in Belize, with district health educators to support each region. CHWs have been part of the system ever since... CHWs are now better acknowledged, they are recognized as a vital component of the primary health care system.” In addition, findings suggest that the recent reorganization of governance and directorate structure of the MOHW has supported the movement towards universal health coverage, enhancing the overall function of the CHW program. This is illustrated by participant KI270321, who stated: *“Since we did the bifurcation of the directors, we have very much focused, on universal health access to care. As you know, coverage and access are two very different things. So the way that we have actually focused on ensuring that people have access is for us to really strengthen the outreach that we do through CHWs.”*

Factor 2: Policy and Strategic Planning

Regarding theme 2, interviews with key informants suggest that the policy direction and strategic planning initiatives of the MOHW have positively impacted the CHW program in the last decade. It is important to note that research participants made reference to several of the high-level policy documents included in the desk review. In particular, the Belize Health Sector Strategic Plan 2014-2024 has ensured the prioritization of the CHW program in all other policies and operational plans of the ministry (see Table 6, Theme: Policy and Strategic Planning, Data Source: KI020206 and KI270321). This is illustrated by research participant KI020206, who stated: *“We use the Belize Health Sector Strategic Plan, but not all the objectives of this plan will encompass the CHW program...So the operational plan that we use is based on this plan. The Health Sector Strategic Plan is an example of the program being incorporated into policy. The CHW program is also included in other policies like the National Breastfeeding Policy...”* As stated here, the overarching objective of the health sector strategic plan has paved the way for

additional policies and plans to formalize and integrate the CHW program into the wider health system. It is worth noting that while there is no specific community health strategic plan that focuses solely on the CHW program, findings suggest that the program is integrated into various strategies and initiatives across the MOHW. This is further supported by participant KI270321, who stated: *“We don't have a specific Community Health Strategic Plan, but we have the national strategic plan and we have the plan against NCDs and then we have the sustain malaria elimination plan. So all these plans have the CHWs as a part of it.”*

Most recently, the policy direction of the MOHW resulted in a substantial increase in the CHWs' stipends from \$100 BZD to \$500 BZD, along with the launch of an updated Terms of Reference for the program. This significant milestone reflects the government's commitment to enhancing the program and establishes clear guidelines for CHWs. This is illustrated by participant KI020206, who stated: *“I can definitely say that this current administration did consider this program a priority. We managed to submit a Cabinet Paper for the increase in stipend from \$100 to \$500 a month... So for us, that showed us that the health system and the government prioritizes this program... We also have an updated terms of reference which we launched right after the increase in stipend and I only thought that was fitting because we needed to have more structure and a policy in place.”* To summarize, this theme was echoed by participant KI010206, who stated: *“Our policies have transformed and impacted their [CHWs] action.”*

Factor 3: Service Delivery and Quality Improvement

In terms of theme 3, interview findings align with the desk review, indicating that over the years, the roles of CHWs have significantly expanded to support health service delivery in communities nationwide. CHWs' roles now extend well beyond maternal and child health

services, and now include a diverse skillset such as disease surveillance, NCDs management, HIV management, and mental health, to name a few (see Table 6, Theme: Service Delivery and Quality Improvement, Data Source: KI010206 and KI270321). This is illustrated by research participant KI010206, who stated: *“CHWs have moved away from only being for MCH, they have been trained in tuberculosis, in malaria, in dengue, in HIV, in syphilis, you name it; to the point that we have been at the level here at headquarters expressing concerns, as to how much they can absorb and how much they are working. During COVID they got significant training by PAHO in regard to NCDs, diabetes, hypertension. So when it comes to NCDs and taking vital signs, they have been properly trained.”*

In addition, interviews also reiterated the instrumental roles CHWs played in major health achievements, such as malaria elimination, the elimination of mother to child transmission of HIV and syphilis, the HEARTS initiative,⁸ and pandemic response efforts during COVID-19. An example of this was given by participant KI270321, who stated: *“Of course, CHWs played a significant role in the elimination of malaria, and they have played a significant role in the EMTCT of HIV and syphilis. So those are areas that we have really been able to close the gaps with the help of CHWs. Now, they are very much involved with our NCD plan, mental health... and the HEARTS initiative.”* Notably, regarding quality improvement initiatives, only one reference was made by research participant KI010206, who stated: *“As we speak, there is a project getting off the ground right now with the IDB whereby quality assurance and improvement is 50% of the component. Actually we are at the stage right now of designing what we call a national framework to guide us in improving quality issues across the board.”* While the desk review documented substantial quality improvement initiatives, such as results-based

⁸ HEARTS Initiative seeks to promote best practices in the prevention and control of cardiovascular diseases (CVD) in the Americas.

financing through the Salud Mesoamerica Project, key informant interviews provided limited references to these ongoing quality improvement efforts. This may suggest a potential gap in the planning and implementation of these initiatives as the MOHW explores new avenues to enhance this area.

Factor 4: Resource Allocation

For theme 4, findings from the KIIs consistently align with those of the desk review, suggesting that financial constraints and limited resources have significantly impacted the functionality of the CHW program in recent years (see Table 6, Theme: Resource Allocation, Data Source: KI270321, KI020206, and KI010206). This is illustrated by participant KI020206, who stated: *“It is challenging. The CHW program doesn’t have a specific budget. I know last year the health budget was cut, so I am really not sure how much of the health budget goes to HECOPAB...Really, the push comes from the collaboration that we have.”*

In light of these constraints, the MOHW has been proactively partnering with local and international donors to enhance the performance of the CHW program. External funding and collaboration with organizations like PAHO/WHO and UNICEF have provided the CHW program with essential equipment, supplies, and training. This is illustrated by participant KI270321, who stated: *“We collaborate very closely with UNICEF and PAHO as well. CHWs get support with equipment and supplies through them. I think those would be the biggest funding partners... So we definitely can’t do it without our partners, and that’s really important for me to stress.”* Another example in support of this theme is by participant KI020206, who stated: *“We rely a lot on donations and projects for these functioning equipment and supplies. We have the malaria elimination project, for example, that was an opportunity for them to get*

some supplies. If we have the EU coming on board, that's another opportunity for them to get equipment and supplies.”

In summary, the findings from both the desk review and key informant interviews consistently highlight the significant influence of Belize’s health system on the functionality and performance of the CHW program over the past decade. The decentralization of the health system and integration of CHWs into the primary health care model have been pivotal in enhancing local support for CHWs and amplifying HECOPAB’s role and position in the CHW program. Findings from both data sources also indicate that strategic policies and planning by the MOHW have formalized and prioritized the CHW program, ensuring its integration into various health policies and plans. However, key informant interviews further revealed that there is currently no specific community health strategic plan focused solely on the CHW program. Results from research question 1 also indicate that the roles and responsibilities of CHWs have expanded, underscoring their critical role in delivering diverse health services and responding to health challenges such as the COVID-19 pandemic and the elimination of malaria.

Conversely, both data sources revealed significant financial constraints as a persistent challenge, limiting the program’s potential and sustainability. Findings show that due to the insufficiency of national budget support, the program has had to rely heavily on external funding and donations. Discrepancies between the desk review and key informant interviews regarding the impact of quality improvement initiatives suggest a need for further alignment and planning in this area. This may indicate that while quality improvement initiatives are planned and documented, their implementation and impact might not be well-structured or uniformly recognized. Overall, the health system’s structure, strategic planning, and service delivery model have positively influenced the CHW program, but addressing financial constraints and improving

resource allocation remain crucial for its long-term success and sustainability. These findings collectively highlight the multifaceted influence of Belize's health system and provide a general overview on how the health system, as a structure, has shaped the CHW program in the last decade.

5.2.2 Research Question 2: To what extent have the WHO health system building blocks influenced the different programmatic components of the CHW program in Belize?

For research question 2, interviews were conducted with 3 program leadership personnel, 4 district health educators (1 from each of the four regions), and 20 community health workers (5 from each region), totaling 27 research participants. The purpose of this research question was to understand the influence of the 7 WHO health system building blocks on the different programmatic components of the CHW program in Belize. For analysis purposes, the 10 programmatic components of the CHW program were grouped into 4 overarching components (Human Resource Management, Capacity Building, Support, and Links⁹), as recommended by the CHW AIM and the conceptual framework of this dissertation. As described in chapter 4, the building blocks and programmatic components allowed the researcher to consider what specific questions to ask at each level. Thus, the findings for this research question were presented in two separate tables– from the perspectives of the program leadership and DHEs (Table 7) and from the perspectives of CHWs (Table 8).

Table 7 below includes examples of quotations from leadership personnel and DHEs related to the influence of the WHO health system building blocks on the programmatic components of the CHW program in Belize. The table presents 7 categories

⁹ Human Resource Management encompasses Role and Recruitment, Accreditation, and Opportunity for Advancement; Capacity Building encompasses Training and Supervision; Support encompasses Equipment and Supplies, Incentives, and Community Involvement; Links encompasses Data and Linkages to Health System

(Leadership/Governance, Financing, Health Workforce, Access to Medical Products and Technologies, Health Information Systems, Service Delivery and Community Ownership and Partnership) and 4 themes (Human Resource Management, Capacity Building, Support and Links). A comprehensive explanation of the extent to which these building blocks have influenced the programmatic components follows the table.

Table 7. Examples of the WHO Health System Building Blocks’ Influence on the Programmatic Components of the CHW Program in Belize: Insights from Key Informant Interviews with Program Leadership and District Health Educators

Category	Theme	Data Source	Examples
Leadership and Governance	Human Resource Management	KI160221	<i>“We have a documented recruitment process which we have to follow. This process is standardized. The recruitment process starts with what we call community meetings. The community selects the community health worker and we vet it along with the Ministry in Belmopan.”</i>
		KI020206	<i>“Overall, there has been significant improvement in the structure of the program... We use the Belize Health Sector Strategic Plan, but not all the objectives of this plan will encompass the CHW program... So the operational plan that I use is based on this plan. We look at other outputs like improving the structure of the program. Another strategic objective that we focus on is the strengthening of the capacity for human resources for health planning to meet the present and the future health sector needs.”</i>
		KI170221	<i>“For those who are certified already. So we do have continuous training for them, refresher trainings, but it is not standardized.”</i>
		KI270321	<i>“We don't have a specific Community Health Strategic Plan, but we have the national strategic plan that have the CHWs as a part of it.”</i>
	Capacity Building	KI170221	<i>“I do conduct a supervisory visit with them on a monthly basis and if I think that a CHW needs close monitoring, then I would do twice a month... So you know, I'm just developing my own skills at the moment. But I think we as supervisors can definitely benefit from trainings on supervision, leadership, management and so forth.”</i>
		KI020206	<i>“As we increase in the number of CHWs that also brings more demand on the supervision. We have one health educator per district for the most part, but these individuals have to ensure that this program is properly supervised and implemented, and unfortunately that is not the case, so that clearly needs more work, more stringent indicators for us to be at that high functional level.”</i>
		KI160221	<i>“We learn on the job. But I think just like how CHWs get training, I think we also need trainings to strengthen our supervision and leadership skills. A training on supervision would be great.”</i>
		KI150220	<i>“We have supportive supervision forms. After the supervision I provide a summary of your assessment to them to identify areas for improvement. When it comes to training</i>

			<i>for supervisors, I don't remember ever getting any training. I guess you learn most of it on the ground."</i>
	Support	KI150220	<i>"For our program to work better I believe that we need better support from our region and from headquarters in Belmopan. I think that resources go more to the other districts."</i>
		KI270321	<i>"Something very significant that was done under this administration is that we've increased the stipend for the community health workers from \$100 a month to \$500 a month. This has really helped us in many ways. It has helped us because this keeps our CHWs in their villages and in their towns; they don't have to go searching for jobs. It has helped to empower them. It has helped to motivate them as well."</i>
		KI020206	<i>"Well, I can definitely say that this current administration did consider this program a priority. We managed to submit a Cabinet Paper for the increase in stipend. Initially we had that stipend \$100 per month and that went up to \$500 a month. That came into effect earlier last year. So for us, that showed us that the health system and the government prioritizes this program."</i>
	Links	KI270321	<i>"So they are the link between our population and actual secondary care. I feel that they did not feel like they were a part of the health system. Now that we are engaging more with them, we're meeting more with them and we're holding them accountable as well... CHWs form part of our health system, and that's really important because we are now looking at not only healthcare services, but social services, education, different areas that we can improve."</i>
		KI020206	<i>"The program itself has become an integral part of the primary health care system. We can't speak of Primary Health Care without mentioning the CHW program."</i>
		KI170221	<i>"So to me, this program in Belize is really good for the communities that are far away from the hospital. I feel that this program is a bridge that connects the community to the health system."</i>
Financing	Capacity Building	KI020206	<i>"The unit receives a yearly budget at the national level, close to \$200,000 BZD, but recently we've received some cuts, but that budget will also encompass health promotion and wellness. The program operational activities, trainings, transportation, material, supplies, all of that would fall in that budget item. The regions do not cover pretty much anything for the CHWs."</i>
	Support	KI020206	<i>"The CHW program doesn't have a specific budget. I know last year the health budget was cut, so I am really not sure how much of the health budget goes to HECOPAB, but</i>

			<i>it's a small fraction compared to other programs that I can say...It is challenging. Really, the push comes from the collaboration that we have."</i>
		KI170221	<i>"Another challenge is the lack of equipment. For example, the batteries for their apparatus. Sometimes it is hard for us to get batteries, so they end up buying the batteries on their own. This might be caused due to a lack of funding."</i>
		KI150220	<i>"Another challenge would be the limited resources that CHWs undergo. For like the health fairs, we have to donate from our own pockets for food or some snack to feed the people that we're inviting."</i>
		KI270321	<i>"Each technical advisor has an assignment of a certain budget and for the CHW program, the HECOPAB unit has that budget incorporated in their annual budget...but we focus on funding from outside partners, so we collaborate very closely with UNICEF and PAHO."</i>
Health Workforce	Human Resource Management	KI190221	<i>"CHWs are volunteers and are recruited as such, however temporary employments do arise such as caretaker of a rural health clinic. CHWs also have the opportunity to transition from their post into a permanent entry level post within the ministry."</i>
		KI020206	<i>"When we look at the roles and responsibilities of CHWs, those have been clearly defined and documented. We have a TOR that clearly outlines these duties and responsibilities...For accreditation, before we set a date for graduation, I go in and I provide a test. It's a theory test. After that, throughout the year, we have our refresher trainings which sometimes won't be standardized across regions."</i>
		KI270321	<i>"We have our Licensing and Accreditation Unit that accredits allied health professionals, but CHWs are not in that list. Their accreditation is done informally through the exams and through the health educators for each region. You don't need a license to become a CHW. You just get a certificate signed by the MOHW after you pass the trainings and exams."</i>
		KI160221	<i>"Over the years, things have changed. At some point in time, we had 61 CHWs, and then at some point we had 44. This year the MOHW has authorized us to recruit. We are in the process right now of recruiting more CHWs. We have some communities that have expanded, and yet we only have 1 CHW there. So we need to conduct an analysis to see where we have a large population and limited CHWs."</i>
	Capacity Building	KI160221	<i>"Trainings have been based on a curriculum which was developed in 2013, I believe. So we are working in revising that curriculum. We do approximately 17 theory workshops. Every district decides how they will do their trainings. In total, it will take</i>

			<i>like 4 months of both theory and practical trainings for them to be certified as community health workers.”</i>
		KI020206	<i>“Often times we change the health educators because we have limited number of them, one health educator to oversee 30 CHWs. The DHE has to do both health promotion and community outreach and supervise community health workers. So they're not giving their all to the CHW program...So that proper supervision is not there. We really need a health educator who would focus on the program and a health educator who would focus on community outreach and the other assignments.”</i>
	Support	KI150220	<i>“In the manual, it only talks about the stipend, the equipment and follow-up training. So it really comes down to the relationship that health educators build with them. We should be able to give them something back as an incentive, and I think priority health checks should be an incentive for them. Formally, they don't get any vacation or sick days, so it is up to us to work with them.”</i>
		KI160221	<i>“CHWs are provided uniforms. Whenever we have the resources, we do recognition. In terms of vacation, we don't offer any, but maybe we should consider that because what we require of them now, compared to years ago is much more.”</i>
		KI170221	<i>“Each CHW receives a monthly stipend. Each region has different ways of motivating CHWs. Remember these are volunteers, so I do have a way of motivating them. Maybe I give them a little token of appreciation for performing an excellent job within their community. So I do find different strategies to boost them up.”</i>
Access to Medical Products and Technologies	Support	KI150220	<i>“We get provided with stethoscopes, scales, glucometer and blood pressure apparatus probably once a year or once every two years. Those items we need to change them at least every six months if you really want accurate readings... And then the batteries that these machines need. CHWs need batteries so often and then we're not providing them. The monthly requisition form for medications, I stopped using it. The forms need to be revised because of an issue we had with giving meds to CHWs.”</i>
		KI020206	<i>“We have a system in place where they request basic supplies like Tylenol, Benadryl, and dressing materials, but they might not get the full amount that they request because the regions will prioritize the health facilities and then whatever remain in stock they will give to the CHWs...we have the Central Medical Stores, who equip and supply the regions. CHWs get these medications by filling out the requisition form on a monthly basis. That doesn't mean they will get the exact amount that they're requesting. Normally it's lower, if there is no medication available, they get none.”</i>

