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OCCUPATIONAL CHARACTERISTICS AND ECONOMIC ACTIVITIES OF HEALTH WORKERS IN THE QUARTERLY LABOUR FORCE SURVEY: 2008-2017

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A research report submitted to the School of Public Health, Faculty of Health Sciences,

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Master of Science in the Field of Epidemiology and Biostatistics

Johannesburg, South Africa

~~3~~10 June ~~2024~~ 2023

DECLARATION

I, Aphiwe NZ Dinga, declare that this research report is my original work. It is being submitted for the degree of Master of Science in Epidemiology and Biostatistics in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University. I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong. I confirm that the work submitted for assessment for the above degree is my own unaided work, except where I have explicitly indicated otherwise.

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Signature

Date: 10 June 2024

DEDICATION

To Bulelwa and Zola Dinga, thank you for believing in my dreams and the sacrifices you have made for me over the years. Words cannot express my gratitude for having you as my parents; half of my academic battles were already won because of your love and support.

Thank you, GOD; with this, I glorify your name.

ABSTRACT

Background

There is global emphasis on the importance of research and analyses of health labour markets. The latter is defined as dynamic systems consisting of the demand and supply of health workers, influenced by a country's regulations and institutions. However, there is limited national data to inform a health labour market analysis.

Aim

The aim of the study was to analyse the demographic, occupational characteristics and the economic activities of health workers who were surveyed in the Quarterly Labour Force Survey (QLFS) from 1 January 2008 to 31 December 2017.

Methodology

This study was a cross-sectional secondary data analysis of the health workers captured in the QLFS, a household survey that is conducted every three months by Statistics South Africa. The survey focuses on the labour market activities of individuals aged 15 to 64 years who live in South Africa. The sample analysed for this study was all health workers surveyed in the QLFS during the study period. Both the South African Standard Classification of Occupations (SASCO) and the Standard Industry Classification (SIC) codes were used to extract data on all health occupations to ensure that the entire health workforce in the QLFS was included in the current study. To identify predictors of employment a multiple logistic regression was carried out. STATA ® 15 was used for the statistical analysis.

Results

The study sample comprised a total of 5 502 health workers. Nurses constituted the highest proportion of health workers in the survey (60.1%) while medical doctors and dentists represented 10.0%. Nurses were older than the other categories of health workers with a mean age of 43.6 years (SD±10.3), compared to the mean age of 41.8 (SD±10.8) for doctors, 38.6 (SD±10.4) for mid-level health workers and 37.8 (±10.8) for allied health workers. The majority (59.0%) of health workers were employed in the public sector, and in urban areas (83.8%). Only 4.6% of doctors and 7.0% of allied health workers were employed in rural areas.

Overall, the study found that fewer than 1% of health workers reported more than one job during the 10-year period. The results of the logistic regression showed that the odds of employment were approximately two times higher for health workers between the ages of 36-45 and 46-55 years old and 1.8 times higher for health workers between the ages of 26-35. There were 0.5 odds of employment for health workers aged 56-64 years compared to the reference age group of 18–25-year-olds. Females were less (0R=0.56) likely to be employed as compared to males. Compared to health workers in urban areas, those in rural areas were less (0.47) likely to be employed. Health workers were 0.53 times less likely to be employed outside the health industry as compared to being employed in the health industry.

Conclusion

Although the QLFS provides useful information on the health workforce in South Africa, the results highlight the need for investment in a robust human resources for health information system.

Keywords: human resources for health; health workforce; health labour market; occupational characteristics, economic activities, South Africa

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LIST OF ABBREVIATIONS AND ACRONYMS

DoH	Department of Health
GHWA	Global Health Workforce Alliance
HEEG	Health Employment and Economic Growth
HIC	High-Income Country
HLM	Health Labour Market
HREC	Human Research Ethics Committee
HRH	Human Resources for Health
HWF	Health Workforce
LMICs	Low- and Middle-Income Countries
MDGs	Millennium Development Goals
MJH	Multiple Job Holding
NDoH	National Department of Health
NHA	National Health Act
NHI	National Health Insurance
NHS	National Health Service
OECD	Organisation for Economic Cooperation and Development
OSD	Occupational Service Dispensation
PERSAL	Personal and Salary System
QLFS	Quarterly Labour Force Survey
RWOPS	Remunerative Work Outside of Public Service
SANC	South African Nursing Council
SARChI	South African Research Chairs Initiative
SASCO	South African Standard Classification of Occupations
SDGs	Sustainable Development Goals
SIC	Standard Industry Classification
StatsSA	Statistics South Africa
UHC	Universal Health Coverage
USA	United States of America
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

1.1 Background

Human resources for health (HRH) are crucial for the effective functioning of any health system and achieving the global goal of universal health coverage (UHC), aimed at ensuring equitable access to essential health services and financial risk protection (1). HRH are also critical for resilient health systems that are able to respond to emergencies and natural disasters, and for population health improvements (2). The 2030 Global Strategy on HRH uses a labour market conceptual framework, with a health labour market defined as a "dynamic system composed of two distinct but closely related economic forces: the supply of health workers and the demand for such workers" (2, p.13,22). A key objective of the 2030 Global HRH Strategy is to align health workforce investment with population and health system needs by taking account of the behaviour of healthcare providers (who supply labour), the institutions that demand labour (employers), and how these health policy actors respond to legislation, regulation and health and education policies (2).

In 2016, the High-Level Commission on Health Employment and Economic Growth (HEEG) recommended further research to analyse health labour markets (3). Despite the growing recognition of the importance of health labour markets, more research is needed in low-and middle-income countries (LMICs), particularly in Africa (4). Furthermore, there needs to be more analyses of standard data sets on the labour market. Such labour market analysis can generate new knowledge on the characteristics and distribution of the health workforce in order to inform health policy decisions (3, 4, 5).

South Africa has made strides in HRH since the end of apartheid, with numerous transformative laws, various governance structures, good fiscal space for public sector employment, and a robust health professional education system that is well-regulated (1, 6). However, some of the weaknesses include, "insufficient stewardship of HRH planning across the entire healthcare system; lack of a national integrated HRH information system; and inadequate information on overall HRH supply to address historical inequities between urban and rural areas and between the public and private health sectors" (7, p.13). The imperative to improve health workforce

planning and HRH information systems was reiterated in South Africa's 2030 HRH Strategy (1)

Notwithstanding South Africa's sub-optimal HRH information system, routine datasets such as the population census, labour force surveys, and health professional registries could provide useful information on the health workforce (4, 8, 9). The Labour Force Survey of Statistics South Africa (StatsSA) is a quarterly household-based survey of the labour market activities of adult South Africans (10). Since 2008, the Quarterly Labour Force Survey (QLFS) has collected regular information on the employment, occupation, sector of work, remuneration, and job changes of the population (10). The surveys could be an important data source on the occupational characteristics of the health workforce (11). Understanding the South African health labour market is essential for the successful implementation of the proposed National Health Insurance (NHI) system, which is the country's vehicle for UHC (1). This is because the health workforce is central to the realisation of the goal of UHC (1). In light of the gaps in health labour market research, the aim of this study was to analyse the demographic and occupational characteristics as well as the economic activities of health workers who were surveyed in the QLFS for the period from 1 January 2008 to 31 December 2017.

This chapter provides the background and context of the Master of Science (MSc) research study. Section 1.2 contains the literature review, including the definition of terms, the importance of research on the health labour market, and the demographic and occupational characteristics of the health workforce. This is followed by the problem statement and the rationale for this research (section 1.3). The chapter concludes with the aims and objectives of the study (Section 1.4) and the structure and outline of the remainder of the research report (Section 1.5).

1.2 Literature review

1.2.1 Definition of terms

Dual work	Also known as moonlighting**,** or holding multiple jobs, is understood as having a second job (s) in addition to a primary full-time job (12).
Economic activities	Activities that contribute to the production of goods and services in a country. In this study, economic activities are work activities of an individual within an establishment/s, including dual work and types of work (13).
Health worker/ Health workforce	Health workers are defined as people whose job is to improve and protect the health of their communities (5). In this study a health worker is any individual who indicated that he/she had health training following completion of matric and delivered or previously delivered direct clinical or indirect healthcare services to sick or injured patients. The term includes professional health providers such as doctors and nurses, rehabilitation therapists, as well as auxiliary health workers and mid-level health workers.
Labour force participation	This is the proportion of a country's working age population which is actively engaged in the labour market through working or actively looking for work (13)
Unemployment	Individuals aged 15–64 years who did not have a job, have actively looked for work or tried to start a business in the four weeks preceding the OLFS interview, were available for work or had a job or business to start at a definite date in the future (13).

1.2.2 Approach to the literature review

The literature review was informed by the study objectives (Section 1.4). Google Scholar was the primary search engine used to search for literature. The following databases were also used: PubMed, ScienceDirect and Web of Science. The following key words and medical subject headings (MeSH) were used in different combinations during the literature search: Africa; demographics; dual work; economic activities; gender; geographic distribution; health labour market; health workforce; health worker; human resources for health; low-and-middle income countries; quarterly labour force survey; occupational characteristics; South Africa. A grey literature search was also conducted.

An effort was made to only include results from studies which used routine data such as labour force surveys. The literature review foregrounds studies published between the beginning of the study period (2008) until 2023.

1.2.3 Health labour market research

Health labour markets are influenced by various factors, including globalisation, public sector reforms, population health needs, the demand for health services and the supply and governance of health workers (5, 14, 15). The 2006 World Health Report cautioned that expanding labour markets had "*intensified health professional concentration in urban areas and accelerated international migration from the poorest to the wealthiest countries"* (16, p.143). The characteristics of the resultant health workforce crisis included health worker shortages, inappropriate skill mixes, and health service coverage gaps (16, 17). Although health labour markets were not singled out as a priority, the World Health Organization (WHO) 2006 report recommended funding for priority human resources research (16).

In the decade between 2006 and 2016, the importance of research on health labour markets received increased attention from health policy makers and scholars (4, 18, 19, 20, 21). In 2013, McPake and colleagues (22) argued for the application of labour economic frameworks to analyses of the health workforce crisis, especially in LMICs. Similarly, Soucat and Scheffler (23) proposed a labour market conceptual framework and regional and country data to examine the HRH crisis in Africa. In 2016, WHO released the 2030 Global HRH Strategy, in recognition of the criticality of the health workforce to the achievement of the Sustainable Development Goals (SDGs) (2). The Global HRH Strategy emphasised the centrality of health labour market

analysis to the formulation of national health workforce strategies and to the mobilisation of resources to implement these strategies, subsequently echoed in the 2016 HEEG Report of the High-level Commission (2, 3). This is because such health labour market analysis can generate new knowledge on the drivers and policy levers that influence health workforce production, deployment, retention, and performance, thus contributing to the practical design of health policies and appropriate interventions (3). In addition, the value of using routine data in health labour market analyses has been illustrated by joint WHO and World Bank teams (5). Notwithstanding variations in the completeness and the quality of data, the 2017 estimates identified a growing HRH demand, with more than 18 million additional health workers needed by 2030 to achieve the SDGs (5). The modelling estimates suggest that health workers' demand and supply will continue to fall short of population health needs in LMICs (5). Notably, the joint WHO and World Bank team underscored the need for quality HRH data and evidence and recommended that all countries invest in "*analytical capacity for HRH and health system data*" based on agreed-upon standards (5, p.21).