		KI270321	<i>“The process is in place for them to get their medical supplies and the equipment that they need. A lot of equipment comes again from the national level. So the blood pressure machines and other equipment would come from the technical advisor collaborating and writing proposals and getting funding for those things... We are supported very much by collaboration with UNICEF and PAHO...community health workers get support with equipment and supplies through them.”</i>
Health Information Systems	Links	KI020206	<i>“The national health information system does not take into account the community-level data from the CHW program. Simply because most of the data collected at the community level is handwritten. It's not placed into an electronic format until it reaches the health educator. The health educator will receive the home visit forms, the monthly report or the log books that the CHWs have, and then they will provide a comprehensive report at the end of each month. So they do this after they assess all the CHWs that they supervise. So for that reason, we have not been able to incorporate that into a larger system, and after discussing with the Epidemiology unit, it might be a while before we reach there.”</i>
		KI160221	<i>“Documentation for the CHW program needs to improve. When we identify a weakness, it boils down to the documentation part. The information flow needs to be strengthened.”</i>
		KI010206	<i>“We're still struggling for the use of BHIS to be more appropriate, more complete by our own staff within health regions. We do recognize it's a weak point simply because the Epidemiology unit has not given that priority.”</i>
Service Delivery	Human Resource Management	KI010206	<i>“CHWs have moved away from only being for MCH, they have been trained in tuberculosis, in malaria, in dengue, in HIV, in syphilis, you name it; to the point that we have been at the level here at headquarters expressing concerns, as to how much they can absorb and how much they are working.”</i>
		KI020206	<i>“We're cross-cutting, CHWs need to know a little bit of each of these health services, which can become too much.”</i>
	Capacity building	KI270321	<i>“We also started training our CHWs in the management of hypertension because this was signed on to the HEARTS initiative...CHWs have also been trained in mhGAP, which is the mental health gap training. We've also done training with our CHWs in HIV management and counselling as well.”</i>
		KI010206	<i>“During COVID they got significant training by PAHO in regard to NCDs, diabetes, hypertension...So when it comes to NCDs and taking vital signs, they have been</i>

			<i>properly trained. They are like the implementers of many activities at local level within the primary care setting...</i>
	Support	KI020206	<i>"We rely a lot on donations and projects for these functioning equipment and supplies. We have the malaria elimination project, for example, that was an opportunity for them to get some supplies."</i>
		KI270321	<i>"We collaborate very closely with UNICEF and PAHO as well. CHWs get support with equipment and supplies through them... We have the Malaria Salud Mesoamerica program as well, so we definitely can't do it without our partners."</i>
Community Ownership and Partnership	Human Resource Management	KI150220	<i>"We recruit community health workers through community meetings where the community selects the CHW. They also have to involve themselves in community meetings, do clean up campaigns, health fairs, other activities like wellness day within their community."</i>
		KI160221	<i>"The recruitment process starts with what we call community meetings...we call for a community meeting. We introduce the applicants in that meeting. The final decision is then made by the community."</i>
	Support	KI170221	<i>"They [CHWs] work with their community to motivate their community members to be active, engage participants in their health management, they advocate for individual or community health needs. They carry out a community profile survey, which is done once an year."</i>
		KI020206	<i>"Really, the push comes from the collaboration that we have...that's where most of the requests or the advocacy would come in for us to get supplies, for us to do training, for us to get any kind of materials, it is through these collaborations and partnerships."</i>
		KI270321	<i>"We are supported very much by collaboration with UNICEF and PAHO...and the CHWs get support with equipment and supplies through them...So we definitely can't do it without our partners, and that's really important for me to stress."</i>

As demonstrated in Table 7, perspectives from leadership personnel and district health educators highlight the multifaceted impact of the WHO health system building blocks on the functionality and performance of the CHW program in Belize.

Leadership and Governance

In terms of leadership and governance, results show that this building block has shaped all four programmatic components of the CHW program: human resource management, capacity building, support, and links. With HECOPAB being the unit that spearheads the CHW program, improvements were seen in the standardization of the recruitment process which involves community meetings and vetting by the MOHW (see Table 7, Category: Leadership and Governance, Theme: Human Resource Management). This is exemplified by research participant KI160221, who stated: *“We have a documented recruitment process which we have to follow. This process is standardized. The recruitment process starts with what we call community meetings. The community selects the community health worker and we vet it along with the Ministry in Belmopan.”*

The structure of the program has greatly improved through the strategic direction and planning initiatives of the MOHW. While it was mentioned that there is no specific community health strategic plan, the HECOPAB unit utilizes the Belize Health Sector Strategic Plan 2014-2024 to guide the operational planning and structure of the program. This was highlighted by participant KI020206, who stated: *“Overall, there has been significant improvement in the structure of the program. We use the Belize Health Sector Strategic Plan, but not all the objectives of this plan will encompass the CHW program. So the operational plan that I use is based on this plan. We look at other outputs like improving the structure of the program. Another strategic objective that we focus on is the strengthening of the capacity for human resources for*

health planning.” Within the capacity building component, supervisors regularly conduct supportive supervision using structured forms to assess CHW performance. However, it was noted that advanced training is needed for health educators to enhance their leadership and supervisory skills (see Table 7, Category: Leadership and Governance, Theme: Capacity Building). This is illustrated by participant KI170221, who stated: *“I do conduct a supervisory visit with them on a monthly basis...So you know, I’m just developing my own skills at the moment. But I think we as supervisors can definitely benefit from trainings on supervision, leadership and management.”* This was further reiterated by participant KI160221, who stated: *“We learn on the job. But I think just like how CHWs get training, I think we also need trainings to strengthen our supervision and leadership skills. A training on supervision would be great.”* Governance has also enhanced support for the program by increasing stipends for CHWs. This reaffirms the commitment of the MOHW and the Government of Belize to the CHW program by acknowledging the integral role that CHWs play in the primary health care system. On the contrary, some participants felt that support from regional and headquarters levels could be improved to ensure equitable distribution of resources across all regions, as stated by participant KI150220: *“For our program to work better I believe that we need better support from our region and from headquarters in Belmopan. I think that resources go more to the other districts.”* (see Table 7, Category: Leadership and Governance, Theme: Support).

Financing

Financing significantly influenced the capacity building and support components of the CHW program. This building block has arguably had one of the greatest impacts on the functionality and performance of the program. The CHW program receives a substantial portion of its budget for operational activities, training, and material supplies through HECOPAB, with

minimal support from the regions. In recent years, budget cuts from the government have posed challenges in resource allocation and program sustainability, hindering the overall performance of the CHW program (see Table 7, Category: Financing, Theme: Capacity Building and Support). This was expressed by participant KI020206, who stated: *“The unit receives a yearly budget at the national level, close to \$200,000 BZD. But recently we've received some cuts, but that budget will also encompass health promotion and wellness...The regions do not cover pretty much anything for the CHWs. The CHW program doesn't have a specific budget...I am really not sure how much of the health budget goes to HECOPAB, but it's a small fraction compared to other programs that I can say...”* As noted by this participant, the budget that HECOPAB receives covers all health education and promotion activities for the MOHW, making it difficult to allocate a specific budget line item for the CHW program. This poses a significant challenge in the financial flows within community health and the primary health care system.

These financial constraints have impacted the availability of equipment and supplies, necessitating personal contributions from supervisors and CHWs for health fairs and community activities, as stated by participant KI150220: *“Another challenge would be the limited resources that CHWs undergo. For like the health fairs, we have to donate from our own pockets for food or some snack to feed the people that we're inviting.”* Participant KI170221 highlighted these challenges, noting that CHWs often need to pay out of pocket to purchase supplies: *“Another challenge is the lack of equipment. For example, the batteries for their apparatus. Sometimes it is hard for us to get batteries, so they end up buying the batteries on their own. This might be caused due to a lack of funding.”* To address these challenges, the MOHW has enhanced collaboration and partnership efforts to support the proper implementation of the CHW program,

as stated by participant KI270321: *“We focus on funding from outside partners, so we collaborate very closely with UNICEF and PAHO.”*

Health Workforce

The health workforce building block influenced the human resource management and capacity building components. Defined roles and responsibilities for CHWs are clearly documented in an updated Terms of Reference, ensuring structure and consistency in their duties (see Table 7, Category: Health Workforce, Theme: Human Resource Management). This is illustrated by participant KI020206, who stated: *“When we look at the roles and responsibilities of CHWs, those have been clearly defined and documented. We have a TOR that clearly outlines these duties and responsibilities...”* Opportunities for career advancement within the MOHW are available, allowing CHWs to transition into permanent roles, as mentioned by participant KI190221: *“CHWs are volunteers and are recruited as such, however temporary employments do arise such as caretaker of a rural health clinic. CHWs also have the opportunity to transition from their post into a permanent entry level post within the ministry.”*

In terms of the accreditation process, participant KI020206 mentioned that CHWs must undergo a series of training prior to being assessed and certified. They are also offered refresher trainings for recertification purposes, but often times these trainings are not standardized among regions: *“Whenever they are being recruited, they have to undergo a training which is the Competency Based Curriculum Training...before we set a date for graduation, I go in and I provide a test. It's a theory test. After that, throughout the year, we have our refresher trainings which sometimes won't be standardized.”* Furthermore, findings show that even though CHWs are certified before they begin to practice, this accreditation is done informally by the MOHW headquarters, as stated by participant KI270321: *“We have our Licensing and Accreditation Unit*

that accredits allied health professionals, but CHWs are not in that list. Their accreditation is done informally through the exams and through the health educators for each region. You don't need a license to become a CHW. You just get a certificate signed by the MOHW after you pass the trainings and exams.” According to participant KI160221, the insufficient number of CHWs in larger communities has also been a persistent issue: *“Over the years, things have changed. At some point in time, we had 61 CHWs, and then at some point we had 44. This year the MOHW has authorized us to recruit. We have some communities that have expanded, and yet we only have 1 community health worker there. So we need to conduct an analysis to see where we have a large population and limited CHWs.”* This statement highlights the urgent need to reassess and allocate human and financial resources based on community needs, ensuring the adequate availability of CHWs.

Regarding the capacity building component, findings suggest that the initial training for CHWs is based on a defined curriculum, with both a theoretical and practical component. However, similar to the refresher trainings for recertification, results indicate that all trainings are done differently by region, with no standard guidelines for the delivery of trainings (see Table 7, Category: Health Workforce, Theme: Capacity Building). Interviews also revealed that the training curriculum is outdated; however, it was noted that the MOHW is currently updating the CHW training manual. This is illustrated by participant KI160221, who stated: *“Trainings have been based on a curriculum which was developed in 2013, I believe. So we are working in revising that curriculum. We do approximately 17 theory workshops. So we have the workshops and then we have the group presentations. Every district decides how they will do their trainings. In total, it will take like 4 months of both theory and practical trainings for them to be certified.”*

Lastly, it was noted that there is no clearly defined incentive package or mechanism in place for the retention and motivation of CHWs. An example of this was stated by participant KI150220: *“In the manual, it only talks about the stipend, the equipment and follow-up training. So it really comes down to the relationship that health educators build with them...Formally, they don’t get any vacation or sick days, so it is up to us to work with them.”* Participant KI160221 also noted that when resources allow, other non-financial incentives can be offered: *“CHWs are provided uniforms. Whenever we have the resources, we do recognition. In terms of vacation, we don’t offer any, but maybe we should consider that because what we require of them now, compared to years ago is much more.”*

Access to Medical Products and Technologies

The access to medical products and technologies building block primarily influenced the support component of the CHW program. Findings suggest that while there is a system in place for the requisition of basic medications and supplies, there are challenges in maintaining consistent supplies and obtaining necessary medications, as stated by participant KI150220: *“We get provided with stethoscopes, scales, glucometer and blood pressure apparatus probably once a year or once every two years. Those items we need to change them at least every six months... And then the batteries that these machines need. CHWs need batteries so often and then we're not providing them”* (see Table 7, Category: Access to Medical Products and Technologies, Theme: Support). This is further exemplified by participant KI020206, who highlighted the challenges in requesting and maintaining an adequate supply of medications: *“We have a system in place where they request basic supplies like Tylenol, Benadryl, and dressing materials, but they might not get the full amount that they request because the regions will prioritize the health facilities and then whatever remain in stock they will give to the CHWs...CHWs get these*

medications by filling out the requisition form on a monthly basis. That doesn't mean they will get the exact amount that they're requesting. Normally it's lower, if there is no medication available, they get none.” Interviews suggest that despite significant challenges in supply chain management, external support from organizations like PAHO and UNICEF has been vital in providing equipment and supplies to the program, as stated by participant KI270321: *“We are supported very much by collaboration with UNICEF and PAHO...community health workers get support with equipment and supplies through them.”*

Health Information Systems

This building block primarily influenced the links component of the CHW program. Health information systems play a critical role in supporting data collection and reporting by CHWs. However, in this case, the Belize Health Information System (BHIS) does not incorporate community-level data from the CHW program, mainly due to the handwritten nature of data collection (see Table 7, Category: Health Information Systems, Theme: Links). This is illustrated by participant KI020206, who stated: *“The national health information system does not take into account the community-level data from the CHW program. Simply because most of the data collected at the community level is handwritten. It's not placed into an electronic format until it reaches the health educator. The health educator will receive the home visit forms, the monthly report or the log books that the CHWs have, and then they will provide a comprehensive report at the end of each month. So for that reason, we have not been able to incorporate that into a larger system, and after discussing with the Epidemiology unit, it might be a while before we reach there.”* Interviews indicate an urgent need to improve documentation and information flow to support effective monitoring and decision-making, as stated by participant KI160221: *“Documentation for the CHW program needs to improve. When we identify a weakness, it boils*

down to the documentation part. The information flow needs to be strengthened.” Similarly, research participant KI010206, also expressed concern about the weak integration of community-level data: “We’re still struggling for the use of BHIS to be more appropriate, more complete by our own staff within health regions. We do recognize it’s a weak point simply because the Epidemiology unit has not given that priority.”

Service Delivery

Service delivery models have significantly influenced the human resource management, capacity building, and support components of the CHW program, particularly in the areas of task-shifting and training. In recent years, the roles and responsibilities of CHWs have expanded far beyond maternal and child health services, and now include a diverse skillset such as disease surveillance, NCDs management, and basic mental health counselling (see Table 7, Category: Service Delivery, Theme: Human Resource Management). Participant KI010206 illustrated this by stating: *“CHWs have moved away from only being for MCH, they have been trained in tuberculosis, in malaria, in dengue, in HIV, in syphilis, you name it; to the point that we have been at the level here at headquarters expressing concerns, as to how much they can absorb and how much they are working.”* As stated by this participant, the expansion of roles and responsibilities have raised questions about the productivity and workload of CHWs. This sentiment was echoed by participant KI020206, who mentioned: *“We’re cross-cutting, CHWs need to know a little bit of each of these health services, which can become too much.”*

While the current CHW list of interventions aligns with the basic package of essential health services, findings indicate that CHWs are now required to do much more to meet the health needs of their communities (see Table 7, Category: Service Delivery, Theme: Capacity Building). This was pointed out by participant KI27020206, who stated: *“We also started*

training our CHWs in the management of hypertension because this was signed on to the HEARTS initiative...We've also done training with our CHWs in HIV management and counselling as well.” In this same regard, participant KI010206 expressed how the service delivery model for CHWs had to expand during the pandemic to meet the demands of the health system: *“During COVID they got significant training by PAHO in regard to NCDs, diabetes, hypertension...So when it comes to NCDs and taking vital signs, they have been properly trained. They are like the implementers of many activities at local level within the primary care setting...”*

The expansion of the service delivery model also brings opportunities for collaboration and support from partners to acquire essential supplies for the program (see Table 7, Category: Service Delivery, Theme: Support). This has been the case for Belize as illustrated by participant KI020206: *“We rely a lot on donations and projects for functioning equipment and supplies. We have the malaria elimination project, for example, that was an opportunity for them to get some supplies.”* Similarly, participant KI270321 shared sentiments pertaining to the influence of the service delivery building block on the program’s support component: *“We collaborate very closely with UNICEF and PAHO as well. CHWs get support with equipment and supplies through them...We have the Malaria Salud Mesoamerica program as well, so we definitely can’t do it without our partners.”*

Community Ownership and Partnership

As the final building block, community ownership and partnership has been essential for the acceptance and functionality of the CHW program. Findings suggest that this building block has positively influenced the human resource management and support components of the CHW program. This influence is primarily due to the community engagement and partnerships that

have enhanced the program's overall performance. For a CHW to be employed by the MOHW, they must first be selected by their community, ensuring that they have the trust and support of the people they will serve (see Table 7, Category: Community Ownership and Partnership, Theme: Human Resource Management). This is exemplified by research participant KI150220, who stated: *"We recruit community health workers through community meetings where the community selects the CHW. They also have to involve themselves in community meetings, do clean up campaigns, health fairs, other activities like wellness day within their community."* Likewise, participant KI160221 expressed: *"The recruitment process starts with what we call community meetings...we call for a community meeting. We introduce the applicants in that meeting. The final decision is then made by the community."* This approach promotes active community engagement, ensures that CHWs are well-integrated within their communities, and creates a sense of community ownership.

Community partnerships also ensure that CHWs have the necessary equipment and supplies by leveraging local resources and community contributions (see Table 7, Category: Community Ownership and Partnership, Theme: Support). A clear example in this regard is provided by participant KI020206, who stated: *"Really, the push comes from the collaboration that we have...that's where most of the requests or the advocacy would come in for us to get supplies, for us to do training, for us to get any kind of materials, it is through these collaborations and partnerships."* Participant KI270321 echoed this sentiment, emphasizing the importance of both local and external partnerships for the program's overall success: *"We are supported very much by collaboration with UNICEF and PAHO...and the CHWs get support with equipment and supplies through them...So we definitely can't do it without our partners, and that's really important for me to stress."*

Table 8 below includes examples of quotations from community health workers related to the influence of the WHO health system building blocks on the programmatic components of the CHW program. The table presents 5 categories (Health Workforce, Access to Medical Products and Technologies, Health Information Systems, Service Delivery and Community Ownership and Partnership) and 4 themes (Human Resource Management, Capacity Building, Support and Links). As explained in chapter 4, CHWs were asked more individual-level and targeted questions related to the building blocks and program. Consequently, the leadership/governance and financing building blocks were not directly discussed with CHWs. The purpose of Table 8 is to illustrate how the building blocks have influenced the components of the program from the perspectives of CHWs. A comprehensive explanation of the extent to which these building blocks have influenced the programmatic components follows the table.

Table 8. Examples of the WHO Health System Building Blocks’ Influence on the Programmatic Components of the CHW Program in Belize: Insights from Key Informant Interviews with Community Health Workers

Category	Theme	Data Source	Examples
Health Workforce	Human Resource Management	KI040216	<i>“I think we started as a CHW and we are going to finish as a CHW. I think our age has a lot to do with...I do not see any advancement, like you know to get promoted to something else, unless you finish junior college, then you can go to become an auxiliary nurse or something...”</i>
		KI130219	<i>“We don't get the opportunity to advance, which would be nice if we did. You know other than just doing the basic things, it would be nice if they could give us that privilege to advance further. For example, currently I am training to become a home caregiver, and I have to take that money out of my pocket to do the training. So it would be nice if the ministry of health could step in and assist us.”</i>
		KI260225	<i>“Opportunities to advance in our personal career, I don't think so. Like right now I am taking this caregiver course and I would have really liked for the Ministry of Health to pay for that. I asked for assistance, but didn't receive any.”</i>
		KI140219	<i>“We do get trainings as part of the CHW curriculum, but when it comes to career opportunities for us to grow and probably advance as a health professional, then I guess we would have to do it by ourselves.”</i>
		KI070216	<i>“I don't think we get a lot of opportunities to advance...maybe that is something that the Ministry can work on. They can perhaps provide new and innovative opportunities for us CHWs that are older.”</i>
	Capacity Building	KI110219	<i>“I would like for them to have more refresher trainings. Another training in first aid would be great. I believe we could always use more training.”</i>
		KI200221	<i>“I think more hands on trainings, more practical training for us would help a lot.”</i>
		KI210221	<i>“I feel that they can improve and provide not only health training, but we also need personal life training like communication skills, presentation skills, and so forth.”</i>
		KI240222	<i>“Domestic violence and mental health is a very sensitive situation, so we need to be trained on how to handle these cases. Also, mental health support for us CHWs, because sometimes we do need a break from work, especially when we face a death or a depressing situation in our community.”</i>
		KI220222	<i>“It would be good if they can do mental health training for us too. Training in domestic violence and rape too, like how to address cases of domestic violence.”</i>

		KI120219	<i>"I feel we can definitely get more practical trainings and refresher courses. If the Ministry could look into improving trainings and have us do more advanced stuff..."</i>
	Support	KI180221	<i>"They raised the stipend yes, but they also gave us more work to do, but with little support. It is definitely frustrating. Sometimes we have to use that stipend to buy stuff for our daily work...So majority of us have other jobs, because the stipend they give us cannot maintain a family, you know."</i>
		KI230222	<i>"Since we have been receiving this \$500, the work has increased. We're required to do a lot more in the community and that includes more writing, more documentation."</i>
		KI120219	<i>"The \$500 stipend is not enough for us and our families, so we have to work somewhere else to provide food for our own family. If the ministry of health can make the CHW position a salaried job, then that would allow us to dedicate all our time to our community."</i>
		KI240222	<i>"They could recognize us more. For example recognize the years we have been working. Some of us have been working for 20 years, but haven't received any recognition, not even an award. We need more recognition and other incentives. That would definitely motivate us."</i>
		KI050216	<i>"My point of view is that if you are to award one, we all work as a team, so a little token would work for everyone. More recognition and incentives for everyone not just a select few. The appreciation and recognition we receive is also very important."</i>
Access to Medical Products and Technologies	Support	KI100219	<i>"We do not have a consistent process. We only have a limited amount of medication and that's for the month. And if we need more, then we need to wait for the next month, and sometimes the ministry doesn't have. There is definitely a limited supply. Also, we do not get supplies from the ministry to do our posters. So we have to use our own money to do the posters and printing for our health education."</i>
		KI230222	<i>"We have limited medications and equipment. I have some equipment that I received 13 years ago and some of the equipment are outdated, they are not functional anymore."</i>
		KI180221	<i>"So we meet once a month and that's when we would hand in our requisition when it comes to medication and a lot of time, we'll say we want Tylenol, there is no Tylenol. You know, we need battery for our equipment, but there is no battery. So a lot of times when we ask for certain things, we don't get it...When we put in our requisition, it takes a while for us to get the medication. Sometimes two weeks, three weeks, sometimes a month, so there is definitely a limited supply of medication."</i>

		KI060216	<i>"We have to fill the form, but sometimes they don't have enough medication. You know, it's a big hospital and in this area they have to distribute to different mobiles. Sometime they don't have enough supplies, so we have to work with what we have."</i>
		KI250223	<i>"I think the process is OK, it's just that sometimes we don't get most of the things we need. We have limited supply of medications. Like for me to do a dressing, it takes a very long time for me to get gauze. And I do get a little frustrated because people come to me and I don't have the supplies to help."</i>
		KI110219	<i>"I think the process could be improved...if the medication is not available then we can't get it... We need more supplies. I have some personal stuff because I have a retired nurse that lives in the U.S. She's a Belizean, and she normally sends barrels with supplies..."</i>
		KI140219	<i>"The timeframe in which we receive the medication is not as adequate. I believe that it has been very challenging for us because sometimes the supplies are not there.. Sometimes we have to buy supplies to make our posters from out of pocket, but like I said, we always try to do our best."</i>
Health Information Systems	Links	KI120219	<i>"If the ministry can provide a laptop to each community health worker then that would help us with reporting of information. We have a lot of forms and reports that we need to do every month. We have a lot of information, but no proper way to store that information."</i>
		KI230222	<i>"When it comes to the digital world, right now we don't have access to send our forms digitally, we need to be writing all these paper forms."</i>
		KI200221	<i>"I do all my reporting on paperwork, manually, then I submit all paper forms to my supervisor...If we can hand in reports by e-mail, that would make it easier. Right now we are doing everything by hard copy. So maybe digitalizing would be great."</i>
		KI130219	<i>"It would be nice if they would give us a laptop so we can simply document and keep the data within the computer because right now we have to do it manually, we have to write everything down in a paper form."</i>
		KI260225	<i>"My table at home is full of forms because everything is via paper and pen, so having a laptop would definitely help a lot with documentation and sharing of information."</i>
		KI210221	<i>"Right now, we do everything manually, so a computer would definitely help for digitization of all the forms that we use."</i>

Service Delivery	Capacity building	KI200221	<i>"All the community health workers come together with our supervisor, and we normally go to the clinic every month to do our community service time. Overall, we have a good interaction with our supervisor and the polyclinic."</i>
		KI140219	<i>"With the district health educator, we have a monthly meeting. We always have that engagement and support. If we have any issues or challenges, we can always talk to our supervisor. The interaction with the polyclinic is maybe just like once a year."</i>
		KI210221	<i>"Well, me and my supervisor, we work well together. I have no problem there. They are ready at hand to assist us. But with the polyclinic, no. I can't say we have a good interaction. We have no relationship at all."</i>
		KI180221	<i>"I definitely think there can be a stronger communication and link between us and the hospital... We are only called upon when we are needed."</i>
		KI100219	<i>"The rural health nurses from the mobile clinic also come to give their service and they help me coordinate everything. They help me out a lot..."</i>
	Links	KI040216	<i>"I think doctors are not really aware of our role. Most of the time there are many changes in the hospital with new doctors and new nurses and new staff. With the new doctors, we send referrals and don't get them back. So I don't know..."</i>
		KI230222	<i>"The referral system has always been a challenge. The respect to acknowledge the referral system of CHWs. It's still being mentioned at every monthly meeting and it has been promised that they will speak to all these doctors and nurses and sensitize them about the work we do. It is still a challenge up to now."</i>
		KI060216	<i>"Sometimes we refer patients who really need assistance but they don't get any kind of assistance at the hospital and that really brings me down because I feel like I'm doing nothing here."</i>
		KI210221	<i>"Well to begin with, they don't even acknowledge that we wrote a referral. Even though it has the Ministry of Health and Wellness logo on the referral... So that's why I barely write any referrals now. They just don't give us our place. I feel like the doctors and nurses don't appreciate and value us as CHWs."</i>
		KI030215	<i>"Sometimes we need the doctors to work with us, because some doctors don't want to sign our referrals or even see it and that makes us feel like they don't appreciate our hard work."</i>
		KI120219	<i>"For my referrals, sometimes I go with the patient. I put on my uniform and my ID, and I accompany the patient to the hospital, so they have to respect me as a community health worker."</i>

Community Ownership and Partnership	Support	KI090216	<i>"I engage the entire community and the support from them is always there. I like the feedback that we get from them and the encouragement."</i>
		KI220222	<i>"Well, thanks to my village, we have a good communication, we have that trust. We have a group called the Leaders in the Community with the police in charge, the chairlady, pastors, principals, and I am in that group too."</i>
		KI230222	<i>"Well, first of all, the community selects the community health worker and I had the privilege to be selected by my community to serve them and because of that, the interaction has been increasing over the years."</i>
		KI250223	<i>"Everyone in my community knows that I am a CHW. They support us. We cannot say that the village doesn't support us. If I ask for help, they are always willing to help."</i>
		KI210221	<i>"Well, I have lived in this area for almost 20 years, so my community already knows what I do. So yes, they help me if I call for a community meeting, or women's meeting or whatever group, they would support. Without the community support, probably we wouldn't even have CHWs in the urban area. They support me in every way, they welcome me to their homes..."</i>
		KI030215	<i>"Well, me and my community we are all one big family, because anything they need, they know how to find me. If they need to borrow the phone, they come to my house, if they have any complaint, they come to me too."</i>

As demonstrated in Table 8, perspectives from community health workers highlight more specific influences on the functionality and performance of the CHW program. The impact of leadership/governance and financing mechanisms on the day-to-day activities and experiences of CHWs was not prominently discussed. Instead, their responses focused more on the need for increased stipends and better support for their daily tasks, rather than the broader leadership, governance and financial strategies and policies of the MOHW.

Health Workforce

The health workforce building block significantly influenced the human resource management, capacity building and support components of the CHW program. The majority of the CHWs highlighted the lack of opportunities for career advancement within the program, which has led to feelings of stagnation and demotivation (see Table 8, Category: Health Workforce, Theme: Human Resource Management). For example, participant KI130219 mentioned: *“We don't get the opportunity to advance, which would be nice if we did. You know other than just doing the basic things, it would be nice if they could give us that privilege to advance further. For example, currently I am training to become a home caregiver, and I have to take that money out of my pocket to do the training. So it would be nice if the ministry of health could step in and assist us.”* Another participant, KI040216, shared similar views, expressing that age and level of education might be barriers for advancement: *“I think we started as a CHW and we are going to finish as a CHW. I think our age has a lot to do with...I do not see any advancement, like you know to get promoted to something else, unless you finish junior college, then you can go to become an auxiliary nurse or something...”*

Additionally, most CHWs expressed a strong desire for more comprehensive and advanced training opportunities to better equip themselves (see Table 8, Category: Health Workforce,

Theme: Capacity Building). This is exemplified by research participant KI120219, who stated: *“I feel we can definitely get more practical trainings and refresher courses. If the Ministry could look into improving trainings and have us do more advanced stuff...”* Similarly, some CHWs expressed a desire for professional development training, such as building communication and presentation skills (KI210221): *“I feel that they can improve and provide not only health training, but we also need personal life training like communication skills, presentation skills, and so forth.”*

In terms of the support component, CHWs also noted the need for better recognition and incentives for their work, as mentioned by participant KI240222: *“They could recognize us more. For example recognize the years we have been working. Some of us have been working for 20 years, but haven’t received any recognition, not even an award. We need more recognition and other incentives. That would definitely motivate us.”* Furthermore, findings suggest that although their stipend has increased to \$500 BZD, the workload of CHWs has also significantly expanded, leading to frustration among them (see Table 8, Category: Health Workforce, Theme: Support). This is illustrated by participant KI180221, who stated: *“They raised the stipend yes, but they also gave us more work to do, but with little support. It is definitely frustrating. Sometimes we have to use that stipend to buy stuff for our daily work...So majority of us have other jobs, because the stipend they give us cannot maintain a family, you know.”* This reflects a need for the MOHW to enhance support for CHWs through more structured career pathways, continuous professional development, and better recognition of their contributions.

Access to Medical Products and Technologies

This building block primarily influenced the support component of the CHW program (see Table 8, Category: Access to Medical Products, Theme: Support). Community health workers

reported significant challenges with the limited supply of medications and equipment, which often hindered their ability to provide adequate care to their community. One CHW (KI100219) noted: *“We do not have a consistent process. We only have a limited amount of medication and that’s for the month. And if we need more, then we need to wait for the next month, and sometimes the ministry doesn’t have. There is definitely a limited supply. Also, we do not get supplies from the ministry to do our posters. So we have to use our own money to do the posters and printing for our health education.”* The inconsistency in the supply chain is a major issue, as stated by another CHW (KI230222): *“We have limited medications and equipment. I have some equipment that I received 13 years ago and some of the equipment are outdated, they are not functional anymore.”* These challenges have prompted CHWs in Belize to be innovative and seek outside assistance. For instance, participant KI110219 relies on donations from friends in the U.S. to support her daily tasks: *“I think the process could be improved...if the medication is not available then we can’t get it...We need more supplies. I have some personal stuff because I have a retired nurse that lives in the U.S. She’s a Belizean, and she normally sends barrels with supplies...”* These findings underscore the need for improved logistics and supply chain management to ensure that CHWs have the necessary tools to perform their duties effectively.