High-income countries continue to have superior data quality and analytical capacity for research on health labour markets compared to many LMICs, yet the evidence base on HRH labour markets in high-income Organization for Economic Co-operation and Development (OECD) countries does not provide a clear picture of the expected future HRH situation in these countries (21). Nonetheless, in other diverse country settings, there is an encouraging increase in the research and analyses of HRH requirements and labour market dynamics (23, 24, 25, 26). Similarly, the 2013 study on the labour market for health workers in Africa provides valuable information (27). The author highlighted the importance of context for each of the 53 African countries studied and recommended a country's need to select a combination of relevant health measures and contextual factors to estimate HRH requirements (27).

In South Africa, the Ministerial HRH Task Team adopted a labour market approach and three different modelling estimates to develop the 2030 HRH Strategy (1). The modelling indicates a need for more skilled health professionals in South Africa (1). One of the five recommendations focused on institutionalising data-driven and research-informed health workforce policy, planning, management, and investment (1, p.42). This recommendation highlights the importance of analysing routine datasets such as the QLFS conducted by Statistics South Africa to add information on South Africa's health labour market dynamics.

Although Festus, Kasongo, Moses and Yu (6) examined the changes in the South African labour market from 1995- 2015 and the employment trends in the general South African population, no published studies could be found that have focused on an analysis of health workers in the QLFS.

1.2.4 Health workforce and demographic characteristics

Age analysis of health workers

Demographic trends directly impact labour markets, notably labour supply, productivity, and demand (5). An ageing population due to demographic and epidemiological changes is expected to increase the demand for health services and, therefore, the demand for HRH, and is expected to reduce the supply of health workers (28). The age structure of the health workforce also has important implications for policy and management, such as workability, training opportunities, and occupational health and safety (29). The combination of an ageing population and an ageing health workforce has been termed a "double whammy" while representing an opportunity for innovation and transformation (29, p.1).

In 2020, Szabo and colleagues (30) highlighted the dearth of research on the notion of health worker demography. This is because demography on age-trends could have direct implications for labour markets, notably labour supply, productivity, and demand (28). Szabo and colleagues (30) proposed a conceptual framework that focuses on key types of health workforce entry (e.g., education, migration) and exit (e.g., dismissal, retirement, death), the nature of which can influence the age and gender profile of the workforce. Unsurprisingly, the authors underscore the need for robust data for each health worker category (e.g., doctors, nurses), their age or age group, and disaggregation by employment sector and geographical distribution (30).

Studies have found that the age distribution of health workers varies across regions and even among countries within a region. In Finland in 2015, the largest age group among nurses and midwives was 35 years to 44 years (30). Similar variations in the age distribution of the health workforce have been reported in LMICs. In China, a study to examine the trends, composition and distribution of the nurse workforce using national public datasets from 2003 to 2018 found that most nurses (60.3%) were under the age of 35 years (31). A Cameroon study found that

36.1% of the health workforce was between the ages of 31 years and 40 years (32), while a study in Sudan reported that only 20% of health workers were between 50 years and 60 years of age (33). An analysis of the HRH labour market in Zambia found that most nurses were under 35 years (34).

The South African Nursing Council (SANC) Statistics indicated that only 28.0% of registered nurses were less than 30 years of age, with those in the 50 years and older age group accounting for 47.0% of professional nurses (35). As nurses make up a large part of the healthcare workforce in South Africa, this ageing nursing workforce has potentially negative implications for healthcare delivery, exacerbating the widespread reported shortages (35). In contrast, using the database of the Health Professions Council of South Africa (HPCSA), Tiwari and colleagues (36) found that the majority of registered male doctors (21.9%) are between the ages 35 years and 44 years, whereas the majority of the registered female doctors (38.8%) are between the ages 30 years and 39 years.

Gender analysis of health workers

Gender biases in health systems and workforce policies have created systemic inefficiencies regardless of the country's income level (37). Evidence suggests that structural and relational factors impact women's engagement in the labour market in general and in the health sector (3, 4, 5, 30, 37). Globally, women comprise 75.0% of healthcare workers, yet they face significant work-related inequities in compensation, working conditions, and health outcomes (37). Data on 16 high-income countries for 2007 show that women make up the majority of managers in the health and social sector but were underrepresented when adjusting for their share of total employment (5).

Nonetheless, an analysis of gender equity in the health workforce of 104 countries demonstrated progress and changing trends (38). The study found that the nursing and midwifery professions were dominated by females, whereas most health workers in other professions such as doctors, dentists, and pharmacists, were males (38). The study also found that women’s representation in the health sector has increased over time, particularly among the higher wage health care occupations (i.e. physicians, dentists and pharmacists) (38).

In the Organization for Economic Cooperation and Development (OECD) countries, the proportion of female physicians increased by 13.0% between 2000 and 2017 (38). Furthermore, the majority of health workers in higher wage health occupations (i.e. physicians, dentists and pharmacists) under the age of 40 are female (38). Interestingly, there is also an increasing share of male workers in younger age bands in nursing and midwifery (38).

However, females continue to dominate the nursing and midwifery professions, whereas men continue to dominate in the medical, dental and pharmacy professions (37). Context remains important regarding gender equity. South Africa's 2030 HRH Strategy underscores the importance of gender-transformative policies (1). Although Tiwari *et al* (36), found that 59.4% of the medical doctors on the HPCSA register were men, South Africa's HRH Strategy modelling suggests an average projected increase of 259% in female doctors within the surgical specialties by 2030 (1).

Geographical distribution of health workers

The urban-rural maldistribution of healthcare workers is a universal challenge, particularly in LMICs (39). The maldistribution between urban and rural areas is exacerbated by the inequities between the public and private health sectors (2). The reasons for the geographical maldistribution are complex, and include lack of explicit redistribution policies, health professional education, tertiary hospitals in urban areas, personal preferences of health workers, resource constraints, poor infrastructure in rural areas, and low employers demand (2, 39, 40, 41, 42). Analysing the urban-rural distribution of health workers provides insights into targeted policies to address the maldistribution and the shortages (2, 40, 43). In India, researchers have found a significant disproportion between the urban and rural distribution of health workers across all provinces (44). A study in Cameroon found evidence of health workforce imbalances between the capital city, Yaoundé and the poorest and under-developed regions (45). Similarly, in Sudan the study also reported a maldistribution of the health workforce between urban and rural areas, with the urban northern state having 4.6 times more health workers than the rural South Dafar state (45). In South Africa, the NHI white paper emphasises the disparities between the urban and rural health workforce (1). The maldistribution of health workers hampers access to health care for people in rural areas and impacts mortality rates (1).

1.2.5 Occupational characteristics

Globally, the health sector is the largest employer of workers, accounting for a large portion of national budgets (5). The majority of health workers fall into four critical healthcare occupations: doctors, dentists, nurses, and midwives (5). Although countries differ in planning and implementing human resource policies and strategies, the starting point was to collect data on health workers' occupational characteristics, especially their categories and skills mix (46). Skills mix refers to the mix of staff or the distribution of different health professional categories in the health sector (47). Researchers have investigated the skill mix in the health workforce and found that globally, nurses make up the majority of the health workforce, with sizable differences between doctors and nurses across countries (46, 47, 48, 49). Similarly, an Australian study reported that over half of their health workforce was dominated by nurses, with medical doctors being the second largest (14).

In LMICs such as Bangladesh, severe shortages of nurses were reported, as well as inadequate numbers of physicians (48). In contrast, a labour force survey in India found that the majority of the health workers comprised nurses and midwives and pharmacists (50). The public health sector in South Africa is predominantly nurse-driven, with nurses making up more than half of healthcare providers (1). However, there were wide variations in the skills mix across the nine provinces, with larger numbers of doctors in the urban provinces of Gauteng, the Western Cape and KwaZulu-Natal, and a greater reliance on community health workers in the rural provinces (1).

1.2.6 Employment activities

Employment status

The employment status of healthcare workers influences their availability and many other factors in the healthcare system (3, 51). Traditionally, the health care systems of most countries offered a standard employment contract featuring permanent full-time work with one employer (2). However, the permanent full-time employment contract lost its dominance with the realisation that employees prefer flexible contracts, whereas employers prefer to offer fewer employee benefits (19). In South Africa, for example, the employment status of many healthcare workers has changed, with the emergence of non-standard forms of employment such as agency nursing (52). One study has found that some healthcare workers prefer casual

employment because of better quality of life, reduced work responsibilities, limited workplace politics, and work-life balance with reduced job stress and better remuneration (52). In contrast, permanent healthcare workers have reported the advantages of paid leave for holidays and illness, retirement annuity, workplace coherence, access to career training and progression and job security that (52).

Employment sector

There is a dearth of studies that have examined healthcare workers' employment by sector which would assist in understanding employment preferences and occupational characteristics (11). More than half of health workforce in India was reported to be in the private sector (53). Ngah *et al.* (32) reported that about two-thirds of health workers in Cameroon were employed in the public sector. The remaining workforce was in the private sector, including non-profit organisations (32).

In South Africa, the government uses the Personal and Salary System (PERSAL) to record and pay all health workers employed in the public sector, but this system does not exist in the private health sector (1). However, an analysis of general practitioner and specialist numbers by ECONEX reported that approximately 40.0% of general practitioners and nurses work in the private sector, caring for approximately 17.0% of the population (54). In general, while many South African healthcare workers continue to work in the public health sector, it has been reported that they hold negative perceptions about their working conditions and environment, which often influences their decision to leave the sector (1). Understanding the employment sector where healthcare workers are located will contribute to new knowledge about their occupational characteristics and economic activities (1).

Multiple Job holding

Another factor has been multiple job holding (MJH), a practice where an individual has a primary full-time job with at least one extra paid job (12). Labour economists have also used the labour supply economic theory to explain multiple job holding as an additional source of income (12, 55, 56). Researchers have investigated dual practice among medical doctors and given various reasons for having more than one job, including improving their skills and knowledge (12, 55, 56, 57).

In Cameroon, Ngah *et al.* (32) found that many public sector health workers have part-time jobs in the private sector to compensate for their low salaries, resulting in high levels of absenteeism, reduced performance, and reduce productivity in the public health sector (32).

In South Africa, the Public Service Act makes provision for Remuneration Work Outside the Public Service (RWOPS) based on certain conditions set by the employer (1). A cross-sectional study of nurses reported that agency nursing and dual practice were common in the South African health system (58). Multiple job holding has severe consequences for the health system, including exhaustion, paying less attention to work while on duty, taking sick leave when not sick and conflicting schedules between their primary and secondary jobs, thus undermining the efficiency of the South African health system (58).

1.3 Problem statement and study rationale

This MSc research study was informed by three problems. Firstly, despite an encouraging increase in research on the health labour market, there are still knowledge gaps on the South Africa's health labour market. Secondly, the QLFS datasets from Statistics South Africa are available, but there has been insufficient analysis of this data source to examine the demographics, occupational characteristics, and economic activities of health workers, as well as the factors associated with the employment status of health workers. Lastly, the current HRH strategy reiterates the need for a dedicated intelligence unit in the National Department of Health to steer planning and the development of a robust HRH information system (1).

However, it is unclear whether the QLFS data could contribute to the gaps on HRH information in South Africa. Hence, the rationale for this study was to examine the occupational characteristics and economic activities of health workers surveyed in the QLFS. Additionally, the study analysed trends over a ten-year period from the QLFS's inception in 2008 to 2017. The study also set out to determine whether the data on health workers in the QLFS can be used to assist with HRH analysis and contribute to planning. Lastly, the study also contributes to the generation of new knowledge on the South African health labour market.

1.4 Aim and objectives

The aim of the study was to analyse the demographic and occupational characteristics as well as the economic activities of health workers who were surveyed in the QLFS from 1 January 2008 to 31 December 2017.

The specific objectives of the study were to:

1. Describe the trends in *demographic characteristics* of health workers who were surveyed in the QLFS from 1 January 2008 to 31 December 2017.
2. Describe the trends in *occupational characteristics* and *economic activities* of health workers who were surveyed in the QLFS from 1 January 2008 to 31 December 2017.
3. Evaluate the *demographic* and *occupational* factors associated with *employment status* of the health workers who were surveyed by the QLFS using data from the fourth quarter of 2017.

1.5 Outline of the research report

The remainder of this research report is organised as follows:

Chapter 2 focuses on the study methods, including a detailed description of the primary study, namely the QLFS, and the methodological approach used to achieve the study objectives.

Chapter 3 describes the study results and the trends for the selected period.

Chapter 4 discusses the study findings, guided by the study objectives and the review of the relevant literature.

Chapter 5 presents the study conclusion and recommendations.

CHAPTER 2: METHODOLOGY

2.1 Introduction

This chapter describes the methodology used to meet the objectives of this study, as outlined in Chapter 1. Section 2.2 presents an overview of the preliminary study, namely the Quarterly Labour Force Survey (QLFS) from which the data for this study was drawn. Section 2.3 presents a detailed description of the methods of the current study, which was an analysis of the QLFS data on health workers. Section 2.4 summarises data management, while Section 2.5 describes the data analysis in this study. The chapter concludes with ethical considerations.

2.2 Background to the Quarterly Labour Force Survey

2.2.1 Design and sampling

The QLFS is a household survey that Statistics South Africa conducts every three months (or every quarter). Although the original Labour Force Survey (LFS) started in 2000, the survey in its current form was launched in 2008. The purpose of the QLFS survey is to collect data on the labour market activity of individuals aged 15 years or older who live in South Africa (14).

The QLFS is a longitudinal survey with a rotating panel design. The sampling was done in a stratified two-stage design. The first stage used probability proportional to size sampling of the Primary Sampling Unit (PSU), followed by systematic random sampling of the dwelling units in the second stage. The current sample size of the QLFS is 3 080 PSUs, divided equally into four rotation groups.

The rotating panel design is shown in Table 2.1, with each shape representing a rotation group (or panel) and each colour representing a different year. The QLFS base year was 2008, with the four original sampled rotation groups (panels). The rotation of groups (panels) commenced in the first quarter of 2009 when 25% of the 2008 sample was replaced with a new rotation group. Hence, 25% of the sample is replaced every quarter. The sampling meant that every fourth quarter had a unique group of households.

Table 2.1: Illustration of QLFS rotation groups, 2008-2017

	Q1	Q2	Q3	Q4
2008	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2009	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2010	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2011	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2012	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2013	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2014	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2015	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2016	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★
2017	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★	● ■ ▲ ★

Source: Adapted from Statistics South Africa [16]

Legend: each shape represents a rotation group, and each colour represents a specific year.

Rotation group	Shape
1	●
2	■
3	▲
4	★

Year	Colour
2008	
2009	
2010	
2011	

The QLFS used the South African Standard Classification of Occupations (SASCO) to classify all occupations (such as pharmacists, nurses, and doctors) and used the real-time management system to code all occupations into four digits which range from 1110-9333. These occupations were also grouped by the industry they belong to using the Standard Industry Classification (such as Manufacturing, Health, and Mining). The SIC provides a national framework and allows for international occupational comparability.

2.2.2 QLFS materials and methods

The QLFS survey involved interviews with household members using a structured questionnaire (see ***Appendix 2***). The questionnaire is divided into five sections (illustrated in Figure 2.1) with various skip patterns depending on the responses to questions on economic activities.

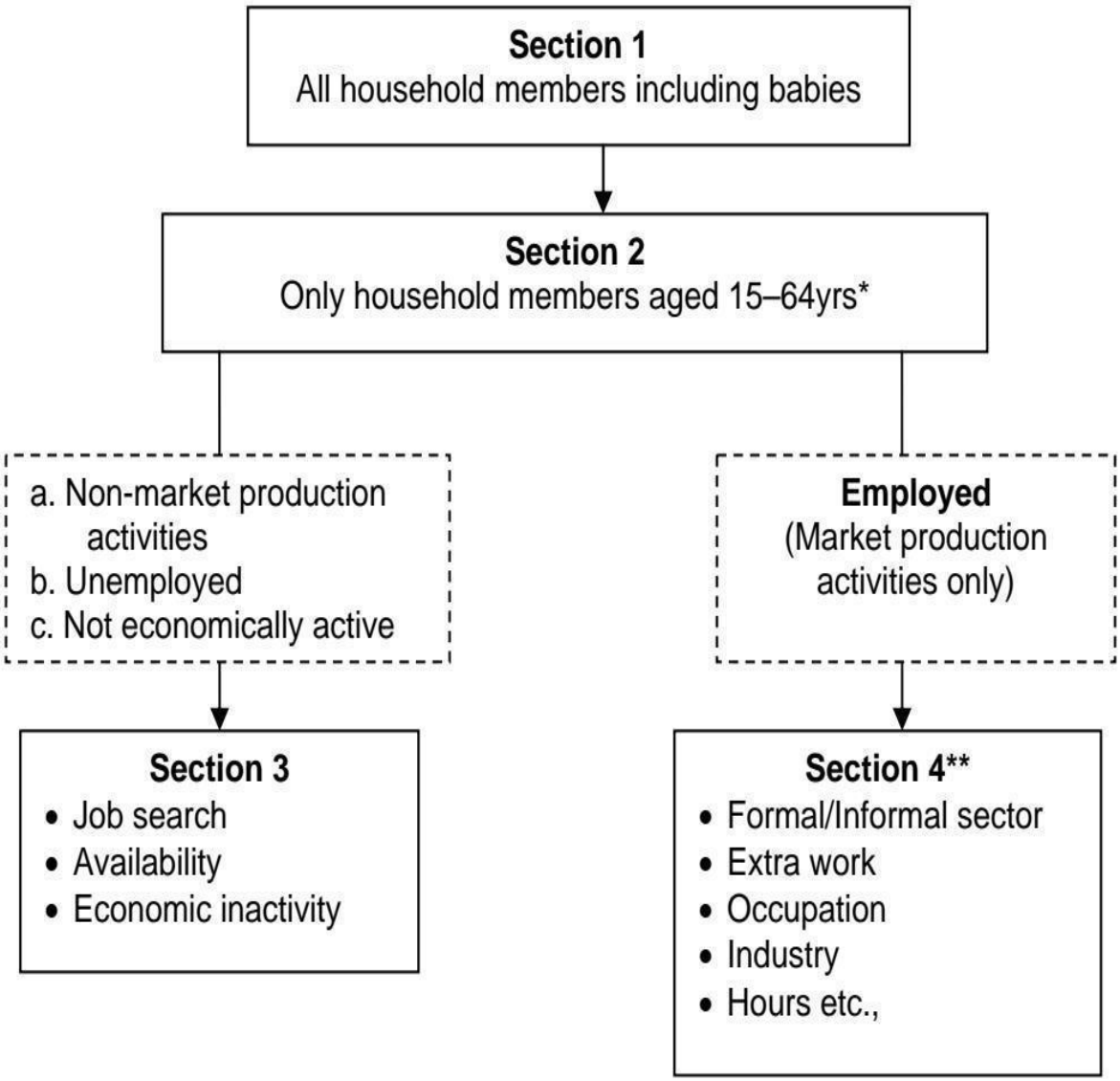

Figure 2.1: Illustration of the design of the questionnaire used in the QLFS survey

Source: Adapted from Statistics South Africa [13]

The QLFS questionnaires were completed by trained field staff and captured using an electronic tool called the Real-Time Management System. As indicated, data collection happened every quarter, and the results were released in the next quarter while simultaneously starting the data collection for that quarter (Figure 2.2).

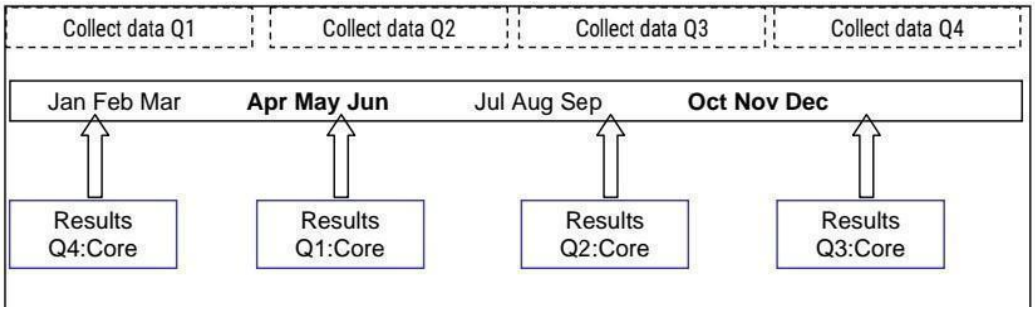

Figure 2.2:Collection of QLFS data and publication of results

Source: Statistics South Africa (13)

2.3 Description of the MSc study

This study was a secondary data analysis of the QLFS conducted by Statistics South Africa, focusing on the ten years from 1 January 2008 to 31 December 2017.

2.3.1 Study population

The study population consisted of all health workers who were surveyed in the QLFS during the study period. Both the South African Standard Classification of Occupations (SASCO) and the Standard Industry Classification (SIC) codes were used to extract data on all health occupations to ensure that the entire health workforce is included.

The inclusion criteria were any individual who: (1) had formal health training; (2) and delivered or previously delivered direct clinical or indirect healthcare services to sick or injured patients, or (3) formed part of the formal healthcare system defined as public and private health sectors in South Africa. **Table 2.2** shows health occupations included for the final analysis and how they were grouped into different health worker categories.

Table 2.2: Health occupations included in the study

SASCO codes	Health Occupations	Grouped categories
2221	Medical practitioners, physicians	**1. Doctors/Dentists**
2222	Dentists (general), Dental Specialists	
2230	Nursing and midwifery professionals	**2. Nurses**
3231	Nursing associate professionals, Nurses	
3232	Midwifery associate professionals	
3228	Pharmaceutical assistants	**3. Mid-level health workers**
5132	Paramedics and nursing aids	
3228	Pharmacists' assistants	
3220	Optometrist assistants	
3221	Medical assistants	
3225	Dental assistants	
3223	Dieticians and nutritionists	**4. Allied health workers**
3224	Optometrists and opticians	
3226	Physiotherapists and related associate	
2224	Pharmacists	
3229	Modern health associate professionals (e.g., speech therapists)	

As shown in **Table 2.3**, ten health occupations were excluded from the analysis because they did not meet the criteria of a health worker in this study or did not form part of the formal health care system. Psychologists were excluded because there needs to be a clear distinction in the QLFS between clinical psychologists and other psychologists. In addition, psychologists are grouped with psychometricians and psych technicians who are unrelated to health.

Table 2.3: Occupations excluded from the study

SASCO codes	**Health Occupations**
3241	Traditional healers
3242	Faith healers
3222	Sanitarians
5139	Personal care workers, e.g., child-minders
5133	Home-based care workers
2445	Psychologists/Psychometricians/
2446	Social work professionals
3460	Social work associates
3152	Safety health inspectors
1110	Legislators

2.3.2 Data collection and preparation

Statistics South Africa publishes the QLFS data on their official website, and the datasets can be downloaded freely. The de-identified datasets downloaded from the NESSTAR Quarterly Labour Force Survey database were available on (nesstar.statssa.gov.za:8282/webview/) for the study period.