Health Information Systems

This building block influenced the links component of the CHW program (see Table 8, Category: Health Information Systems, Theme: Links). Community health workers expressed a strong need for better digital tools to improve the efficiency of data collection and reporting. CHWs highlighted the challenges associated with manual data entry and the potential benefits of having tools to support their data management duties. This is illustrated by participant KI120219, who stated: *“If the ministry can provide a laptop to each community health worker then that*

would help us with reporting of information. We have a lot of forms and reports that we need to do every month. We have a lot of information, but no proper way to store that information.”

Similarly, another CHW (KI200221) noted: *“I do all my reporting on paperwork, manually, then I submit all paper forms to my supervisor...If we can hand in reports by e-mail, that would make it easier. Right now we are doing everything by hard copy. So maybe digitalizing would be great.”* These insights reflect a critical need for the modernization and digitization of health information systems to streamline the work of CHWs and enhance the overall performance of the program. Ultimately, this can facilitate smoother integration of community-level data into the broader health system and improve the flow of information back to the community.

Service Delivery

Service delivery models influenced both the capacity building and links components of the program. Community health workers described their interactions with supervisors and the local health system, emphasizing the importance of regular meetings and effective communication to ensure smooth integration (see Table 8, Category: Service Delivery, Theme: Capacity Building). This is exemplified by participant KI200221, who mentioned: *“All the community health workers come together with our supervisor, and we normally go to the clinic every month to do our community service time. Overall, we have a good interaction with our supervisor and the polyclinic.”*¹⁰ On the contrary, some participants made note of their supportive engagement with their supervisors but emphasized the poor interaction with the local health facility, as stated by participant KI210221: *“Well, me and my supervisor, we work well together. I have no problem there. They are ready at hand to assist us. But with the polyclinic, no. I can’t say we have a good interaction. We have no relationship at all.”*

¹⁰ In Belize, a polyclinic refers to a health facility that offers a wide range of outpatient services, including general medical consultations, preventive care, diagnostic services, and minor surgical procedures.

Regarding linkages to the health system, CHWs faced significant challenges with the referral system, as their referrals were often not acknowledged by healthcare professionals (see Table 8, Category: Service Delivery, Theme: Links). Community health workers expressed feelings of disrespect and being overlooked by doctors and nurses in their communities. This is illustrated by participant KI230222, who stated: *“The referral system has always been a challenge. The respect to acknowledge the referral system of CHWs. It's still being mentioned at every monthly meeting and it has been promised that they will speak to all these doctors and nurses and sensitize them about the work we do. It is still a challenge up to now.”* Another CHW expressed frustration and felt that her efforts were not being valued by the local health facility, as noted by KI210221: *“Well to begin with, they don't even acknowledge that we wrote a referral. Even though it has the Ministry of Health and Wellness logo on the referral...So that's why I barely write any referrals now. They just don't give us our place. I feel like the doctors and nurses don't appreciate and value us as CHWs.”* These issues indicate a need for better integration and recognition of CHWs within the wider health system to improve service delivery and community health outcomes.

Community Ownership and Partnership

Community ownership and partnership significantly influenced the support component of the CHW program (see Table 8, Category: Community Ownership and Partnership, Theme: Support). Findings suggest that this building block was crucial in fostering a sense of “community”, which has been vital to the program’s success. Community health workers emphasized the importance of community support and involvement in their day-to-day activities, noting that trust and cooperation from the community are fundamental. Interviews indicate that all CHWs felt supported by their communities, which made them feel appreciated and motivated

to continue their dedicated work. One clear example is provided by participant KI230222, who stated: *“Well, first of all, the community selects the community health worker, and I had the privilege to be selected by my community to serve them and because of that, the interaction has been increasing over the years.”* Another CHW (KI210221) described the close relationship with her community, mentioning: *“Well, I have lived in this area for almost 20 years, so my community already knows what I do. So yes, they help me if I call for a community meeting, or women's meeting or whatever group, they would support. Without the community support, probably we wouldn't even have CHWs in the urban area. They support me in every way, they welcome me to their homes...”* These strong community ties not only enhance the effectiveness of the program, but also ensure that health initiatives are community-driven and culturally relevant. The partnership between CHWs and the community is indispensable for the program's success and sustainability.

Interactions Between the WHO Health System Building Blocks

According to the findings, the interactions between the 7 WHO health system building blocks have been pivotal in further influencing the functionality and performance of the national community health worker program in Belize. As findings indicate, each building block contributes uniquely to various aspects of the program, and their interactions collectively shape the overall effectiveness of the CHW program.

Leadership and governance provide the foundational strategic direction and policies necessary for the CHW program. Evidence shows how these frameworks influence the structure and organization of the program, ensuring standardized recruitment processes, continuous training, and clearly documented roles and responsibilities for CHWs. Effective leadership and governance can create a supportive foundation that enables other building blocks such as health

workforce and financing to operate effectively. Data suggests that the health workforce is directly influenced by leadership and governance through these defined roles, structured recruitment processes, and initial training programs. The availability, quality, and accessibility of trained and motivated CHWs are essential for service delivery and community engagement, as demonstrated in the analysis. Furthermore, findings reveal inadequate funding to sufficiently support capacity building, supervision, and incentives for CHWs, highlighting the interaction between the financing and health workforce building blocks.

As findings consistently highlight, financing is crucial for the success of the CHW program, providing the necessary resources for training, medications, equipment, and stipends. Interactions between financing and leadership and governance are evident in budget allocations and financial planning for the sustainability of the CHW program. In addition, financing impacts access to medical products and technologies, as sufficient funds are necessary to maintain a reliable supply chain. Participants further highlighted the close link between the access to medical products and technologies building block and financing, illustrating how budget constraints have led to shortages of essential medical supplies and equipment. Consequently, this impacts the service delivery building block, as CHWs are dependent on these resources to provide care to their communities. Findings further highlight that service delivery models are influenced by multiple building blocks, indicating that effective service delivery requires well-trained and highly motivated CHWs (health workforce), adequate supplies (access to medical products), and efficient data management (health information systems). In addition, leadership and governance structures play a vital role in establishing service delivery standards for the integration of CHWs. However, findings show that CHWs in Belize face significant challenges with the referral system and their interactions with local health facilities.

The data collection, reporting, and decision-making components of the health information system building block interact with leadership and governance through the implementation of policies and procedures for the integration of community-level data. However, as observed in this study, the inadequate integration and flow of community-level data into the wider health system, and vice versa, have limited the ability of CHWs and the MOHW to digitize and improve data management.

As the final building block, community ownership and partnership has been essential for the acceptance and functionality of the CHW program in Belize. Strong community partnerships enhance the impact of service delivery and support, ensuring that health initiatives are culturally relevant and community-driven. In Belize, CHWs emphasized the importance of this building block, highlighting how trust and collaboration with local leaders and community members have enabled them to serve their community more effectively. This mutual support has fostered a sense of shared responsibility and empowerment, which is crucial for the long-term success and sustainability of the program.

In summary, while the WHO health system building blocks have been vital to the functionality and performance of the CHW program, findings reveal significant deficiencies in some areas that have potentially contributed to inefficiencies in the health system, and consequently, the CHW program. Despite strategic planning and policies formalizing the CHW program, there is a notable absence of a specific community health strategic plan, and support from regional and headquarters levels remains inadequate. The financing building block is particularly problematic, with the CHW program lacking a dedicated budget line and relying heavily on a small fraction of the overall health budget allocated to HECOPAB. This insufficient

budget allocation, coupled with recent budget cuts, has severely impacted resource allocation, forcing the program to depend heavily on external funding and donations.

Findings also highlight challenges within the health workforce building block, as CHWs report limited career advancement opportunities, insufficient recognition and incentives, and inconsistent training standards across regions. Moreover, access to medical products and technologies is hindered by an inconsistent supply of medications and equipment, which undermines the CHWs' ability to perform their duties effectively. Results also indicate deficiencies in health information systems, as the BHIS fails to integrate community-level data, resulting in weak monitoring and decision-making capabilities. While service delivery models have expanded the roles and responsibilities of CHWs, this increased workload raises concerns about their capacity to manage these additional tasks effectively. Ultimately, addressing these deficiencies within the WHO health system building blocks is essential for health systems strengthening and enhancing the effectiveness and sustainability of the CHW program.

5.2.3 Research Question 3: Given the findings from research questions 1 and 2, what are the specific recommendations for optimizing the CHW program in Belize?

The purpose of research question 3 was to synthesize the findings from this dissertation, including the desk review, key informant interviews, and literature review to develop a set of recommendations to optimize the CHW program in Belize. These recommendations will be provided in chapter 6.

However, in preparation for these recommendations, Table 9 provides examples of proposed modifications that the program leadership, district health educators, and community health workers suggested to optimize the CHW program. Table 9 presents the main category (Proposed Modifications) and 7 themes (Leadership and Governance, Financing, Health

Workforce, Access to Medical Products and Technologies, Health Information Systems, Service Delivery and Community Ownership and Partnership), following the WHO Health Systems Framework, a conceptual foundation for this study (WHO, 2010).

Table 9. Examples of Proposed Modifications to Optimize the CHW Program Provided by Program Leadership Personnel, District Health Educators and Community Health Workers

Category	Theme	Data Source	Examples
Proposed Modifications	Leadership and Governance	KI270321	<i>“Improve leadership and communication at each district because some districts work very well with the community health workers but when we go to some districts they would say, oh, we don't know the community health worker for this village. Ensure that the communication, reporting system and knowledge is improved... so we need to focus as a developing nation in strengthening our prevention and our primary health care system...”</i>
		KI160221	<i>“Maybe it has to be put into a policy form so that they abide by these referrals... We need to sensitize the personnel in the health system about this referral form.”</i>
		KI010206	<i>“I think we need to identify strategies or best practices from other countries...”</i>
		KI020206	<i>“Community health needs its own area of focus, because juggling health promotion and community health is really challenging. It might be cross cutting, but really if we want to reach other components of health, working with other ministries in community health, like rural development, looking at environment, looking at several other components for community health requires that focus. So standing alone might be a modification.”</i>
	Financing	KI020206	<i>“An increase in the overall budget for the program and more human resources is needed.”</i>
		KI110219	<i>“I think we need more funding...funding for medication and transportation.”</i>
		KI150220	<i>“I think whatever you're giving to the other regions you should give across the board...If you cannot fund for everyone, don't give anyone.”</i>
	Health Workforce	KI020206	<i>“A big recommendation would be to integrate them as permanent staff of the Ministry of Health and Wellness, and I know that is challenging due to financial implications, but that would allow us to make them feel like this is something more permanent, promote job security. They won't be doing other things on the side, because right now you find some of them cleaning, doing other side jobs...so having them incorporated as permanent staff, even if it's at a lower pay scale.”</i>
		KI050216	<i>“More recognition and incentives for everyone not just a select few...”</i>
		KI210221	<i>“They need to recognize us as partners, because we are partners. We simply do the ground work, but we are a team and we should be treated as such... And of course I</i>

			<i>already mentioned that they can improve training and provide more personal and life skills like communication and presentation skills.”</i>
		KI250223	<i>“I think the ministry could provide a bus for CHWs, a mini bus to pick up CHWs when it is workshop day...Also, I think they can have a little fun day for us...A little CHW trip or field day would motivate us and encourage us...”</i>
		KI260225	<i>“If they had more opportunities for us, more career pathways, more scholarships and programs for us, that would be great.”</i>
		KI120219	<i>“If the ministry of health can make the CHW position a salaried job, then that would allow us to dedicate all our time to our community.”</i>
		KI230222	<i>“Have more trainings and programs that involve not only CHWs alone, but also the different departments in the hospital settings. Have CHWs go out and work with different organizations so we can build more confidence. They can also give us more incentives...Little things can boost our motivation, our confidence.”</i>
		KI180216	<i>“They can equip us more with knowledge by increasing the training and education so we can be certified at a higher level.”</i>
		KI150220	<i>“Standardized trainings for everyone, for all regions, so that everyone gets the same information...”</i>
	Access to Medical Products and Technologies	KI180221	<i>“They also need to improve the supply of medications and not have us wait for a whole month. It stresses us even more.”</i>
		KI060216	<i>“The ministry of health needs to do proper planning of medications and supplies. They should procure enough medications and supplies during high seasons knowing that communities will need more supply during these times.”</i>
		KI120219	<i>“Changes in the supply of the medication. We definitely need more medications.”</i>
		KI260225	<i>“Better supply us with medications, supplies, equipment, materials. Honestly, when we go to these monthly meetings, every CHW complains of this same issue. We are all experiencing this limited supply of medications and equipment. I think the ministry needs to really improve on that.”</i>
	Health Information Systems	KI160221	<i>“As I said, documentation is a weakness, we need to work towards the digitization of reports. I think that would help us to harmonise with the national health system... If we had a strong documentation process, then it would be easier to harmonize with the BHIS.”</i>
		KI270321	<i>“We need to start to do an analysis and routine evaluation of the program to identify areas that we can strengthen...”</i>

		KI150220	<i>“Regarding the forms that we use, especially the monthly requisition forms, the forms need to be revised.”</i>
		KI010206	<i>“I think something that I have been giving a lot of attention to has been the issue of monitoring and evaluation. So I would say something that needs to be done at the level of the primary care, at the level of the community health workers...”</i>
	Service Delivery	KI270321	<i>“I think that although we have integrated our CHWs quite a lot into our health system, there is still a gap there and we need to ensure that we integrate them much more, and that might be by doing monthly meetings with not just the health educators, but bringing in the entire team, all the doctors and nurses get to know the community health workers and get to become very familiar with their capabilities. In many areas we can create support systems, but if our doctors and nurses are unaware, they won't be utilized.”</i>
		KI030215	<i>“The ministry can involve us more with the hospital.”</i>
		KI220222	<i>“More communication and interaction with nurses and doctors from the health facilities to improve the referral system.”</i>
		KI130219	<i>“Improve the referral system, and more training and opportunities for us to grow as CHWs. Just more support in general from the ministry of health.”</i>
		KI180221	<i>“It would be nice if we had a vehicle to support CHWs in each community. Sometimes we have to move tents, chairs and older people, but we have no transportation.”</i>
	Community Ownership and Partnership	KI090216	<i>“I would encourage the ministry of health to work along with other ministries so that we can fix all the problems and make this program even stronger and encompassing all the aspects of the word “community”. We need to look at health, housing, education, food, and everything really.”</i>
		KI020206	<i>“...Really we need to reach other components of health, working with other ministries in community health, like rural development, looking at environment, looking at several other components for community health requires that focus.”</i>
		KI030215	<i>“Well, my village has a lot of poor people, especially elderly people. Sometimes they don't even have a good meal...So I would say maybe the government could help us with that. They can maybe get help from rural development.”</i>

As seen in Table 9, proposed modifications in leadership and governance highlight the need for improved communication, strategic focus, and policy development. The importance of standardized reporting systems across districts and better communication was mentioned by participant KI270321, who stated: *“Improve leadership and communication at each district because some districts work very well with the community health workers but when we go to some districts they would say, oh, we don't know the community health worker for this village. Ensure that the communication, reporting system and knowledge is improved... so we need to focus as a developing nation in strengthening our prevention and our primary health care system...”* In addition, there is a call for policy formalization and sensitization of health care workers to strengthen the referral process for CHWs, as stated by participant KI160221: *“Maybe it has to be put into a policy form so that they abide by these referrals... We need to sensitize the personnel in the health system about this referral form.”* Furthermore, participants expressed the need for a distinct focus on community health, given the challenges of managing the CHW program while also implementing the health promotion portfolio of the MOHW. An example of this is illustrated by participant KI020206, who stated: *“Community health needs its own area of focus, because juggling health promotion and community health is really challenging. It might be cross cutting, but really if we want to reach other components of health, working with other ministries in community health, like rural development, looking at environment, looking at several other components for community health requires that focus. So standing alone might be a modification.”*

Optimizing the CHW program in Belize requires critical attention to financing, particularly in terms of increased budget allocations and equitable distribution of resources. Participants identified the need for more funding to support medications, human resource development and

overall program sustainability. This is exemplified by participant KI020206, who stated: *“An increase in the overall budget for the program and more human resources is needed.”* Another participant (KI150220) highlighted the need for equitable funding across regions to support CHWs equally: *“I think whatever you're giving to the other regions you should give across the board...If you cannot fund for everyone, don't give anyone.”*

Enhancing the health workforce involves providing job security, career advancement opportunities, and increased recognition for CHWs. It is proposed to integrate CHWs as permanent staff of the MOHW, as expressed by participant KI020206: *“A big recommendation would be to integrate them as permanent staff of the Ministry of Health and Wellness, and I know that is challenging due to financial implications, but that would allow us to make them feel like this is something more permanent, promote job security. They won't be doing other things on the side, because right now you find some of them cleaning, doing other side jobs...so having them incorporated as permanent staff, even if it's at a lower pay scale.”* This opinion was shared by participant KI120219, who mentioned: *“If the ministry of health can make the CHW position a salaried job, then that would allow us to dedicate all our time to our community.”* Participants also called for more recognition and incentives across the board, with participant KI250223 suggesting: *“I think the ministry could provide a bus for CHWs, a mini bus to pick up CHWs when it is workshop day...Also, I think they can have a little fun day for us...A little CHW trip or field day would motivate us and encourage us...”* Similarly, participant KI050216 expressed the need for equitable distribution of these incentives, stating: *“More recognition and incentives for everyone not just a select few...”* Additional proposed modifications included providing standardized trainings across all regions and offering professional development opportunities for CHWs to enhance their communication and presentation skills. This is exemplified by

participant KI210221, who stated: “...*And of course I already mentioned that they can improve training and provide more personal and life skills like communication and presentation skills.*”

Research participant KI150220 shared similar thoughts on this: “*Standardized trainings for everyone, for all regions, so that everyone gets the same information...*” Regarding opportunities for career advancement, participant KI260225 noted that the MOHW can improve career pathways by providing scholarships and advanced programs for CHWs: “*If they had more opportunities for us, more career pathways, more scholarships and programs for us, that would be great.*”

As highlighted by participants, the supply of medications and equipment is a significant concern for the program. There were numerous calls for improved planning and procurement to ensure consistent supply. One participant, KI060216, proposed: “*The ministry of health needs to do proper planning of medications and supplies. They should procure enough medications and supplies during high seasons knowing that communities will need more supply during these times.*” In the same way, another participant (KI260225) emphasized the urgent need to improve this component of the program: “*Better supply us with medications, supplies, equipment, materials. Honestly, when we go to these monthly meetings, every CHW complains of this same issue. We are all experiencing this limited supply of medications and equipment. I think the ministry needs to really improve on that.*” Another example of this recommendation is provided by participant KI180221, who expressed frustration with the limited supply: “*They also need to improve the supply of medications and not have us wait for a whole month. It stresses us even more.*”

Findings also indicate a strong need for the digitization of health information systems to improve documentation, reporting, and integration with the Belize Health Information System.