Although 40 datasets that correspond to the quarters of the ten-year study period were available and initially downloaded, only the quarter four data of each year were used. This is because the fourth quarter represents a unique group of households and individuals due to the rotating panel nature of the QLFS (illustrated in Table 2.1 above). This avoided the double counting of individuals and ensured that the health workers in each year were unique. The 10 datasets were cleaned and inspected individually for consistency and completeness. This was done by ensuring that all selected variables were named and coded the same in all 10 datasets before appending them. **Figure 2.3** shows the steps followed in preparing the final dataset for statistical analysis and is further explained in detail below.

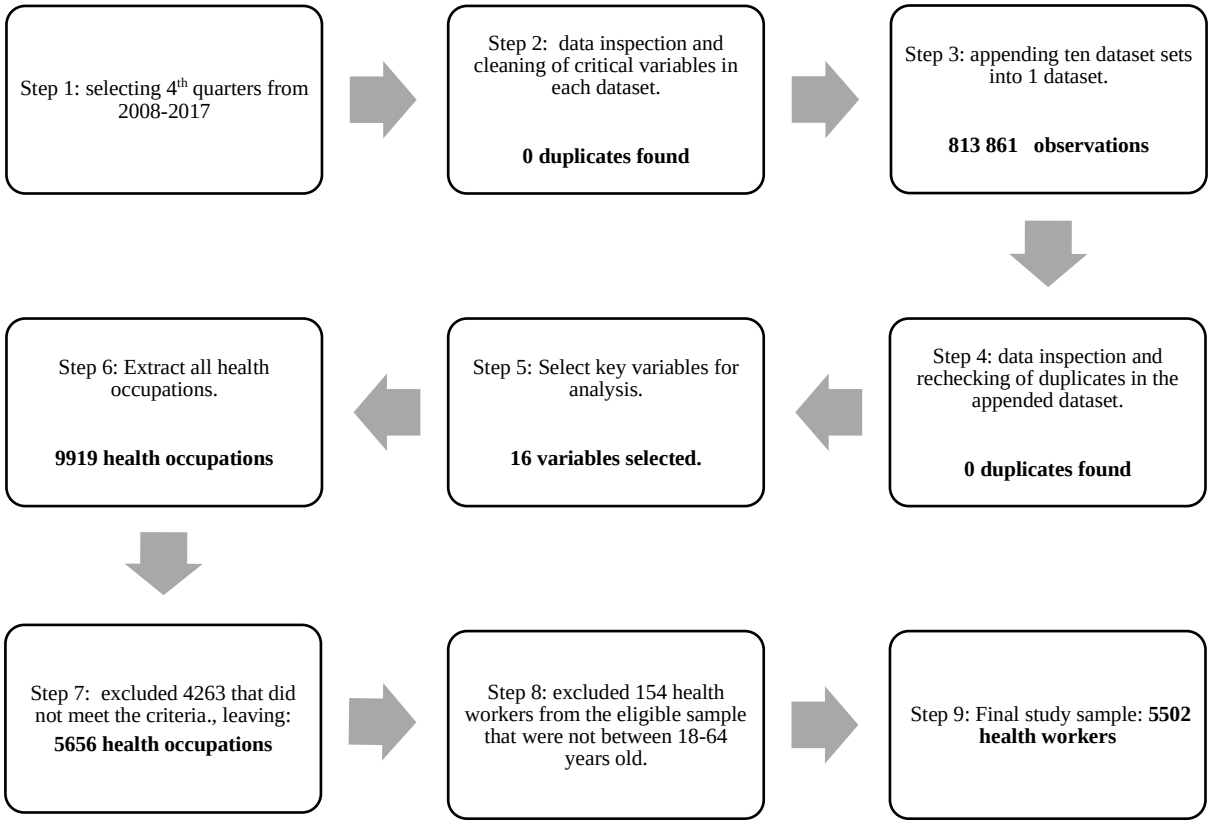

Figure 2.3: Data preparation process for analysis

- Step 1 entailed downloading 40 QLFS datasets from the StatsSA website, inspecting the data to verify the rotating panel (overlap of participants) and selecting data from the fourth quarter of each year only. At the end of this process, ten datasets were selected.
- Step 2 entailed identifying key variables, checking duplicates, cleaning, and ensuring all variables were named and coded appropriately in each of the ten datasets before appending.
- Step 3 entailed appending all ten datasets making a final dataset that contained 813 861 observations.
- Step 4 entailed data inspection and rechecking of duplicates in the appended dataset using UQNO, which is an 18-digit household ID, as the unique identifier.
- Step 5 entailed selecting 14 key variables that were kept for the analysis of this study. The 14 key variables selected are presented in the data management section below in Table 2. 5.
- Step 6 entailed extracting observations of all health occupations, which were 9919.

- Step 7 entailed excluding observations of 4263 health occupations that did not meet the definition of health workers in this study, e.g., traditional healers and environmental health practitioners.
- Step 8 excluded 154 observations of participants younger than 18 (2) and older than 64 (152) from the dataset.
- Step 9, the remaining eligible health workers were 5502.

2.3.3 Study sample

The entire sample of relevant health workers was used in the analysis (N=5502); hence no further sampling was done. In the study's final eligible sample of health workers, 461 (8.37%) were unemployed, and 5 041 (91.62%) were employed health workers. **Table 2.4** compares the total sample of health workers each year and the overall QLFS sample from which these were drawn.

Table 2.4: Sample of health workers and the overall QLFS sample

Year	**Overall QLFS sample** **N**	**Sample of health workers** **N**
	Frequency	**Frequency**
2008	93,062	627
2009	87,653	570
2010	83,357	575
2011	84,953	578
2012	85,112	614
2013	87,523	581
2014	84,274	529
2015	70,345	490
2016	69,231	476
2017	68,351	462
Total	**813,861**	**5,502**

2.4 Variable description and data management

Table 2.5 shows the original variables in the QLFS, their definitions, and the data management process.

Table 2.5: Data management process

QLFS variable	Definition	Data Management Process
Sociodemographic variables		
UQNO:	This is an 18-digit ID allocated to each household, with 1st eight digits being the PSU number.	Extracted PSU as a new variable and used that to adjust for the survey design all analyses.
Weight	Original survey weights: This is the probability or sampling weight proportional to the inverse probability of being sampled because of the survey design.	This variable was used to adjust for the survey design Weight was added as svyset psu [pweight=weight].
Person No,	Person No is the respondent number of a participant in a single household.	We generated a unique ID number for each respondent, which was used to check for duplicates.
Q14age	Respondents' current age, the original QLFS defines its working age as individuals between 15-64 years old.	Age was restricted to 18-64 years and further changed to 5 categories as indicated below:1(18-25); 2(26-35); 3(36-45); 4(46-55); 5(56-64).
q16maritalstatus	Respondents' marital status: 1. Married 2. Living together like husband and wife 3. Single 4. never married, 5. divorced/separated 6. widow/widower	This variable had low numbers in some of the groups and was changed to two categories for analysis purposes and recoded as: 1-Married (living together like husband and wife, married) 2-Single (never married, divorced/separated, widow/widower)
q17education	Respondents' highest education	This variable was excluded from the analysis due to data entry errors; over 45 % of this variable had incorrect information where Doctors and Nurses, for example, had no schooling or had primary schooling as their highest education.
Province	Current province of residence 1- Western Cape, 2- Eastern Cape, 3-Northern Cape, 4- Free State, 5-Kwazulu Natal, 6- North-West, 7-Gauteng, 8- Mpumalanga, 9-Limpopo	This variable was rearranged into alphabetical order and coded as: 1-Eastern Cape, 2- Free State, 3-Gauteng,4-Kwazulu Natal, 5-Limpopo, 6-Mpumalanga, 7- Northern Cape, 8- North-West, 9-Western Cape

QLFS variable	Definition	Data Management Process
Geo_type	Respondents' geography type/ type of areas they lived. 1. Urban 2 Rural 3. Farms, traditional mining	This variable had low numbers in some groups and was changed to two categories for analysis. recorded as: 1 -urban (urban) 2 -rural (farms, traditional, mining)
Occupational and economic variables		
Q42occupation	The actual occupation of respondents who were employed when the survey was conducted. There were approximately 380 listed occupations	Used the codes derived from the South African Standard Classification of Occupation to extract all employed health workers and classified them into four groups: **Group 1**- Dentists and doctors **Group 2**- All categories of nurses **Group 3**- Mid-level health workers (these include pharmacy, medical and dental assistants) **Group 4**- Allied health workers (these include physiotherapists and health workers involved with the rehabilitation of patients)
q13prevoccupation	The last occupation unemployed respondents had when they were last employed. There were about 400 listed occupations.	Used the codes derived from the South African Standard Classification of Occupation to extract all unemployed health workers
q43industry and q316previndustry	q43industry- current industry of employed respondents. q316previndustry- previous industry of unemployed respondents. 1. social and personal services;2. Agriculture hunting. 3. forestry and fish;4. Mining and quarrying, manufacturing, 5. electricity: gas and water supply; 6. Construction; 7 wholesale and retail trade; 8 transport ;9 financial intermediation, private households	A new variable was created (Industry) and recorded as 1.Health industry (social and personal services) 2. Non-health industry (Agriculture hunting; forestry and fish, mining and quarrying, manufacturing, electricity: gas and water supply, construction, wholesale and retail trade, transport, financial intermediation, private households)
Status_expanded	This variable was used to classify the employment status of all respondents: 1. Employed 2. Unemployed 3. Not economically active	A new variable was generated (employment status) using the status_exp variable and was recorded as: 1-employed (employed) 0-unemployed (unemployed, not economically active)

QLFS variable	Definition	Data Management Process
q415typebusns	Respondent's employment sector 1-National/Provincial/Local government, 2-Government controlled business (e.g.Eskom/Telkom), 3-private enterprise, 4-Non-profit organisation (NGO/CBO), 5-Private household)	This variable had low numbers in some categories and was changed to two categories for analysis purposes and re coded as 1-public sector (National/Provincial/Local government, government-controlled business (e.g., Eskom/Telkom) 2-private sector (private enterprise, Non-profit organisation (NGO/CBO), private household)
q41multiplejobs	Respondents who had more than one job 1-Yes 2-No	This variable was kept as coded initially 1-Yes 2-No
Other		
Year	Year of survey	

2.5 Data analysis

2.5.1 Trends in sociodemographic characteristics trends of health workers.

In addressing objective 1, the median age with the interquartile range was calculated from 2008 to 2017 and presented in a box plot. A table presenting both the mean with standard deviation (SD) and median with interquartile range (IQR) by each health occupation was presented. Proportions were calculated for the categorical variables (health occupation, gender, population group, and geographic distribution), presented in line graphs, tables, and bar graphs. All variables were stratified by health worker categories and a Chi-squared test was conducted to identify significant differences between them. A non-parametric test for trends in ordered groups was used to assess whether the trends in the different years were statistically significant. This was done using the *nptrend* (Cochrane-Armitage) command in Stata.

The Stata *svyset* and *svy:* commands were used to account for the stratified two-stage sampling design in the primary study.