One participant (KI160221) expressed the need for harmonization to improve data management: *“As I said, documentation is a weakness, we need to work towards the digitization of reports. I think that would help us to harmonise with the national health system... If we had a strong documentation process, then it would be easier to harmonize with the BHIS.”* Additionally, there is a call to strengthen the monitoring and evaluation (M&E) of the program, as this is considered a weak area for the MOHW. This is exemplified by participant KI010206, who stated: *“I think something that I have been giving a lot of attention to has been the issue of monitoring and evaluation. So I would say something that needs to be done at the level of the primary care, at the level of the community health workers...”* Another example in support of this was given by participant KI270321, emphasizing the need for ongoing M&E to strengthen the program: *“We need to start to do an analysis and routine evaluation of the program to identify areas that we can strengthen...”* Furthermore, the updating of forms was proposed as part of the digitization improvements, as stated by participant KI150220: *“Regarding the forms that we use, especially the monthly requisition forms, the forms need to be revised.”*

For the service delivery theme in Table 9, participants proposed better integration of CHWs into the wider health system, strengthening the referral process, and increasing interactions with local health facilities. One participant, KI270321, emphasized the need to establish support systems by enhancing monthly interactions between CHWs and local health staff: *“I think that although we have integrated our CHWs quite a lot into our health system, there is still a gap there and we need to ensure that we integrate them much more, and that might be by doing monthly meetings with not just the health educators, but bringing in the entire team, all the doctors and nurses get to know the community health workers and get to become very familiar with their capabilities. In many areas we can create support systems, but if our doctors*

and nurses are unaware, they won't be utilized.” This suggestion is supported by participant KI220222, who also believes that increased interaction with local health staff is essential to enhance the referral process: *“More communication and interaction with nurses and doctors from the health facilities to improve the referral system.”* Participant KI130219 also proposed improvements to the referral system, stating: *“Improve the referral system, and more training and opportunities for us to grow as CHWs. Just more support in general from the ministry of health.”* In terms of general support, participant KI180221 highlighted the need for transportation to support CHWs’ activities within their communities: *“It would be nice if we had a vehicle to support CHWs in each community. Sometimes we have to move tents, chairs and older people, but we have no transportation.”*

Regarding community ownership and partnership, participants believe that collaborating with other ministries and integrating various aspects of community welfare into health initiatives is vital. One participant (KI090216) recommended: *“I would encourage the ministry of health to work along with other ministries so that we can fix all the problems and make this program even stronger and encompassing all the aspects of the word ‘community’.* We need to look at health, housing, education, food, and everything really.” This intersectoral collaboration was also proposed by participant KI020206, who stated: *“...Really we need to reach other components of health, working with other ministries in community health, like rural development, looking at environment, looking at several other components for community health requires that focus.”* This holistic approach not only fosters strong community ties, but can also amplify the effectiveness of the CHW program by engaging diverse actors in a unified effort to enhance public health.

In summary, research participants offered key suggestions that present a practical strategy for optimizing the CHW program in Belize. These proposed modifications address essential areas for improvement across the 7 WHO health system building blocks, specifically targeting enhancements for the CHW program to create a more effective, integrated, and resilient health system. Chapter 6 will present formal recommendations to optimize the CHW program in Belize, based on these findings.

CHAPTER VI: DISCUSSION AND CONCLUSIONS

This study aimed to assess the national community health worker program in Belize and provide specific recommendations within the context of the WHO health systems framework. The following chapter begins with a discussion of research questions 1 through 3, including formal recommendations to optimize the program. The chapter concludes with a review of the study's strengths and limitations, implications for research, policy, and practice, and final conclusions.

6.1 Discussion

6.1.1 Discussion: Research Question 1

Research question 1 explored how Belize's health system has influenced the functionality and performance of the CHW program over the past 10 years (2013-2023). The findings from this study suggest that the national health system has impacted the program through 4 main areas: structure and organization of the system, policy and strategic direction of the MOHW, service delivery and quality improvement initiatives, and resource allocation for the program. These influences have been part of the broader health sector reform aimed at improving primary health care and strengthening the health system. As noted by Lewin and colleagues (2021), the functioning of CHW programs is influenced by the specific agenda prioritized within a country's health system (Lewin et al., 2021). This agenda may involve restructuring the health system, decentralizing services, or fostering greater partnerships and collaboration to support health systems strengthening (Lewin et al., 2021).

Similarly, results from this study revealed that the structure and organization of Belize's health system have significantly influenced the functionality and performance of the CHW program. Findings from both the desk review and KIIs with leadership personnel and DHEs

indicate that the decentralization of health services and the revamping of the country's primary health care model over the last 10 years have supported the integration of the CHW program in the country. The MOHW's creation of the 4 health regions has enabled a decentralized approach to PHC, supported by a network of CHWs in rural and underserved areas. This strategy has enhanced local decision-making and responsiveness while improving supervision and support for CHWs in each health region. Additionally, results indicate that this structural integration has ensured that CHWs receive direct oversight and mentoring from DHEs. This positive impact of a robust PHC model and a decentralization approach in support of CHW programs has been corroborated by several studies. A study by Dodd et al. (2021) in the Philippines found that decentralized health systems lead to improved access to health services and better health outcomes in rural and remote areas (Dodd et al., 2021). Another example by Panda and Thakur (2016) highlights the importance of decentralized PHC systems in low-and middle-income countries (LMICs) to address gaps and fragmentation in service delivery, ultimately supporting the integration of CHW programs into the broader health system (Panda & Thakur, 2016).

As elucidated in this study, the policy and strategic direction of the MOHW were also instrumental in shaping the CHW program through an updated Terms of Reference, a guiding document that clearly outlines the roles, responsibilities, expectations, and competencies of CHWs in Belize. According to Glenton et al. (2013), well-defined roles and supportive policies are crucial for ensuring the effective implementation of CHW programs (Glenton et al., 2021). Another study by Van Iseghem and colleagues (2023) suggests that this systematic approach to role definition is crucial for maintaining accountability and performance standards among CHWs (Van Iseghem et al., 2023). Furthermore, results indicate that strategic policies and planning by the MOHW have formalized and prioritized the CHW program, ensuring its integration into

various health policies and plans. However, it is worth noting that there is currently no specific community health strategic plan focused solely on the CHW program. In a study by Schneider and Nxumalo (2017), four key factors were deemed essential for a well-functioning CHW program. Among these, the authors emphasized the importance of developing and implementing a dedicated community health strategic plan to better align and integrate CHWs programs at the national level (Schneider & Nxumalo, 2017). Therefore, creating and implementing such a plan should be considered essential for the success and sustainability of the CHW program. With both the health sector and HRH strategic plans concluding this year, there is a significant opportunity to prioritize and incorporate community health and the CHW program into the new plans and policies, positioning them as key components of the national health agenda for the MOHW.

A notable policy directive exemplified in this study was the recent approval to increase CHWs' stipends from \$100 BZD to \$500 BZD, along with the introduction of an updated Terms of Reference for the program. This significant milestone reflects the government's commitment to enhancing the program and prioritizing health workforce policies. Increasing literature stresses the crucial role of government policy-makers in enacting new directives to standardize and increase stipends and other incentives for CHWs. These studies suggest that such measures ultimately increase the motivation and retention of CHWs, thereby enhancing the program's effectiveness (Agarwal et al., 2021; Pandya et al., 2022).

Regarding the service delivery and quality improvement initiatives of the MOHW, findings indicate that over the years, the roles of CHWs have evolved and expanded to support integrated health services across the country. Originally focused primarily on maternal and child health services, CHWs now possess a diverse skillset encompassing areas such as disease surveillance, management of NCDs, HIV management, and mental health services. Additionally,

the expanded roles of CHWs have been crucial in achieving major health milestones. This was reflected in Belize's certification of malaria elimination in 2023, where CHWs played an instrumental role. Moreover, their contributions were pivotal during the COVID-19 pandemic response efforts, and most recently in the elimination of mother-to-child transmission of HIV and syphilis. In the context of COVID-19, literature suggests that CHWs made significant contributions in surveillance, contact tracing, and community education, particularly in vaccination efforts. These roles were crucial in managing the pandemic and ensuring community compliance with public health measures (Bhaumik et al., 2020; Kaseje et al., 2024).

While a plethora of studies acknowledge the expansion of CHWs' roles to meet health demands and their importance in achieving significant health outcomes, Glenton and colleagues (2021) highlighted the importance of program coordinators to review local and global evidence-based guidance on the long-term effectiveness and safety of relevant tasks performed by CHWs (Glenton et al., 2021). This aligns with the growing concern expressed by the MOHW regarding the workload and capacity limits of CHWs in Belize.

Results from the desk review indicate that quality improvement initiatives under the Salud Mesoamerica 2015 project, which aimed to revitalize the CHW program through results-based financing, led to improved health outcomes and increased motivation among CHWs during the project's timeframe. However, key informant interviews provided limited information on these ongoing quality improvement efforts, suggesting a need for further alignment and planning in this area. This may also indicate that while quality improvement initiatives are planned and documented, their implementation and impact might not be well-structured or uniformly recognized. Supporting scientific evidence underscores the effectiveness of such quality improvement and incentive-based programs in enhancing CHW programs, particularly in hard-

to-reach communities. Schuster and colleagues (2018) found that incentivizing health care workers through results-based financing can lead to their empowerment and improved quality of care (Schuster et al., 2018). The success of these initiatives highlights the importance of structured and well-implemented quality improvement measures and incentives in enhancing CHW performance and engagement within the health system (Morgan et al., 2013; Schuster et al., 2018).

The significant impact of resource allocation on the CHW program in Belize was consistently emphasized in this study. Despite the health system's strides in integrating CHWs and providing some financial support, substantial resource constraints persist. Most notably, ongoing budget cuts and the lack of a specific budget line item for the CHW program have been major issues. Additionally, findings revealed that the budget allocated to HECOPAB is minimal compared to other health programs within the MOHW. Supporting evidence corroborates these findings, demonstrating that financial constraints and resource limitations are common challenges faced by CHW programs globally. Studies by Perry and colleagues (2014) and Kok et al. (2015) discuss how inadequate funding and lack of resources can hinder the effectiveness of CHW programs. Both studies emphasize the importance of external support and partnerships to sustain program activities (Kok et al., 2015; Perry et al., 2014).

Furthermore, Schneider et al. (2016) underscore the critical role of international collaborations in providing essential supplies and general support to CHWs, particularly in LMICs (Schneider et al., 2016). In alignment with this research, the MOHW has proactively sought partnerships with local and international donors to strengthen the CHW program in Belize. External funding and collaborations with organizations such as PAHO/WHO and UNICEF have been crucial in providing financial and logistical support. However, according to

Taylor and colleagues (2017), the reliance on external funding highlights the need for governments to allocate more domestic resources to ensure the sustainability of CHW programs (Taylor et al., 2017). Therefore, addressing this ongoing challenge will require the MOHW to implement sustainable funding solutions to fully leverage the potential of the CHW program.

In summary, findings from research question 1 indicate that Belize's health system has had a profound influence on the functionality and performance of the CHW program over the past decade. Through strategic structural changes, policy directives, service delivery enhancements, and external resource allocation, the program has been further integrated into the primary health care system. However, challenges remain in sustainable resource allocation and the strategic focus of the MOHW in developing and implementing dedicated community health policies and plans. Addressing these issues is critical for optimizing the CHW program and ensuring that it continues to play a vital role in delivering primary health care services throughout communities in Belize.

6.1.2 Discussion: Research Question 2

Research question 2 explored how the seven WHO health system building blocks have influenced the various programmatic components of the CHW program in Belize. In terms of leadership and governance, findings highlight the crucial role of this building block in shaping the four core components of the CHW program in Belize. This building block has provided the necessary framework and strategic direction to enhance the functionality and performance of the CHW program. Results show that HECOPAB's leadership, the unit which spearheads the CHW program, has significantly improved the standardization of the recruitment process. As mentioned by key informants, this process involves community participation through meetings with community members and local leaders to select CHWs. This structured approach ensures

transparency and community involvement, fostering trust and ensuring that CHWs are well-integrated into the communities they serve. This method aligns with best practices highlighted in the literature, which emphasizes the importance of a standardized recruitment process for CHWs. As stated by Maes and Kalofonos (2013), such a process is vital in reducing political interference in CHW selection and supports the retention of local CHWs within their communities (Maes & Kalofonos, 2013).

The strategic vision of the MOHW has also been instrumental in enhancing the program's structure. As highlighted in both the desk review and KIIs, although there is no specific community health strategic plan, the CHW program is guided by the broader Belize Health Sector Strategic Plan 2014-2024. Findings suggest that this strategic leadership ensures that the program's operational plan is aligned with national health policies and plans. The literature consistently highlights that the strategic alignment of CHW programs with national health plans is a critical success factor. This alignment ensures consistency and sustainability in primary health care, as demonstrated in many developing countries (Chilundo et al., 2015; Kok et al., 2016; Schneider & Nxumalo, 2017).

The leadership and governance building block has also focused on capacity building and support for CHWs. Findings indicate that supervisors play a key role in this effort by conducting regular supportive supervision using structured forms to assess CHW performance. This approach aligns with best practices, which highlight supportive supervision as an essential strategy to improve CHW performance and motivation (Hill et al., 2014). However, this Belize study also reveals a need for advanced training for health educators to enhance their leadership and supervisory skills. The current on-the-job learning approach, while valuable, is not sufficient to fully equip supervisors with the necessary skills. Therefore, training in supervision, leadership,

and management is crucial for health educators to effectively guide CHWs and address challenges proactively. Similarly, Jaskiewicz and Tulenko (2012) emphasize the importance of comprehensive training programs for supervisors to enhance their leadership capabilities and provide substantial support to CHWs (Jaskiewicz & Tulenko, 2012).

As highlighted in the discussion of research question 1, governance has also positively impacted the program by increasing stipends for CHWs, reaffirming the commitment of the MOHW leadership and the Government of Belize to the CHW program. This financial support is crucial as it acknowledges the integral role that CHWs play in the primary health care system and helps to motivate and retain them. As evidenced by numerous studies, financial incentives are widely recognized as a critical factor in enhancing the performance and retention of CHWs (Bhutta et al., 2010; Perry et al., 2014).