2.5.2 Trends in occupational characteristics and economic activities of health workers.

In addressing objective 2, proportions for economic and occupational variables (employment status, employment sector, industry, multiple job holding, and geographical distribution) were calculated. They were presented in tables and bar graphs. All variables were stratified by health worker categories and evaluated using a chi-squared test. A non-parametric test for trends in ordered groups assessed whether the trends in the different years were statistically significant. This was done using the *nptrend* (Cochrane-Armitage) command in Stata.

2.5.3 Demographics and occupational factors associated with employment status

In addressing objective 3, the outcome variable was employment status (1-employed/ 0-unemployed). A bivariate analysis (Chi-square test) assessed the association between employment status and each explanatory variable. These included demographic variables (age group, gender, population group) and economic and occupational variables (health worker categories, industry, geography type). A cut-off point for association with a p-value of less than 0.2 was used to select variables for the final regression model. Multiple logistic regression analysis determined the demographic, economic and occupational factors associated with employment status in health workers surveyed in the QLFS. Adjusted odds ratios are presented. The Archer-Lemeshow post-estimation goodness of fit test suitable for survey data was done to check whether the final model fit. The level of significance (α) was set at 0.05. The Stata *svyset* and *svy:* commands were used to account for the stratified two-stage sampling design in the primary study.

2.6 Ethical considerations

The University of the Witwatersrand Human Research Ethics (Medical) Committee (HREC) granted a waiver (see ***Appendix 3***) as a clearance certificate was not required: number W-CBP-190222-2. This is because the study analyses the information in the public domain, which is de-identified with no personal identifiers (names, home addresses and identification numbers). The QLFS is well-established, and the outcomes of interest (occupational characteristics and economic activities) did not present any ethical dilemmas. Importantly, the downloaded datasets excluded any information on earnings due to their sensitive nature, while the de-identified information removed the potential for discrimination against particular groups or individuals.

CHAPTER 3: RESULTS

3.1 Introduction

This chapter presents the results of the secondary data analysis of the QLFS from 2008 to 2017, in line with the study objectives. Section 3.2 presents descriptive statistics of the sample used in the final analysis. Section 3.3 describes the trends in the demographic characteristics of health workers surveyed in the QLFS from 2008-2017. Section 3.4 shows the economic and occupational characteristics of health workers surveyed in the QLFS from 2008-2017. Section 3.5 presents the logistic regression results used to examine the demographic and occupational factors associated with employment status amongst health workers.

3.2 Study participants

In this study's final eligible sample of health workers, 461 (8.37%) were unemployed, and 5 041 (91.62%) were employed, health workers. **Figure 3.1** shows the total number of health worker cadres in each category. The highest proportion of health worker cadres in the QLFS were nurses (60.01%), and the lowest proportion were allied health workers (8.10%).

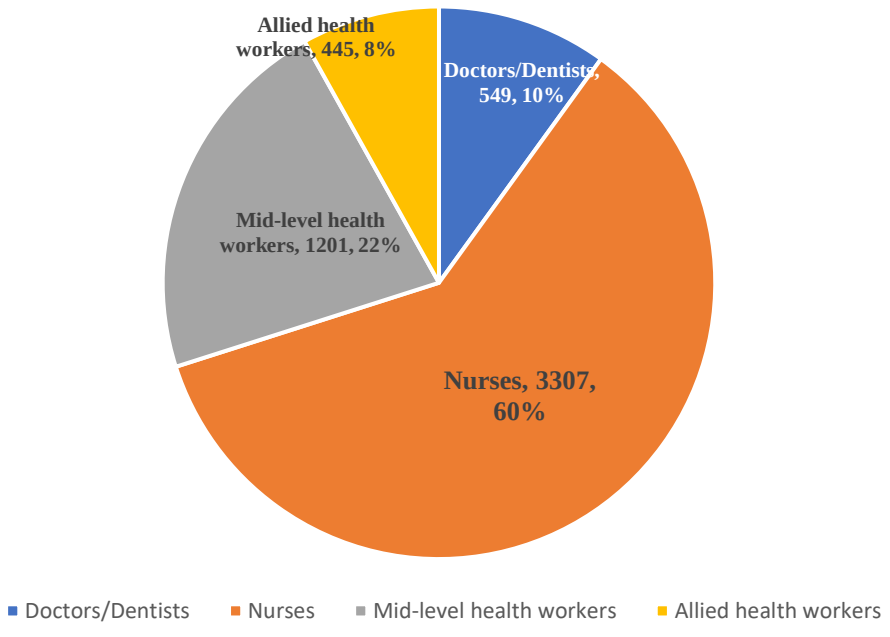

Figure 3.1: Total number of health workers by occupation category, 2008-2017

3.3 Trends in socio-demographic characteristics of health workers

3.3.1 Age of health workers

Figure 3.2 presents the trends in the median age of health workers from 2008 to 2017. The median age remained relatively stable over the study period, with minor fluctuations observed. In 2008 the median age of health workers was 41.0 years, which slightly increased to 42.0 years in 2012 returning to 41.0 years in 2017. The overall test for trends in the age of health workers from 2008-2017 was not statistically significant.

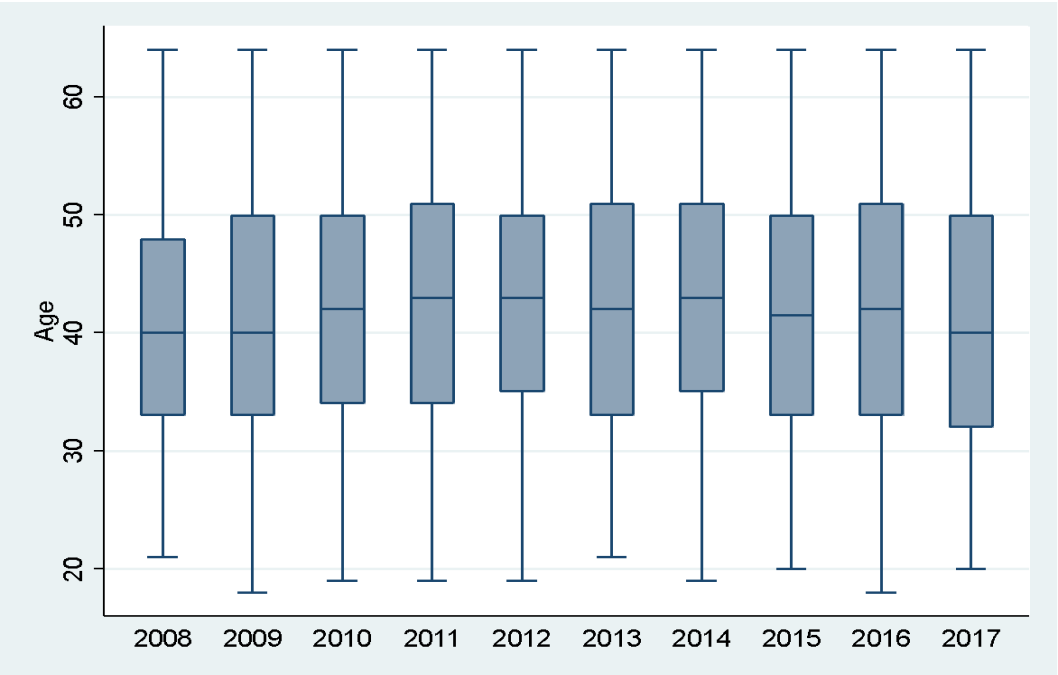

Figure 3.2: Median age distribution among health workers, 2008-2017

Table 3.1 shows the mean with standard deviation (SD) and median with interquartile range (IQR) for age across different health worker categories. The mean age of doctors/dentists, nurses, mid-level health workers and allied health workers was 41.8 (SD±10.8), 43.6 (SD±10.3), 38.6 (SD±10.4), 37.8 (±10.8) respectively.

Table 3.1: Mean (SD) and median (IQR) of ages by health worker category

Health occupations	Means	SD	Median	IQR
Doctors/Dentist	41.8	10.8	41	33-50
Nurses	43.6	10.3	44	36-52
Mid-level health worker	38.6	10.4	37	30-46
Allied health workers	37.8	10.8	36	29-45

Table 3.2 below presents age groups of different health worker categories. Notably, the majority of nurses (72.2%) were considerably older (between 56-64 years) than other age health worker's categories, as also reflected by the mean and median provided in **Table 3.1**. Although doctors/dentists constituted 10.0% of the total health workers, only a small proportion (4.9%) were found in the 18-25 age-group.

Table 3.2: Age groups by health worker categories, 2008-2017

Age group	Doctors/Dentists n(%)	Nurses n(%)	Mid-level health workers n(%)	Allied health workers n(%)	Total n(%)
18-25	27 (4.9%)	121 (3.7%)	114- (9.5%)	55 (12.4%)	317(5.8%)
26-35	161(29.3%)	688(20.8)	406(33.8%)	153(34.4%)	1408(25.6%)
36-45	150(27.3%)	1023(30.9%)	363(30.2%)	126(28.3%)	1662(30.2%)
46-55	146(26.7%)	988(29.9%)	232(19.3%)	74(16.6%)	1440(26.2%)
56-64	65(11.8%)	487(14.7%)	86(7.2%)	37(8.3%)	675(12.3%)
Total	549(100%)	3307(100%)	1201(100%)	445(100%)	5502(100%)

3.3.2 Gender

Figure 3.3 presents trends in the gender distribution of health workers from 2008-2017. Throughout the study period, females consistently comprised a higher proportion of health workers surveyed compared to men. However, there was a slight decrease in the proportion of female health workers over the years (82% in 2008 to 78% in 2017). The proportion of males gradually increased accordingly from 18.0% in 2008 to 22.0% in 2017. The overall test for the trend in the gender of health workers from 2008-2017 was statistically significant (p=0.003), suggesting an increasing proportion of male health workers over time.

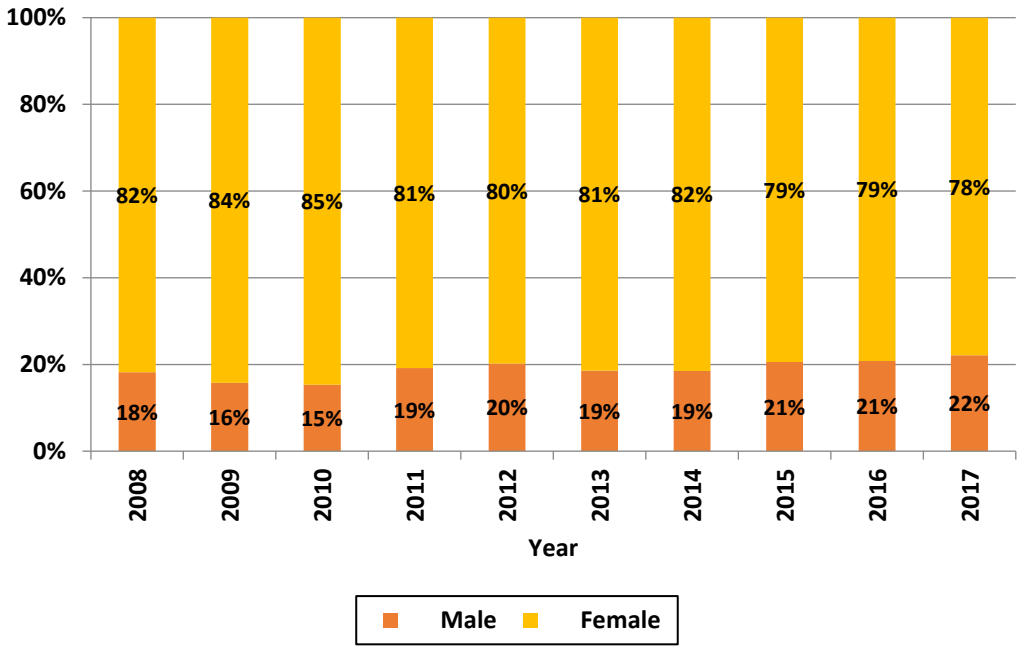

Figure 3.3: Gender distribution of health workers, 2008-2017

Figure 3.4 below provides a breakdown of health worker categories by gender. Nursing had the highest proportion of females (91.0%) compared to other health worker categories. In contrast, there was a higher proportion of males (53.0%) than females in the doctors/dentists' category.