Despite these improvements in leadership and governance, this study identified challenges related to the equitable distribution of resources across health regions in Belize. Some participants felt that support from regional and headquarters levels could be improved to ensure all regions receive adequate resources. This concern highlights the need for a more structured and balanced allocation of resources to ensure that CHWs in all districts have the necessary tools and support to perform effectively. According to Ahmed and colleagues (2022), equitable resource distribution is essential for the success of CHW programs, yet it remains a common challenge in many health systems (Ahmed et al., 2022). Overall, the findings underscore the importance of strong leadership and governance in enhancing the CHW program in Belize. While significant strides have been made, ongoing efforts are needed to address training gaps for supervisors and ensure equitable resource allocation. Developing a dedicated community health strategic plan can also lead to significant improvements for the program. By strengthening these

components, the CHW program can further improve its effectiveness and sustainability across all 4 health regions in Belize.

Regarding the financing building block, findings suggest it has had one of the greatest impacts on the program's functionality and performance. As highlighted in this study, the CHW program relies heavily on the budget allocated to HECOPAB, which is intended to cover a wide range of health education and promotion activities and not solely the CHW program. This lack of a specific budget line item for the CHW program creates significant challenges in ensuring consistent financial flows within community health. The literature suggests that this finding is not unique to Belize, as many CHW programs globally face similar financial constraints due to national budget limitations that hinder their capacity to perform effectively (Rush et al., 2020; Schriger et al., 2024).

In Belize, these financial constraints have had a direct impact on the availability of necessary equipment and supplies, often requiring personal contributions from supervisors and CHWs for activities such as health fairs. This inadequacy of current financial support highlights the need for more robust and sustainable funding mechanisms. Similar challenges have been documented in other LMICs, where CHWs often face resource shortages that impede their ability to perform their roles effectively (Musoke et al., 2022; Olaniran et al., 2022a). To address these financial challenges, the MOHW has enhanced collaboration and partnership efforts with external organizations such as UNICEF and PAHO, as mentioned in the discussion section of research question 1. These partnerships have been crucial in supplementing the budget shortfalls and providing some of the necessary equipment and supplies to support the CHW program. According to Naimoli and colleagues (2015), these strategic partnerships and collaboration offer the potential for accelerating progress in improving CHW performance at scale (Naimoli et al.,

2015). While the MOHW has made commendable efforts to secure external funding and support, there is a pressing need for more sustainable and dedicated financial resources to ensure the long-term viability of the CHW program.

In terms of the health workforce building block, its significant influence on the human resource management, capacity building, and support components of the CHW program was well documented. Findings indicate that while opportunities for career advancement within the MOHW are available, CHWs believe that these opportunities are limited and often not equitable, leading to feelings of stagnation and demotivation. According to Smithwick et al. (2023), this is a common issue, with many countries reporting limited career development pathways for CHWs, resulting in turnover, attrition, and workforce instability (Smithwick et al., 2023). The authors further highlight the importance of governments supporting career development and progression pathways to keep CHWs engaged and committed (Smithwick et al., 2023). Furthermore, a recent study by UNICEF counterparts in Belize revealed the urgent need for transparent guidelines and mechanisms to ensure fair assessment of CHWs and the equitable rewarding of incentives, including opportunities for career advancement (Oladeji et al., 2023a).

Findings from this dissertation also describe the accreditation process for CHWs, which involves an initial training based on a defined curriculum, followed by assessment and certification. However, results indicate that training and refresher courses are not standardized across regions, leading to inconsistencies in the quality of training received. Mupara et al. (2022) highlights challenges in integrating CHW education, certification, and accreditation into national programs, noting inconsistent post-training accreditation, which aligns with the findings of this study (Mupara et al., 2022). Furthermore, CHWs in Belize expressed a desire for continuous personal development training to enhance their communication and presentation skills.

According to Holcomb and colleagues (2022), effective communication skills among CHWs are crucial for patient decision-making and understanding, especially when plain language is needed for communication. Holcomb's study also highlights a gap in the training methods and curriculum for CHWs, emphasizing the need for improved and standardized education to better equip them in their roles (Holcomb et al., 2022). The MOHW's current effort to update the CHW training manual marks a positive step towards ensuring that CHWs receive standardized and comprehensive training.

Another significant finding related to the health workforce building block is the lack of a clearly defined incentive package or mechanism for the retention and motivation of CHWs. Although stipends have been increased, the expanded workload has left CHWs feeling overwhelmed. Results also suggest that non-financial incentives such as uniforms, vacation, and recognition are limited and inconsistently provided across all regions. The need for improved recognition and incentives is supported by extensive literature, which emphasizes the critical role of both financial and non-financial incentives in retaining and motivating CHWs (Colvin et al., 2021; Gadsden et al., 2021; Oladeji et al., 2023b). Lastly, findings also suggest an insufficient number of CHWs in larger communities, resulting in increased workloads for existing CHWs. This underscores the need for the MOHW to conduct comprehensive health workforce planning to ensure adequate CHW density across all communities, as supported by the literature (Ahmat et al., 2021; Perry et al., 2021).

Regarding the access to medical products and technologies, findings indicate that this building block has primarily influenced the support component of the CHW program in Belize. While there is an established system for the monthly requisition of basic medications and supplies, maintaining consistent supplies and obtaining necessary medications have proven to be

significant challenges. These challenges arise due to prioritization issues within regional health facilities, resulting in CHWs often receiving fewer supplies than they request or, at times, no supplies at all. This inconsistency in supply chain management affects the ability for CHWs to provide adequate care to their communities, a problem that is well-documented in the literature, especially in LMICs where health systems struggle with resource allocation and logistical support (Chandani et al., 2014; Masis et al., 2021; Olaniran et al., 2022b).

The limited and inconsistent supply of medications and equipment often forces CHWs to seek alternative means to support their work, such as personal contributions or external donations. This situation not only places additional financial burden on CHWs, but also highlights the systemic issues within the supply chain management of the public health system. According to Phillips-White and colleagues (2019), a well-functioning supply chain is crucial for ensuring that high-quality medicines and products are available when and where they are needed. The authors emphasize that due to the complexity of the system, strong leadership and governance are essential for driving continuous improvements in this area (Phillips-White et al., 2019). This underscores the urgent need for the MOHW to improve logistics planning and supply chain management to ensure that CHWs have the necessary tools and medications across all regions. Strengthening this building block can enhance the overall performance and stability of the CHW program and ensure that CHWs are adequately equipped to meet the health needs of their communities.

In terms of the health information systems building block, findings reveal its influence on the links component of the CHW program. Evidence suggests that effective health information systems are crucial for supporting data collection, reporting, and analysis within CHW programs (Admon et al., 2013). However, as highlighted in this study, the Belize Health Information

System (BHIS) does not incorporate community-level data from the CHW program. This gap is primarily due to the handwritten nature of data collection at the community-level, limiting the integration of community data into the broader health system. This issue is consistent with challenges faced in other LMICs where health information systems are often underdeveloped and fragmented (World Health Organization, 2010)

As indicated multiple times in this study, there is an urgent need to improve documentation practices and information flow within the CHW program in Belize. Community health workers face significant challenges with manual data entry, which is time-consuming and prone to errors. Similarly, health educators struggle with collating and finalizing reports due to these manual practices. Providing digital tools, such as laptops or tablets, could enhance data collection and reporting, facilitating better integration of community-level data into the BHIS. A study by Scott and Mars (2013) highlights the importance of modernizing health information systems to support electronic data capture, thereby improving the quality and accessibility of health data (R. Scott & Mars, 2013). Additionally, this can lead to more effective monitoring and evaluation of health interventions and improve informed decision-making and resource allocation. These findings reflect an urgent need for the modernization and digitization of the BHIS to streamline the work of CHWs and their supervisors. Ultimately, strengthening this building block will enhance the MOHW's ability to effectively monitor the CHW program and ensure that community-level data integrates seamlessly with the wider health system.

Regarding the service delivery building block, findings indicate that the roles of CHWs in Belize have expanded beyond traditional maternal and child health services. This broader scope, which now includes disease surveillance, management of NCDs, and basic mental health counselling, to name a few, has raised concerns about their productivity and workload, requiring

closer attention. Similarly, Kok (2015) notes that task-shifting in other settings increases workloads and requires careful management to avoid overburdening CHWs (Kok, 2015).

The referral system is a critical link between CHWs and the formal health system. However, findings from this study indicate significant challenges, as CHWs' referrals are often not acknowledged by health care professionals. This lack of acknowledgement has led to feelings of disrespect and diminished morale among CHWs. Moreover, CHWs in Belize reported suboptimal interactions with local health facilities, highlighting a weak linkage with the health system. In the same way, Oladeji and colleagues (2023) found that most health care workers in Belize do not complete the returned referral form to update CHWs. This presents a major challenge for an effective two-way referral system, which requires strengthening to ensure a continuum of care (Oladeji et al., 2023a). Studies emphasize the importance of a robust referral system and improved recognition of CHWs' contributions for better integration into the wider health system (Give et al., 2019; Schriger et al., 2024).

As demonstrated in this study, community ownership and partnership have been essential for the acceptance and functionality of the CHW program in Belize. This building block has positively influenced the human resources management and support components by ensuring community involvement in the recruitment and selection of CHWs. The requirement for CHWs to be selected by their community ensures that they have the trust and support of the people they serve, fostering a strong sense of community ownership and engagement. Furthermore, CHWs in Belize highlighted the importance of community support and involvement in their day-to-day activities, noting that trust and cooperation from their communities are fundamental. A study by LeBan and colleagues (2021) supports this approach, emphasizing that a successful CHW

program requires community support and ownership, as well as active participation at national, district, and local levels (LeBan et al., 2021).

Findings also indicate that community partnerships have been pivotal in ensuring that CHWs have the necessary equipment and supplies. Resources and community contributions from local businesses, churches, and leaders, supplemented by collaborations with organizations like UNICEF and PAHO, provide indispensable support for the program. Results suggest that these partnerships have also been vital for training opportunities and advocacy support, enabling CHWs to be well-equipped and empowered. As documented by Afzal et al. (2021), partnerships are crucial in supporting CHW programs in resource-limited settings like Belize. The authors further state that these collaborations foster a sense of collective responsibility and community empowerment, which are essential for the sustainability and effectiveness of CHW programs (Afzal et al., 2021).

In summary, findings indicate that the interactions between the WHO health system building blocks create a synergistic effect, significantly influencing the overall functionality and performance of the CHW program in Belize. Effective leadership and governance have been foundational in establishing the strategic direction and policies necessary for the program's structure and organization. When implemented in an ideal way, this building block would construct a supportive environment that enables other building blocks, such as financing and the health workforce, to function effectively (Karim et al., 2022). However, as noted in this study, setbacks remain in several of the health system building blocks, including budget constraints, shortage of medications and supplies, a weak service delivery model, poor health workforce planning, and inadequate information systems.

The interplay between financing and leadership is evident in budget allocation and financial planning, which are crucial for the program's sustainability. Furthermore, results suggest that financing directly impacts access to medical products, as budget allocations are necessary to maintain a reliable supply chain. This, in turn, affects service delivery since CHWs rely on these resources to perform their duties effectively. A study by Perry and colleagues (2014) found that inadequate financing in LMICs leads to shortages of essential medical supplies and equipment, negatively impacting the service delivery component of the health system. The authors also noted that financing influences capacity building, supervision, and incentives for CHWs, highlighting its interconnectedness with the health workforce (Perry et al., 2014).

Similarly, effective service delivery models require well-trained and motivated CHWs, adequate supplies, and efficient data management to support informed decision-making and resource allocation. The interaction between community partnerships and other building blocks, such as health workforce and service delivery, underscores the importance of fostering community involvement in health initiatives (Sacks et al., 2019). In sum, the interactions between the WHO health system building blocks are crucial for the sustainability of the CHW program. Each building block contributes to various components of the program, and when successfully implemented, their combined effects could result in an effective system. Therefore, addressing the deficiencies within the WHO health system building blocks is essential for health systems strengthening, and subsequently enhancing the effectiveness and sustainability of the CHW program.

6.1.3 Discussion: Research Question 3

The focus of research question 3 was to synthesize the findings from research questions 1 and 2, resulting in specific recommendations to optimize the CHW program in Belize. Drawing

from the desk review, key informant interviews, and further literature review, a set of recommendations is proposed based on the WHO health systems framework (WHO, 2010). These recommendations are organized according to each of the seven building blocks to facilitate targeted improvements and streamline implementation. Table 10 below presents the formal recommendations to optimize the CHW program in Belize, followed by a comprehensive explanation in support of these recommendations.

Table 10. Recommendations to Optimize the Community Health Worker (CHW) Program in Belize within the Context of the WHO Health Systems Framework

WHO Health System Building Blocks	Recommendations
Leadership and Governance	• Dedicated Strategic Focus: Establish a dedicated strategic focus on community health, with a standalone strategic plan that fully integrates the CHW program. This plan should outline clear objectives, strategies, and action plans. • Improved Communication: Develop and implement standardized communication protocols and reporting systems to ensure consistent information flow between health regions and headquarters. • Policy Formalization and Sensitization: Formalize policies related to CHW roles, including the referral process, and conduct regular sensitization workshops to ensure compliance and effective integration of CHWs into the health system.
Financing	• Increased Budget Allocations: Advocate for increased budget allocations for the CHW program to support medications, human resource development, and overall program sustainability. • Equitable Resource Distribution: Ensure equitable distribution of financial resources across all regions by implementing a needs-based approach that considers population size, disease burden, and disparities in health care access.
Health Workforce	• Job Security and Integration: Integrate CHWs as permanent staff within the MOHW to provide job security and improve retention. This includes offering clear career advancement pathways and professional development opportunities. This integration can facilitate the incorporation of CHWs into inter-professional teams, ensuring they work alongside other health professionals as integral members of the health workforce. • Health Labour Market Analysis: Conduct a comprehensive health labour market analysis that includes CHWs to understand workforce needs and dynamics. This analysis can identify trends and key factors affecting the supply and demand of health care workers, including CHWs, improve forecasting, and inform planning needs.

	• Training and Standardization: Provide standardized initial and refresher training programs across all regions, ensuring CHWs and their supervisors are well-equipped with the necessary skills to perform their roles effectively. • Recognition, Compensation, and Incentives: Implement comprehensive recognition programs, provide adequate compensation, and establish an equitable incentive package to motivate and retain CHWs.
Access to Medical Products and Technologies	• Efficient Planning and Procurement: Enhance planning and procurement processes to ensure a consistent supply of medications and equipment for CHWs. • Decentralized Distribution Networks: Strengthen decentralized distribution networks to ensure timely availability of medical supplies and equipment.
Health Information Systems	• Digitization of Documentation: Implement electronic health records and digital reporting systems to integrate community-level data with the Belize Health Information System. This includes updating and standardizing CHW-related forms. • Strengthening Monitoring and Evaluation (M&E): Develop a robust M&E framework to regularly assess program performance, using digital tools for data collection and analysis. • Provision of Digital Tools: Equip CHWs and health educators with laptops and necessary digital tools to facilitate efficient data entry, reporting, and communication.
Service Delivery	• Integration with the Health System: Foster better integration of CHWs into the health system through regular interactions with local health staff. • Strengthening Referral Systems: Improve the referral process with clear guidelines and enhanced communication between CHWs and health care providers. • Logistical Support: Provide necessary logistical support to regions, such as transportation, to facilitate CHWs' activities within their communities.

Community Ownership and Partnership	• Intersectoral Collaboration: Collaborate with other ministries to integrate the broader determinants of health, such as housing, education, and agriculture, into health initiatives to support the CHW program. • Partnership Building: Strengthen local and external partnerships to support health initiatives and improve resource allocation for the CHW program.
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Leadership and Governance: At the leadership and governance level, key informants emphasized the need for enhanced communication among regions and the implementation of a standardized reporting system to achieve better coordination. Effective communication ensures that all stakeholders, including CHWs, district health educators, and leadership personnel, are well-informed and aligned with the program's objectives. Studies have shown that strong leadership and effective communication significantly improve health program outcomes by fostering better coordination and strategic alignment (Nyström et al., 2018; West et al., 2014). Research participants also proposed formalizing policies, particularly regarding the referral process for CHWs, and sensitizing health care workers to these policies as critical steps toward optimizing the program. According to Kok and colleagues (2016), clear policies provide a framework for CHWs to operate by ensuring their roles and responsibilities are well-defined and recognized within the health system (Kok et al., 2016). Furthermore, sensitizing health care personnel about these policies can improve the referral process, guaranteeing that CHWs' referrals are acknowledged and acted upon by other health care providers. Evidence suggests that policy clarity in the referral process and the sensitization of health care workers are crucial for effectively integrating CHWs into health systems (Jhpiego Corporation, 2014; Lal et al., 2016).