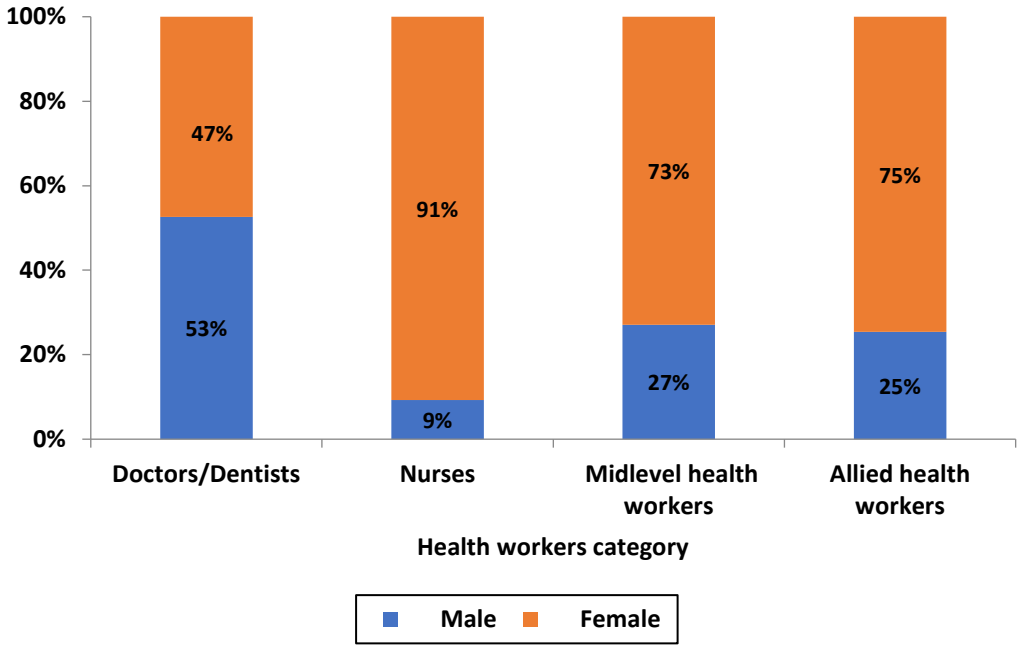

Figure 3.4: Break down of health worker categories by gender

3.3.3 Population groups

Figure 3.5 presents trends in the population group of health workers from 2008-2017. Black Africans accounted for the highest proportion of health workers surveyed, comprising 64.5% of the total. Specifically, the percentage of Black African health workers decreased from 64.0% in 2008 to 57.0% in 2012 and then increased to 69.0% in 2017. Indian health workers accounted for the smallest proportion of health workers surveyed. The overall test for trend in the population group of health workers from 2008-2017 was statistically significant (p=0.011), indicating an overall increase of Black African health workers.

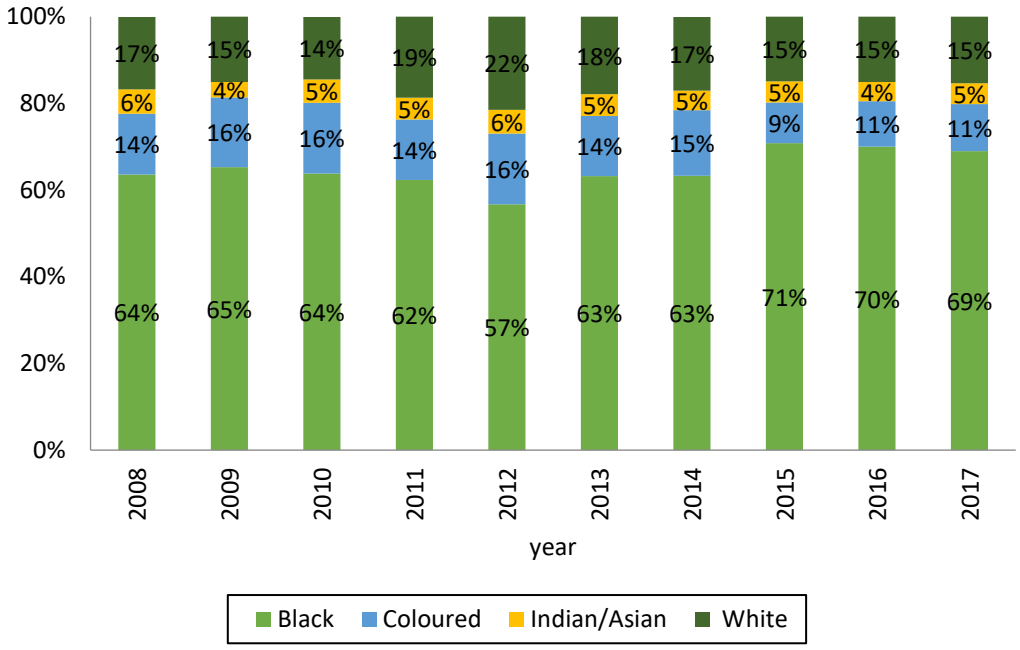

Figure 3.5: Trends in the population group of health workers from 2008-2017

Figure 3.6 below describes the categories of health workers by population group for the period 2008-2018. Among doctors/dentists, the highest proportion (48.0%) was White, while the lowest proportion was Coloured (8.0%). For nurses, the majority (72.0%) were Black Africans, with the lowest proportion being Indian (3.0%). Coloureds accounted for a higher proportion of mid-level health workers (15.0%), compared to Whites (8.0%) and Indians (4.0%). Among allied health workers, the highest proportion was White (49.9%) with Indians (9.0%) and Coloureds (11.0%) having the lowest proportion.

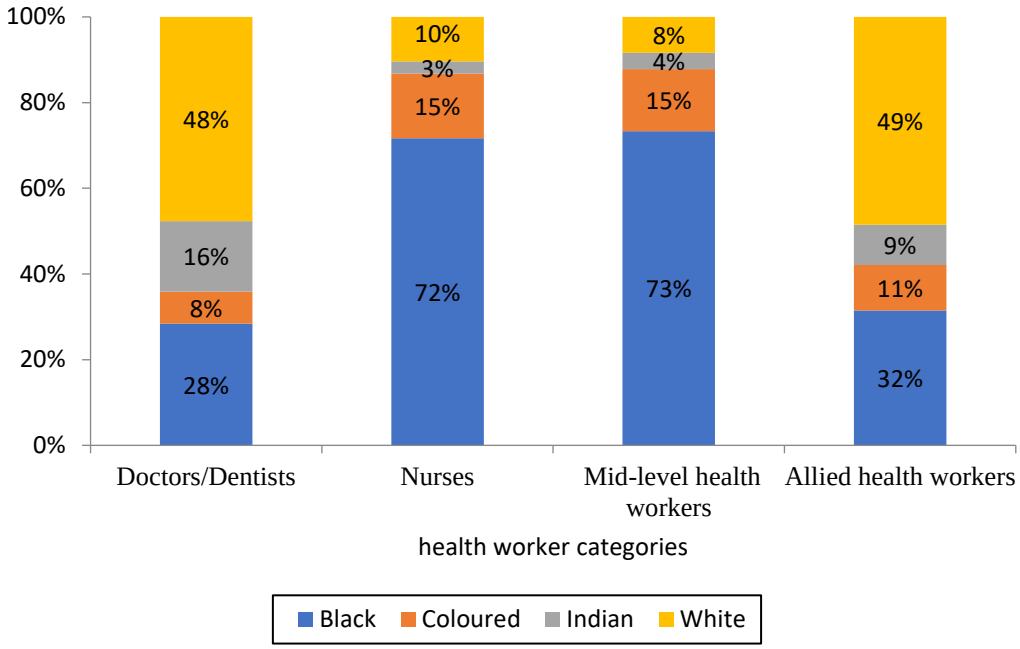

Figure 3.6: Breakdown of health workers' categories by population group

3.3.4 Geographical distribution

Figure 3.7 presents the trends in the geographical distribution of health workers from 2008-2017. Overall, most of the health workers surveyed were in urban areas rather than rural areas. In 2008, the proportion of health workers living in urban areas increased from 85.0% to 88.0% in 2012, before slightly declining to 84.0% in 2017. The overall test for the trend in the rural-urban distribution of health workers from 2008-2017 was not statistically significant (p=0.115), indicating little change in this distribution over time.

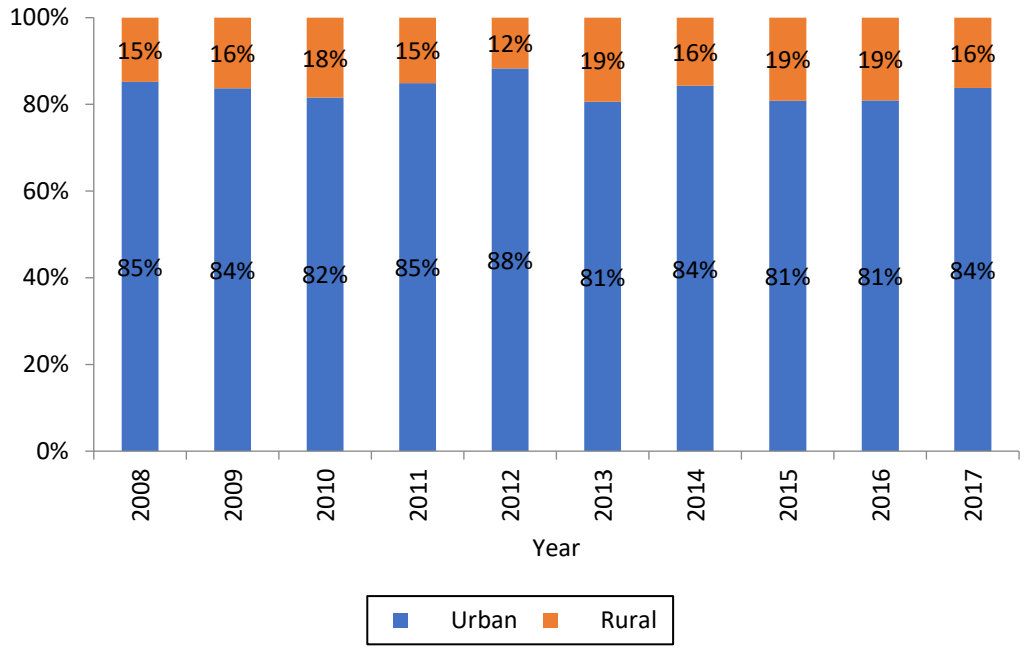

Figure 3.7: Trends in the geographical distribution of health workers, 2008-2017

Figure 3.8 provides a breakdown of the geographical distribution of health workers. The proportions of nurses and mid-level workers in rural areas were significantly higher at 18.0% and 21.0%, respectively, compared to 5.0% of doctors/dentists and 7.0% of allied health workers in rural areas.