Under this building block, it was also proposed to create a distinct focus on community health within the MOHW to address the need for dedicated resources and attention specifically for the CHW program. As mentioned by leadership personnel, juggling health promotion and community health has diluted efforts and hindered the effectiveness of both areas. The literature suggests that establishing a separate focus for community health allows for more targeted interventions, better resource allocation, and enhanced collaboration with other sectors such as rural development (Haldane et al., 2019). This approach aligns with modern health systems

strengthening frameworks, which advocate for dedicated focus areas to address specific health needs effectively (Blanchet et al., 2017; Kruk et al., 2018).

Financing: Regarding the financing building block, research participants proposed increasing budget allocations to optimize the CHW program in Belize. Participants emphasized the need for more funding to support essential components such as medications, capacity building, and overall program sustainability. Recent studies highlight the importance of adequate financing in ensuring that CHWs are well-equipped, adequately trained, and motivated (Haines et al., 2020; K. Scott et al., 2018).

Additionally, participants underscored the need for equitable distribution of resources across regions to ensure that all CHWs, regardless of their location, have access to the same level of support and resources. This approach is vital for maintaining uniform standards of care and preventing disparities in health care service delivery. According to the literature, equitable distribution of resources aligns with principles of health equity by advocating for fair allocation of health resources to address the needs of all populations, especially in rural and remote areas (Ottersen & Norheim, 2014).

Health Workforce: One of the key recommendations under the health workforce building block is to provide job security by integrating CHWs as permanent staff of the MOHW. This recommendation addresses the financial instability faced by CHWs and allows them to focus entirely on the program without seeking additional employment. Furthermore, this integration can facilitate the incorporation of CHWs into inter-professional teams, ensuring they become integral members of the health workforce. Recent literature supports this recommendation, highlighting that job security significantly improves job satisfaction, retention, and performance of CHWs (Perry et al., 2021). Research also states that integrating CHWs into the formal health

system enhances their legitimacy and the sustainability of their contributions to community health (Tseng et al., 2019). Additionally, a comprehensive health labour market analysis (HLMA) that includes CHWs is recommended to better understand workforce needs and dynamics. Such an analysis can identify trends and key factors influencing the supply and demand of health care workers, thereby guiding the strategic integration of CHWs into the formal workforce and informing long-term planning for the health sector (WHO, 2021).

Participants also proposed the need to establish clear career advancement pathways for CHWs, including scholarships and advanced training programs. Studies support this recommendation, demonstrating that career advancement opportunities can motivate CHWs, reduce turnover, and enhance performance (Cometto et al., 2018; Kok et al., 2015). Furthermore, Smithwick and colleagues (2023) suggest that scholarships and advanced programs can equip CHWs with additional skills, enabling them to take on more complex health tasks and leadership roles within their communities (Smithwick et al., 2023). Under this same building block, research participants also proposed increasing recognition, providing equitable incentives, and ensuring adequate compensation for CHWs. Key informants believe that the MOHW should provide vacation, organize social events, ensure the equitable distribution of incentives, and offer adequate compensation to improve job satisfaction and retention among CHWs. Supporting this view, Colvin and colleagues (2021) emphasize that incentives and appropriate compensation significantly enhance CHW retention and performance (Colvin et al., 2021). Participants also stressed the need for standardized training across all regions. Community health workers, in particular, seek professional development opportunities to enhance their communication and presentation skills. Schleiff et al. (2021) underscore the importance of standardized training

programs in maintaining uniform service standards and addressing disparities in CHW knowledge and skills (Schleiff et al., 2021).

Access to Medical Products and Technologies: Proposed recommendations under the access to medical products and technologies building block focused primarily on the need to improve planning and procurement processes to ensure a consistent supply of medications and equipment. Research participants indicated that proper forecasting and procurement during high-demand seasons, along with better inventory management systems, are necessary to meet community needs. These measures, supported by the literature, highlight the importance of robust supply chain management in enhancing the effectiveness and reliability of CHW programs (Chandani et al., 2014; Masis et al., 2021). Furthermore, participants underscored the need for timely availability and distribution of medical supplies and equipment in their regions. This highlights the need for improving decentralized distribution networks to ensure that CHWs receive essential supplies on time and are reliably well-stocked (USAID, 2021).

Health Information Systems: In terms of the health information systems building block, participants noted that digitizing documentation and reporting processes is essential for the future integration of community-level data with the BHIS. They indicated that digitization would enhance data management and harmonization with the national health system. Additionally, it was recommended to update and revise data collection tools, including general documents such as the monthly requisition form, to better meet current needs. Participants also emphasized the need to strengthen the monitoring and evaluation (M&E) framework to regularly assess program performance and identify areas for improvement. Furthermore, the provision of laptops and other digital tools for CHWs and health educators was highlighted as crucial for facilitating efficient data entry, reporting, and communication. Recent studies support these recommendations,

demonstrating the significant benefits of robust digitized health information systems and effective M&E frameworks in improving health care delivery and facilitating informed decision-making (Kirk et al., 2021; Mupara et al., 2023).

Service Delivery: Regarding the service delivery building block, research participants proposed better integration of CHWs into the wider health system, emphasizing the need for regular interactions with local health staff. Improving the referral system was also highlighted as a critical need for the program. As discussed under the leadership and governance building block, the proposed referral policy can be enhanced through increased communication and interaction between CHWs and local health staff. It should be highlighted that the provision of digital tools such as laptops could further improve communication between CHWs and local health staff. Studies have shown that frequent interactions between CHWs and health care providers increase mutual understanding and collaboration, which are essential for effective service delivery (Knowles et al., 2023; Lloyd & Thomas-Henkel, 2017). Moreover, key informants recommended logistical support, such as providing transportation to support CHWs' activities within their communities. Participants noted that the lack of transportation hampers their ability to move heavy equipment and transport elderly patients. According to Agarwal and colleagues (2019), such logistical support is critical in rural and underserved areas where transportation barriers can significantly impact the ability of CHWs to provide timely and effective care (Agarwal et al., 2019).

Community Ownership and Partnership: As it relates to the final building block, participants recommended that the MOHW collaborate with other government ministries to integrate various aspects of community welfare into health initiatives. Community health workers indicated that addressing broader determinants of health, such as education, housing,

and agriculture, is essential for fostering strong community ties and supporting the success of the program. This proposal is in alignment with the literature, which suggests that multi-sectoral partnerships and community engagement significantly enhance the effectiveness and sustainability of CHW programs. (Afzal et al., 2021; Javanparast et al., 2018; Musoke et al., 2021).

6.2 Strengths and Limitations

The CHW program in Belize is unique as it is embedded into a larger government organization that is responsible for overseeing the entire public health sector. A major strength of this study was the exploratory aspect which provided in-depth information on health system and program-level factors influencing the functionality and performance of the CHW program in Belize. According to Gerring (2007), exploratory studies provide in-depth descriptions and analyses on relatively new phenomena in a fundamentally new way (Gerring, 2007). Additionally, the qualitative research methodology provided a wealth of data on the various factors influencing the CHW program and offered valuable insights into the program's unique position within the health system. Furthermore, the interviews provided information on respondents' experiences and perspectives, facilitating a deeper understanding of their opinions and thought processes related to the CHW program. Moreover, the different categories and roles of study participants provided good insights into different perspectives that enriched the research process of this dissertation. Another strength was the case study approach which increased general understanding of how the CHW program is functioning within the health system and communities throughout Belize.

While this dissertation might not be exhaustive of the entire functionality and performance of the CHW program, it aimed to shed light on specific health system and programmatic factors

influencing the program. Geographically, Belize has more rural areas, with over 50% of the population living in rural parts of the country (SIB, 2022). This posed some challenges for the researcher due to the location of some CHWs. Community health workers in remote areas had limited access to digital tools, internet and telephone services, making it difficult to capture a full representation of the phenomena under study. Consequently, findings from this dissertation are not intended to be used as a basis to describe the complete functionality and performance of the CHW program in Belize, but rather as a project that seeks to present a broad overview of factors that have influenced the CHW program within the last 10 years.

Additionally, as noted by Gerring (2007), a major criticism of case studies is the lack of generalizability to the population (Gerring, 2007). Therefore, it is essential to emphasize that the findings and recommendations from this study can only apply to the CHW program in Belize. However, the methodology used in this dissertation could be applied to similar programs and serve as a model for other countries looking to assess their CHW programs. The interview method also has inherent limitations, such as recall bias from interviewees and potential researcher bias. To mitigate this, the researcher collected multiple perspectives from the national program leadership, district health educators, and CHWs to minimize recall bias. The researcher also used the desk review to cross-check the data, particularly regarding health system factors. To reduce researcher bias, the researcher carefully recorded the methods and analyses employed throughout the study and was prepared to review and revise the transcripts with respondents when necessary for member-checking purposes.

In terms of the desk review, the researcher ran the risk of obtaining incomplete documents since many of the country's documents, reports, and gray literature may have not been developed for research purposes. In addition, the desk review might have also been impacted by

participants' willingness to share related documents with the researcher and/or their ability to do so. Participation in the study could have been impacted by the lack of incentives for potential research participants. Due to challenges in the recruitment phase outside of the researcher's control, recruitment methods were reviewed and slightly adjusted through communication with the dissertation chair.¹¹ The data collection period was also extended to ensure every recruitment attempt was made.

Given these challenges and the dynamic nature of research participants, future research should consider methods such as WhatsApp messaging, including group messaging, to facilitate quick communication. Anticipating that other study limitations might arise, the researcher communicated with the dissertation chair as needed to address any issue. Additionally, the MOHW leadership was consulted to ensure that all data collection methods, particularly those related to recruitment, were acceptable and properly utilized.

6.3 Implications for Research, Policy, and Practice

Based on the findings of this study, this section offers broader recommendations in the areas of research, policy, and practice.

6.3.1 Implications for Research

The findings from this study highlight the need for comprehensive evaluation studies to assess the long-term impacts of the CHW program in Belize. While current findings provide valuable insights on immediate system-level factors, longitudinal studies could offer a deeper understanding of how the health system influences the CHW program over time. Such studies should track health outcomes, CHW retention rates, community engagement levels, and other

¹¹ The researcher utilized WhatsApp to contact participants who had issues accessing their emails. Microsoft Teams was also utilized instead of Zoom due to connectivity issues. The data collection period was extended until the end of March 2024.

key health indicators over extended periods. Research should also explore the dynamics of workforce development within the CHW program, focusing on factors that influence the retention, motivation, and performance of CHWs. Additionally, with the push for the digitization of health information systems, studies are needed to investigate the challenges and benefits of fully integrating digital tools in CHW programs, particularly in low-resource settings, like Belize.

Future research should also investigate the interactions between the different WHO health system building blocks and their combined effects on the CHW program. By exploring these synergistic effects in greater depth, studies can provide a comprehensive overview of health systems strengthening and inform integrated approaches for program improvements. In addition, given the decentralized approach of the health system in Belize, future studies should also take an in-depth look at the CHW model by region. This regional analysis can uncover specific challenges and strengths unique to each region. Lastly, if the proposed recommendations are implemented, process and outcome evaluation should be conducted to assess their impact on the program, the CHWs, and its participants.

6.3.2 Implications for Policy

This study demonstrates the need for robust leadership and governance structures, and supportive policies to enhance the effectiveness of the CHW program in Belize. Based on the findings of this study and in alignment with the WHO Guideline on Health Policy and System Support to Optimize Community Health Worker Programs (2018), the researcher notes implications for three broad policy areas to optimize the CHW program in Belize (WHO, 2018b).

- (1) Selection, education and certification: CHWs should be selected based on well-defined criteria, including educational level, membership of and acceptance by the community, personal attributes such as empathy, reliability, adaptability, flexibility and cultural sensitivity, and gender equity. Pre-service training should be tailored in both content and duration to align with expected roles and responsibilities, as well as baseline competencies. Training should balance theoretical knowledge and practical skills and aim to develop technical competencies for disease prevention and treatment and socially oriented competencies for effective patient and community engagement. The program should offer competency-based formal certification upon successful completion of training, which can improve the quality of care, enhance CHW motivation, and positively influence community perception. Lastly, training programs, including initial and refresher courses, should be standardized across all 4 regions in the country.
- (2) Management and supervision: The CHW program in Belize requires sustainable support and integration into the local health system with a dedicated community health strategic plan and related policies. This should encompass supportive supervision that addresses problems and enhances skills, appropriate remuneration corresponding to the work conducted, written contracts specifying roles, working conditions and rights, and opportunities for career advancement.
- (3) Integration into and support by the health system and communities: A successful CHW program is integrated into both the community it serves and the health system in which it operates. Optimizing the value and impact of the CHW program in Belize requires careful planning, effective implementation, a strong referral process, and performance measurement, along with sufficient resources and supplies. Engaging communities in

defining their needs, selecting and holding CHWs accountable, and mobilizing local resources can enhance community ownership and satisfaction, as well as improve CHW motivation and performance.

These implications highlight the need for comprehensive, integrated, and equitable policy frameworks to optimize the CHW program in Belize. Strengthening these key areas can enhance the effectiveness and sustainability of the CHW program, ultimately leading to a more robust primary health care system.

6.3.3 Implications for Practice

The findings from this study have several significant implications for practitioners working within the CHW program in Belize and the wider Ministry of Health and Wellness. The researcher hopes that the recommendations proposed in this study will encourage program leadership to plan and implement evidence-based practices to optimize the CHW program. This research may lead program planners to conduct a self-assessment or situational analysis to gain a clearer understanding of the program's immediate needs. In addition, findings emphasize the need for a strategic focus on community health, suggesting that the MOHW should consider developing a standalone community health strategic plan to support the optimization of the CHW program.

In recognizing the pivotal role of partnerships and intersectoral collaboration, the MOHW should strengthen ties with local and external partners to support community health initiatives. This includes coordinating with various government ministries to address the broader determinants of health. Furthermore, program leadership should prioritize providing general support for CHWs to ensure their seamless integration with local health facilities. In terms of human resources for health planning and health systems strengthening, this study provides the

MOHW with an opportunity to examine global and regional best practices in support of achieving Universal Health and the Sustainable Development Goals by 2030.

This study represents a first step in a series of practical actions that the MOHW needs to undertake to optimize the CHW program in Belize. Additionally, the findings could inform efforts in other developing countries in Latin America and the Caribbean that are also working towards the harmonization of their CHW programs and health systems.

6.4 Conclusions

Guided by the WHO Health Systems Framework and the CHW AIM, this study aimed to assess the CHW program in Belize and provide specific recommendations for its optimization. This research provides a general overview and key insights on critical health system factors that have influenced the functionality and performance of the CHW program over the past decade. Findings indicate that Belize's health system has significantly influenced the CHW program through strategic structural changes, policy directives, service delivery models, and resource allocation, as part of the broader health sector reform aimed at improving primary health care. However, challenges remain in sustainable resource allocation and the development and implementation of dedicated community health policies and plans to better support the program.

This research also sheds light on how the WHO health system building blocks have shaped the core components of the CHW program, including human resource management, capacity building, support, and links. Evidence suggests that these building blocks have positively influenced the program by providing a necessary framework and strategic direction for the MOHW. They have facilitated the integration of the program into various health policies and plans, while also fostering community ownership and partnerships. Despite these positive impacts, setbacks remain in several of the building blocks, including budget allocation, the

availability of medications and supplies, the referral system and coordination with local health facilities, health workforce planning, and the utilization of community-level data. Addressing these challenges is essential for optimizing the program and ensuring that it continues to play a vital role in delivering primary health care services throughout communities in Belize.

Although this study had limitations due to the availability of resources, it is a positive preliminary step in understanding the health system factors influencing the CHW program in Belize. It is the researcher's intention to take the next steps to share the findings of this study with the MOHW leadership and research participants. This dissemination aims to inform future decision-making to enhance the overall success of the CHW program. In conclusion, these findings collectively highlight the intricate and multifaceted influence of Belize's health system on the CHW program and provide a comprehensive roadmap to optimize the functionality and performance of the program, ultimately contributing to health systems strengthening.