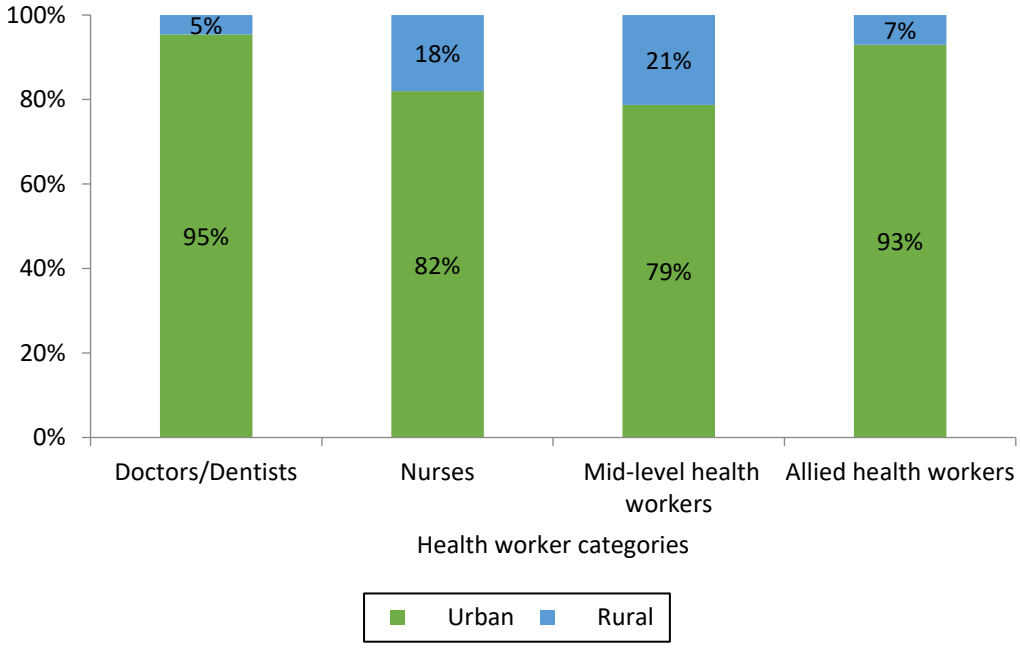

Figure 3.8: Geographic distribution of health worker categories

3.4 Trends in occupational characteristics and economic activities of health workers

3.4.1 Health worker occupations

Table 3.3 presents the health worker categories surveyed in the QLFS from 2008 to 2017 shown as numbers (**n)** and proportion **(%)**. The highest proportion of health workers surveyed were nurses (60.1%), although there was a decreasing trend over the study period. Doctors/dentists category increased from 9.9% in 2008 to 11.4% in 2012 but decreased to 10.6% in 2017. Mid-level health workers accounted for 19.0% in 2008, which decreased to 15.6% in 2012 and then increased to 27.1% in 2017. Allied health workers accounted for the lowest proportion of health workers but showed an increasing trend. The variations in the trends of health occupations from 2008-2017 were statistically significant (p= 0.001).

Table 3.3: Trends in occupational characteristics of health workers, 2008-2017

Years	Doctors /Dentists n (%)	Nurses n (%)	Mid-level health workers n (%)	Allied health workers n (%)
2008	62 (9.9%)	412 (65.7%)	119 (19.0%)	34 (5.4%)
2009	46 (8.1%)	359 (63.0%)	137 (24.0%)	28 (4.9%)
2010	52 (9.0%)	365 (63.5%)	120 (20.9%)	38 (6.6%)
2011	58 (10.0%)	378 (65.4%)	87 (15.1%)	55 (9.5%)
2012	70 (11.4%)	387 (63.0%)	96 (15.6%)	61 (9.9%)
2013	68 (11.7%)	357 (61.4%)	101 (17.4%)	55 (9.5%)
2014	45 (8.5%)	288 (54.4%)	152 (28.7%)	44 (8.3%)
2015	46 (9.4%)	270 (55.1%)	140 (28.6%)	34 (6.9%)
2016	53 (11.1%)	251 (52.7%)	124 (26.1%)	48 (10.1%)
2017	49 (10.6%)	240 (51.9%)	125 (27.1%)	48 (10.4%)
Total	549 (10.0%)	3307 (60.1%)	1201(21.8%)	445 (8.1%)

n: numbers; **%**: proportions

3.4.2 Employment status

Figure 3.9 presents the trends in the employment status of health workers from 2008 to 2017. The proportion of employed health workers increased from 93.0% in 2008 to 94.0% in 2012 before gradually declining to 89.0% in 2017. The overall test for the trend in the employment status of health workers from 2008-2017 was statistically significant (p=0.001), indicating an overall increasing trend of unemployed health workers compared to employed health workers.

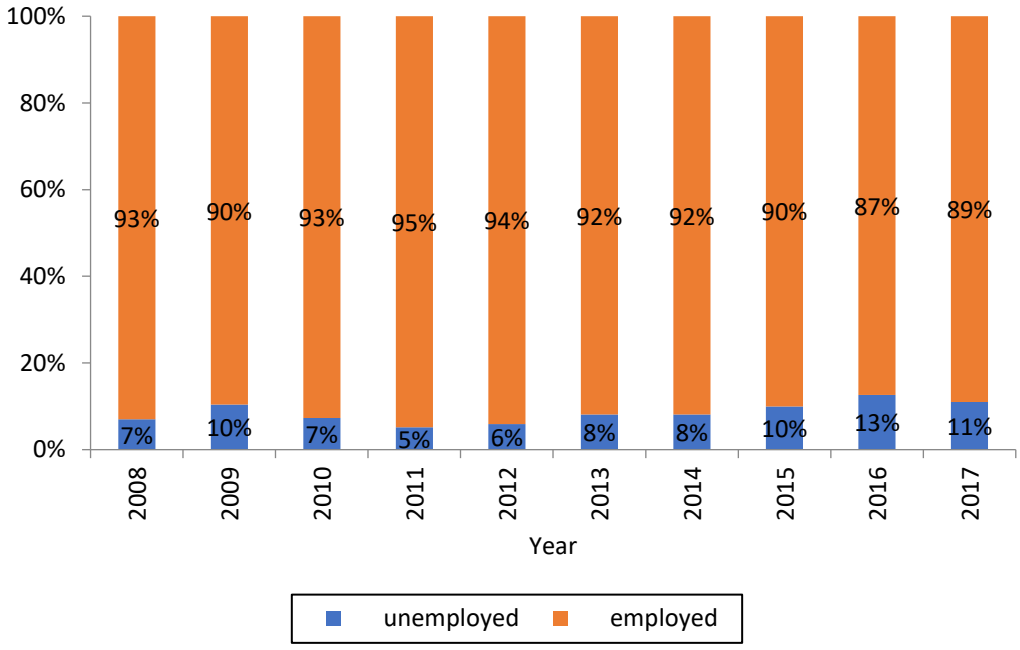

Figure 3.9: Trends in employment status of health workers 2008-2017

Figure 3.10 shows health workers categorised by employment status. Among the various health worker categories, doctors had the highest proportion (97.0%) of employed individuals compared to other health categories. Mid-level health workers (13.0%) had the highest proportion of health workers who were unemployed as compared to other cadres.

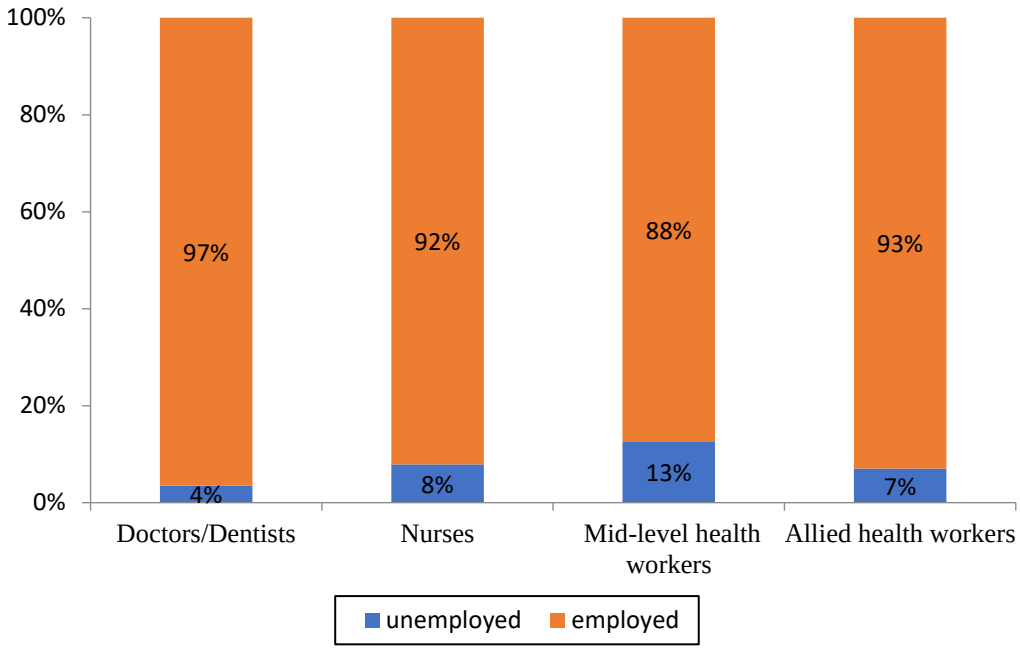

Figure 3.10: Breakdown of health worker categories by employment status

3.4.3 Employment industry

Figure 3.11 presents trends in the employment industry of health workers from 2008 to 2017. The proportion of health workers working within the health industry increased from 85.0% in 2008 to 88.0% in 2012 and remained steady at 88.0% in 2017. The overall test for trends in the labour force industry of health workers from 2008-2017 was statistically significant (p=0.003).

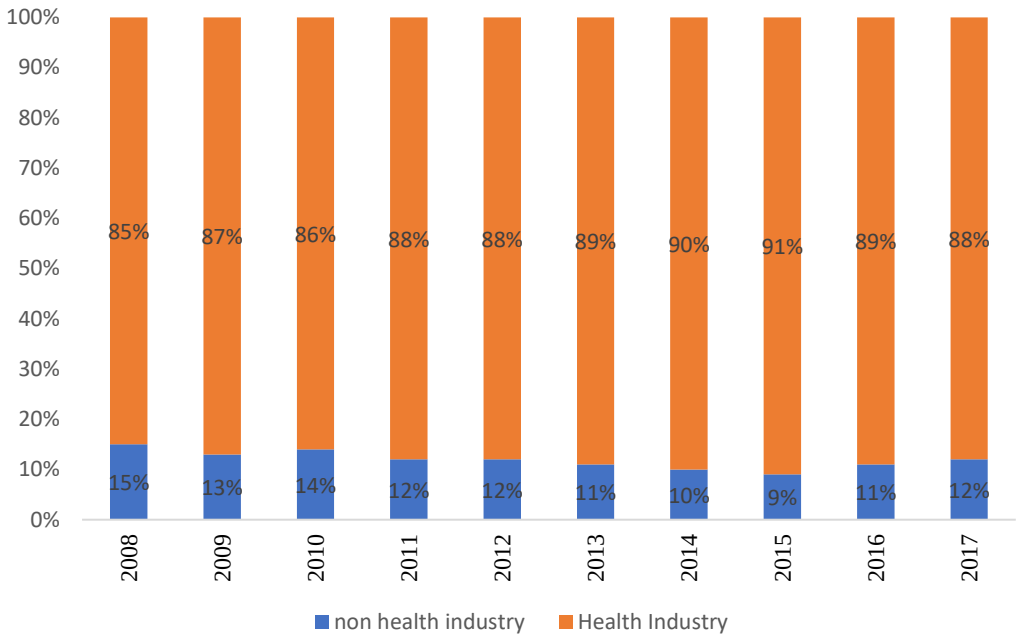

Figure 3.11: Industry distribution of health workers, 2008-2017

Figure 3.12 presents a description of health workers by their employment industry. Mid-level health workers (27.0%) and allied health workers (22.0%) had the highest proportion of health workers employed outside the health industry. Nurses (94.0%) had the highest proportion of health workers employed in the health industry.