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APPENDICES

Appendix 1: Interview Guide for the National Program Leadership

1. What is HECOPAB's role and experience with the CHW program in Belize?
2. How would you describe the overall functionality and performance of the CHW program in Belize in the last 10 years (2013-2023)?
3. To what extent has the health system influenced the CHW program in Belize? Can you give some examples as it relates to the Health Sector Support Program Belize Project?
4. What are some of the key successes of the CHW program in Belize in the last 10 years (2013-2023)?
5. What are some of the main challenges of the CHW program in Belize in the last 10 years (2013-2023)?
6. Is there a Community Health Strategic and Operational Plan or equivalent document that incorporates the CHW Program? If yes, can you please elaborate on the objectives and strategic direction of such document?
7. What funding or financing mechanisms are in place to ensure the success of the CHW program in Belize? Probe: How is the CHW program funded and what percentage of the health budget is allocated to the program?
8. What process is in place to ensure the adequate procurement of essential medicines and technologies for community health? Probe: Is there a system in place to ensure that the needs of the CHW program are met?
9. What accreditation process is in place to assess the knowledge and competencies of CHWs prior to practicing? Probe: Are they recertified at regular intervals while practicing? What happens if CHWs fail? Are they allowed to re-test?

10. Are CHWs accredited by a national body based on clearly documented standards? Probe:
Can you elaborate on these standards?
11. Does the national health information system take into account the community-level data from the CHW program in Belize? If not, why? Is there a non-integrated system for the moment?
12. How does community-level data flow to the health system and back to the community?
Probe: How is the data used for quality improvement? What process is in place for CHWs to document their visits consistently in a standardized format? Do supervisors monitor the quality of data and discuss these data with CHWs and provide help as needed?
13. To what extent does the MOHW conduct general program evaluation of performance against targets, overall program objectives, and indicators of the CHW program?
14. To what extent does the MOHW have policies in place that integrate and include the CHW program in health system planning and budgeting?
15. Based on your experience, what are some modifications to the health system that would be helpful to optimize the current status of the CHW program in Belize? Probe: How can the overall program be strengthened? Any recommendations in this regard?
16. Do you have knowledge of any document pertaining to the CHW program in Belize that you would like to share?
17. Is there anything else you would like to add on this topic?

Appendix 2: Interview Guide for District Health Educators (DHEs)

1. What is your role and experience as a District Health Educator with the CHW program in Belize?
2. What are the roles and responsibilities of CHWs and their supervisors? Are these established in a national document?
3. What process is in place for the recruitment of CHWs across all four health regions? Can you describe the recruitment process?
4. What are the training requirements for CHWs in Belize? How is pre-service training provided to CHWs to prepare for their role? Are training manuals and tools available at all levels (national, district and local levels)? How is ongoing training provided to reinforce initial training?
5. What mechanisms are in place for the retention and motivation of CHWs in Belize? Are these mechanisms listed in any national document?
6. What mechanisms are in place for the supportive supervision of CHWs? How often are supervision visits conducted? Are supervisors trained and have technical skills to do observations? Is there a basic supervision tool checklist to aid them? Do supervisors provide a summary of assessment to CHWs to identify areas for improvement?
7. What incentive package is in place for CHWs? Would you consider the incentive package to be balanced by including financial incentives such as salary (at least minimum wage) and bonuses, and non-financial incentives such as recognition, uniform, etc.?

Probe: Do CHWs receive other employee benefits such as housing, vacation, etc.?
8. What are some of the key successes of the CHW program in Belize in the last 10 years (2013-2023)?

9. What are some of the main challenges of the CHW program in Belize in the last 10 years (2013-2023)?
10. How can the CHW program in Belize be strengthened to work in harmony with the national health system? Any recommendations in this regard?
11. Do you have knowledge of any document pertaining to the CHW program in Belize that you would like to share?
12. Is there anything else you would like to add on this topic?

Appendix 3: Interview Guide for Community Health Workers (CHWs)

1. Can you tell me how long you have been working as a CHW and in what capacity or specific role?
2. Link between the local health system and CHWs: Do local health centers, health posts or mobile clinics effectively coordinate the implementation of the CHW program?
3. Do you feel that the procedures for the distribution and storage of medical products are clearly defined in a manual available to all CHWs?
4. Is there a monthly or regular interaction between health center staff and CHWs? Please describe this interaction.
5. How does your community assist with the success of the CHW program? Probe: How do you engage your community? Do you engage existing multisectoral community structures (e.g., community meetings, committees, community leaders) to ensure the success of the program?
6. Do you believe that you have opportunities for advancement as a CHW? Probe: How are you provided career pathways? What would be the main facilitators and barriers in this regard?
7. What are some of the main challenges you face as a CHW in your community?
8. From your perspective, what are some modifications to the health system that would be helpful to optimize the CHW program in Belize?
9. Do you have knowledge of any document pertaining to the CHW program in Belize that you would like to share?
10. Is there anything else you would like to add on this topic?

Appendix 4: Draft E-mail Invitation for Interview

Subject: Interview Request: Optimizing the CHW Program in Belize Dissertation Research

Dear [Leadership Personnel, DHE, or CHW],

I hope this e-mail finds you well. My name is Andrei Chell, Doctor of Public Health Candidate at the University at Albany, School of Public Health in New York. I am currently working on my dissertation research titled, Optimizing the Community Health Worker (CHW) Program in Belize and Understanding its Unique Intermediary Position within the Health System: Perspective from the WHO Health Systems Approach.

As principal investigator for this study, I am writing to request your kind participation in an interview with me regarding the functionality and performance of the CHW program in Belize.

The overall objective of this study is to assess the national CHW program in Belize and to provide specific recommendations on how to optimize the program, within the context of the WHO health system building blocks. This is a qualitative study, and our research questions may evolve through the insights you provide. However, our current research questions are focused on exploring the influence of Belize's health system on the CHW program in the last 10 years (2013-2023), understanding the extent to which the WHO health system building blocks have influenced the different programmatic components of the CHW program, and defining specific recommendations to optimize the CHW program in Belize. All interviews will be conducted in English. To be considered eligible to participate, you must have been working in the CHW program for at least one year.

The interview will take approximately 1 hour and will be conducted online via Microsoft Teams or phone. Are you available in the next few weeks to share your insights with me? If you are willing to participate, please let me know your availability. Once we schedule a time that works

best for you, I will share the calendar invite and link for the interview. To ensure maximum data collection, and with your consent, I would like to record our interview to make sure that I remember accurately all the information you provide. These recordings will be kept in a secured, password-protected computer and will only be accessible by myself and my faculty advisor and will be deleted at the end of this project (by XXXX).

I want to take this opportunity to thank you for your time and contribution to this important research study. I look forward to hearing from you soon.

Sincerely,

Andrei R. Chell, MSc

Doctor of Public Health (DrPH) Candidate

Department of Health Policy, Management, and Behavior

School of Public Health

State University of New York at Albany

E-mail: achell@albany.edu

Appendix 5: E-mail Reminder for Interview

Subject: Interview Reminder: Optimizing the CHW Program in Belize Dissertation Research

Dear [Leadership Personnel, DHE, or CHW],

I hope this e-mail finds you well. This is a gentle reminder about our upcoming interview via Microsoft Teams/phone (as previously arranged), scheduled for [Date] at [Time]. Please let me know if you are no longer available at this time. The interview should take less than an hour and will be conducted via Microsoft Teams or phone (as previously arranged). We will be recording the interview to ensure that our notes are accurate, but recordings will be deleted at the end of this project [by Date]. The overall objective of this study is to assess the national CHW program in Belize and to provide specific recommendations on how to optimize the program, within the context of the WHO health system building blocks. This is a qualitative study, and our research questions may evolve through the insights you provide. However, our current research questions are focused on exploring the influence of Belize's health system on the CHW program in the last 10 years (2013-2023), understanding the extent to which the WHO health system building blocks have influenced the different programmatic components of the CHW program, and defining specific recommendations to optimize the CHW program in Belize. Kindly find attached the Informed Consent form for your review and signature. The document also includes additional information about this study for reference. If you have any questions, please do not hesitate to contact me. I want to take this opportunity to thank you for your time and contribution to this important research study. I look forward to talking to you soon.

Sincerely,

Andrei R. Chell, MSc

DrPH Candidate, University at Albany, E-mail: achell@albany.edu

Appendix 6: Informed Consent



INFORMED CONSENT INFORMATION FOR RESEARCH PARTICIPATION

Study Title: Optimizing the Community Health Worker (CHW) Program in Belize and Understanding its Unique Intermediary Position within the Health System: Perspective from the WHO Health Systems Approach

Principal Investigator: Andrei R. Chell, MSc.; Doctor of Public Health Candidate

Co-Principal Investigator: Dr. Wendy E. Weller, Ph.D.; Faculty Advisor and Dissertation Committee Chair

IRB Study Number: [Received a determination of non-human subject research]

I am a student at the University at Albany School of Public Health. I am conducting a research study, which I invite you to take part in. This form has important information about the reason for doing this study, what I will ask you to do if you decide to be in this study, and the way I would like to use information about you that we collect.

Basic Information about the Research Project

This research project is being carried out as part of the final process of the Doctor of Public Health (DrPH) Degree with a concentration in Health Policy and Management. The overall objective of this study is to assess the National Community Health Worker Program in Belize and to provide specific recommendations on how to optimize the program, within the context of the WHO health systems approach. Research participants will be individuals who are directly involved with the CHW program in Belize, which will provide information on health system and program-level factors that are influencing the functionality and performance of the CHW program.

Purpose of the project

Why are you doing this study?

You are being asked to participate in a research study about how the CHW program in Belize has been functioning and performing within the health system in which it operates. Through this study, I will propose a set of specific recommendations to strengthen the CHW program.

The purpose of the study is to assess the National Community Health Worker Program in Belize and to provide specific recommendations on how to optimize the program, within the context of the WHO health systems approach.

What will I do if I choose to be in this study?

You will be asked to participate in an interview via Microsoft Teams and share your point of view on the functionality and performance of the CHW program in Belize. You will also be asked specific questions on health system and program-level factors that may be influencing the CHW program.

Study time: Study participation will take approximately 60 minutes of your time.

Study location: All study procedures will take place via Microsoft Teams Platform or telephone, depending on the availability of internet connection.

I would like to video-record this interview to make sure that I remember accurately all the information you provide. I will keep these recordings on a secure password-protected computer and the University at Albany One-Drive storage system. Information will only be accessible by Andrei Chell, principal investigator; Dr. Wendy Weller, co-investigator and dissertation committee chair; and Dr. Christine Bozlak and Dr. Benjamin Puertas, dissertation committee members. If you prefer not to be video-recorded, I will take notes instead.

I may quote your remarks in presentations or articles resulting from this work. A pseudonym will be used to protect your identity unless you specifically request that you be identified by your true name.

What are the possible risks or discomforts?

Your participation in this study does not involve any physical or emotional risk to you beyond that of everyday life. The interview topics ask you to discuss your point of view. Furthermore, your decision on whether to participate will not affect your current or future relationship with anyone at the Ministry of Health and Wellness or any other relevant agency. Your name will not be associated with the findings presented from this study.

As with all research, there is a chance that the confidentiality of the information I collect from you could be breached. To protect your information, I will take steps to minimize this risk, as discussed in more detail below.

What are the possible benefits for me or others?

You are not likely to have any direct benefit from being in this research study. This study is designed to assess the CHW program in Belize and to inform specific recommendations to optimize the program. Through this research, we can increase general understanding of how the CHW program in Belize is functioning within the national health system. In addition, findings obtained from this study may potentially inform efforts in other developing countries in Latin America and the Caribbean who are also working towards the harmonization of their CHW programs and health system.

How will you protect the information you collect about me, and how will that information be shared?

The results of this study may be used in publications and presentations. Your study data will be handled as confidentially as possible. If the results of this study are published or presented, individual names and other personally identifiable information will not be used.

To minimize the risks to confidentiality, I will store all the information from the study on a secure, password-protected computer and the University at Albany One-Drive storage system. At the time of a key informant interview, the researcher will assign the participant an identifier code; this code will be used to identify the participant on video recordings, transcripts, and demographic information.

If a participant discloses any identifying information in the interview, the identifying information will be deleted from the written transcript. Likewise, electronic data will be de-identified before being stored. All digital files will be password-protected, and only the researcher and dissertation chair will have complete access. Participants' names will not appear in any findings or publications from this study.

During the interview, if I think that you intend to harm yourself or others, I will notify the appropriate people with this information.

Financial Information

Participation in this study will involve no cost to you. You will not be paid for participating in this study.

What are my rights as a research participant?

Participation in this study is voluntary. You do not have to answer any question you do not want to answer. If at any time and for any reason, you would prefer not to participate in this study, please feel free not to. If at any time you would like to stop participating, please tell me. We can take a break, stop and continue at a later date, or stop altogether. You may withdraw from this study at any time, and you will not be penalized in any way for deciding to stop participation.

If you decide to withdraw from this study, the researchers will ask you if the information already collected from you can be used.

Who can I contact if I have questions or concerns about this research study?

If you have questions, you are free to ask them now. If you have questions later, you may contact Andrei Chell at achell@albany.edu, phone number +1 518-495-16XX or +501 615-29XX, or my Faculty Advisor, Dr. Wendy Weller at wweller@albany.edu, phone number +1 518-402-03XX. If you have any questions about your rights as a participant in this research, you can contact the following office at the University at Albany:

Institutional Review Board

University at Albany
Office of Regulatory and Research Compliance
1400 Washington Ave, ES 244
Albany, NY 12222
Phone: 1-866-857-5459
Email: rco@albany.edu

Consent

I have read this form, and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form.

Consent for use of video and audio recording during the study

Initial one of the following to indicate your choice:

_____ (initial) I agree to allow the researcher to record me using video and audio for this research.

_____ (initial) I do not agree to allow the researcher to record me using video and audio for this research, but I would like to participate.

Participant's Name (printed)

Participant's Signature

Date

E-mail Address

Phone Number

Appendix 7: Permission to Use Figure. The WHO Health Systems Framework

Dear Mr Chell,

Thank you for your request for permission to reproduce and/or translate certain WHO copyrighted material.

Please note that this is an automated response based on criteria indicated in the form you have submitted.

If the WHO copyrighted material you have requested to reproduce and/or translate is published under the [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO license \(CC BY-NC-SA 3.0 IGO\)](#), then so long as the content is for non-commercial purposes, then you **do not** require written permission from WHO, it is your responsibility to verify the license type and comply with its terms and conditions.

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Kind regards,

WHO Permissions team

World Health Organization

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Field	Value
Title	Mr
First name	Andrei
Family name	Chell
Organisation/affiliation	University at Albany, State University of New York
Website address	www.albany.edu
Type of organisation / affiliation	Academic
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Appendix 8: Permission to Use Figure. Kok's Conceptual Framework

Dear Andrei,

Thanks for your email. Yes, it is no problem to use that framework. Good luck with your study!

Maryse

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:



Maryse Catelijne Kok

Date: 05-07-2024

Maryse Kok, PhD

Reader in Health Systems

Department of Clinical Sciences; Department of International Public Health

Liverpool School of Tropical Medicine

From: Chell, Andrei R <achell@albany.edu>

Sent: Friday, July 5, 2024 12:26:51 AM

To: Kok, Maryse <Maryse.Kok@kit.nl>

Subject: Permission to use Figure 2.2 of Dissertation: Performance of Community Health Workers

Andrei R. Chell

State University of New York at Albany

July 4, 2024

Dr. Maryse Catelijne Kok

Vrije Universiteit

Dear Dr. Maryse Catelijne Kok:

I am Andrei Chell, Doctor of Public Health Candidate at the School of Public Health, State University of New York at Albany. I would like your permission to use Figure 2.2 Conceptual framework on CHW performance, p. 20, of your Dissertation titled: Performance of Community

Health Workers. I am currently working on my dissertation and would like to incorporate your conceptual framework into my own proposed framework to guide my study.

The full citation of your original work:

Kok, M. (2015). *Performance of Community Health Workers: Optimizing the benefits of their unique position between communities and the health sector* [Doctorate Dissertation , VRIJE UNIVERSITEIT]. <https://chwcentral.org/resources/performance-of-community-health-workers-optimizing-the-benefits-of-their-unique-position-between-communities-and-the-health-sector/>

Please indicate your approval of this permission by signing the letter where indicated below and returning it to me at achell@albany.edu. Your signing of this letter will also confirm that you own the copyright to the above described material.

Thank you very much.

Sincerely,

Andrei Chell

Andrei R. Chell

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

Maryse Catelijne Kok

Date:

Andrei R. Chell, MSc

Doctor of Public Health (DrPH) Candidate

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