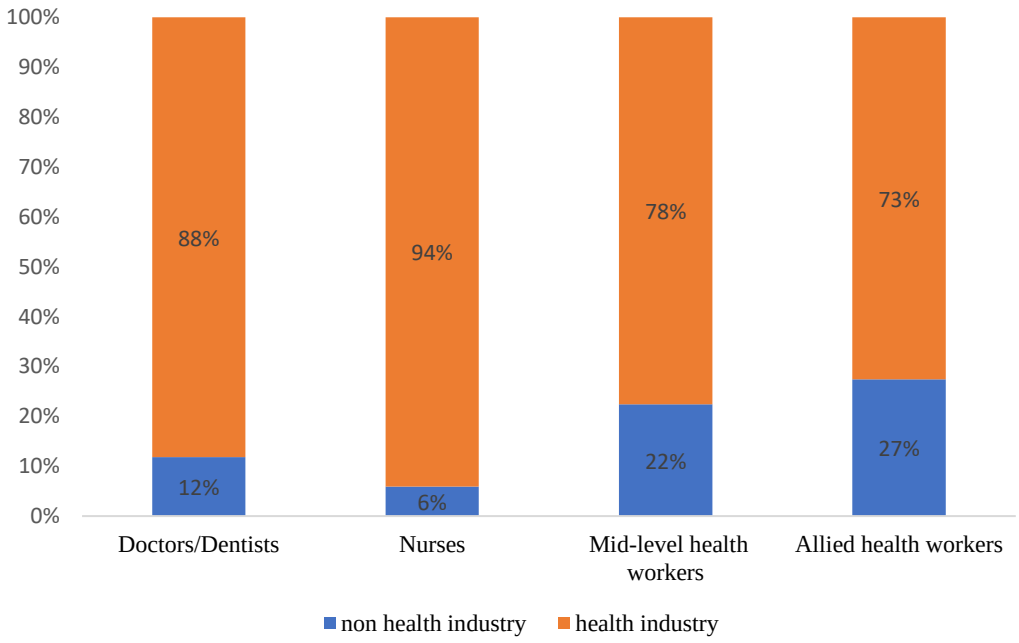

Figure 3.12: Breakdown of health worker's categories by industry

3.4.4 Employment sector

Figure 3.13 presents the trends of health workers employed in the public sector from 2008 to 2017. In 2008, 2012 and 2017, 59.0% of health workers were employed in the public sector while 41.0% were in the private sector. The overall test for trends in the employment sector of health workers from 2008-2017 was not statistically significant (p=0.243), indicating no change in the distribution over time.

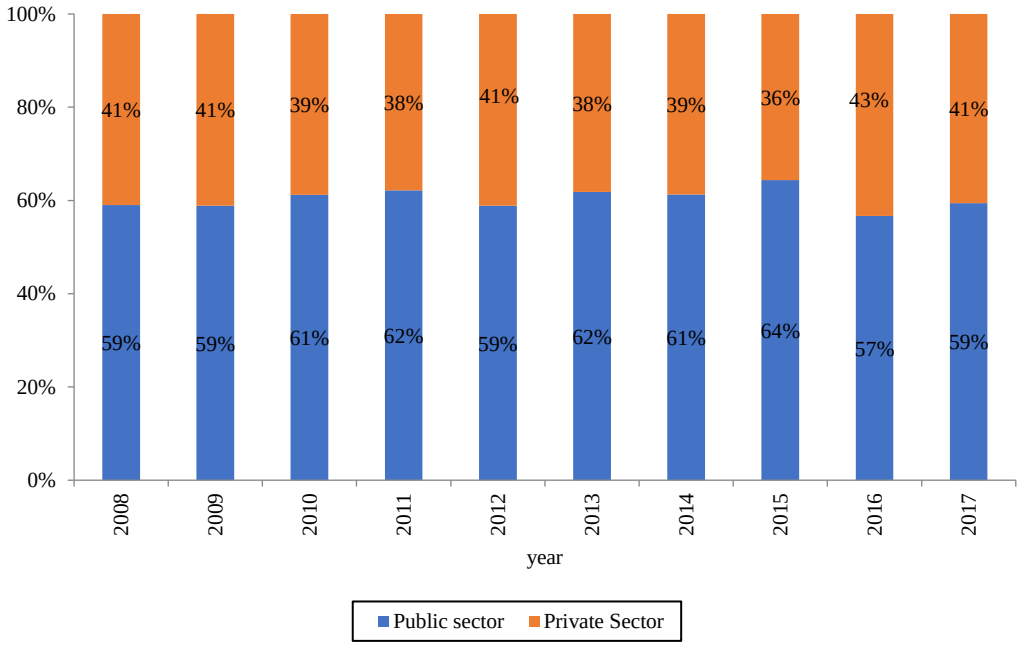

Figure 3.13: Trends in the distribution of health workers by employment sector, 2008-2017

Figure 3.14 shows the distribution of the health worker cadre by employment sector. The category with the highest proportion of health workers employed in the public sector was nurses, at 70.0%. There were more doctors/dentists (57.5%) and allied health workers (65.2%) in the private sector than in the public sector.

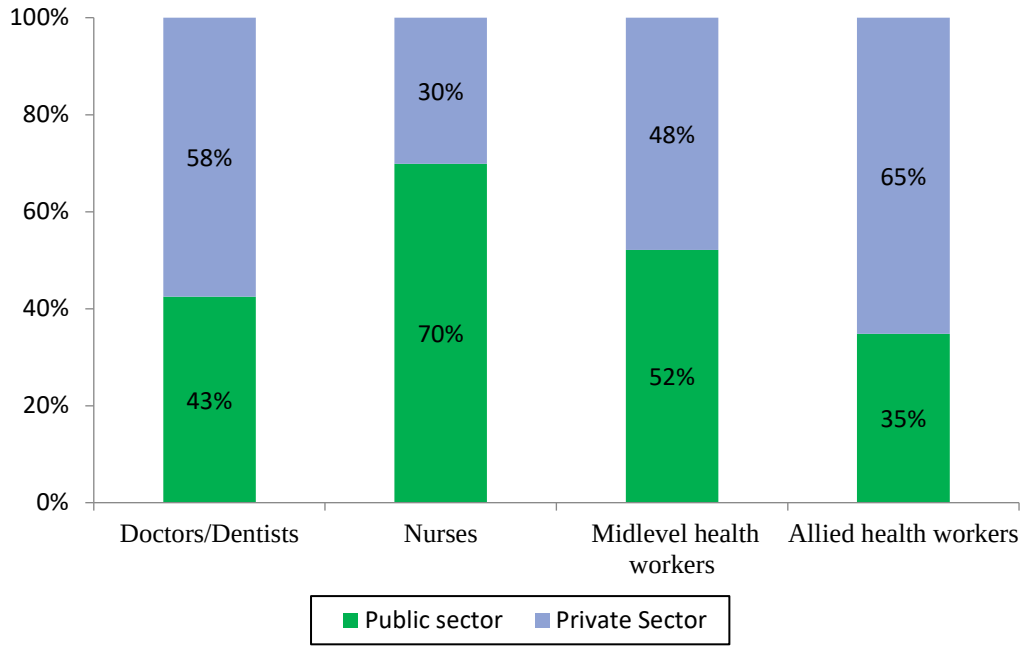

Figure 3.14: Breakdown of health workers by employment sector, 2008-2017

3.4.5 Multiple job holding

Table 3.4 presents trends in health workers who reported dual work or multiple job holding from 2008 to 2017. The majority (99.8%) of health workers reported that they were not engaged in multiple job holding. However, a small proportion (0.2%) reported having a second job; this slightly increased to 0.3% in 2012 before decreasing in 2017. The overall test for trends on multiple jobs held amongst health workers from 2008-2017 was statistically significant (p=0.001).

Table 3.4 :Trends in reported MJH among health workers, 2008-2017

Multiple job holding	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Yes	1 (0.2%)	1 (0.2%)	1 (0.2%)	1 (0.2%)	2 (0.3%)	2 (0.4%)	3 (0.6%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	12 (0.2%)
No	582 (99.8%)	510 (99.8%)	532 (99.8%)	547 (99.8%)	576 (99.7%)	532 (99.6%)	483 (99.4%)	440 (99.8%)	416 (100.0%)	411 (100.0%)	5029 (99.8%)
Total	583 (100%)	511 (100%)	533 (100%)	548 (100%)	578 (100%)	534 (100%)	486 (100%)	441 (100%)	416 (100%)	411 (100%)	5041 (100%)

3.5 Demographic and occupational characteristics associated with employment status

Table 3.5 and **Table 3.6** present the results of the bivariate analysis associations of the demographic variables and the occupational variables respectively with employment status. All demographics and occupational variables were found to be significant at the 0.2 level and therefore included in the multiple regression.

Table 3.5: Association between demographic variables and employment status

Sociodemographic Variables	Unemployed health workers (n-461)		Employed health workers (n=5041)		p-value
	Freq.	%	Freq.	%	
Age					
18-25	44	13.88	273	86.12	<0.001
26-35	121	8.59	1287	91.41	
36-45	86	5.17	1576	94.83	
46-55	73	5.07	1367	94.93	
56-64	137	20.30	528	79.70	
Gender					
Female	403	9.02	4064	90.98	<0.001
Male	58	5.60	977	94.40	
Population group					
African	327	9.22	3,220	90.78	<0.001
Coloured	68	8.92	694	91.08	
Indian	11	4.09	258	95.91	
White	55	5.95	869	94.05	
Geography type					
Urban	415	7.99	4777	92.01	<0.001
Rural	46	14.84	264	85.16	

Table 3.6: Association between occupational characteristics and employment status

Occupational variables	Unemployed health workers		Employed health workers		p-value
	Freq.	%	Freq.	%	
Health Occupations					
Doctors/Dentist	19	3.46	530	96.54	<0.001
Nurse	261	7.89	3.046	92.11	
Mid-level health workers	150	12.49	1051	87.51	
Allied health workers	31	6.97	414	93.03	
Industry					
Health industry	365	7.52	4486	92.48	<0.001
Non- health industry	96	14.75	555	85.25	

Table 3.7 shows the results of the multiple logistic regression. The overall model of the logistic regression was statistically significant (p=0.000). The Archer-Lemeshow post-estimation goodness of fit test confirmed the final model to be a good fit (p=0.135).

The results showed that health workers aged 36-45 and 46-55 had significantly ($p<0.05$) higher odds of employment as compared to health workers aged 18-25 years, with odds ratios of [2.8 (CI 1.8-4.4)] and [2.7 (CI 1.6-4.1)], respectively. Additionally, health workers aged 56-64 had 0.5 times higher odds of employment compared to those aged 18-25, with a statistically significant p-value of 0.011 and a confidence interval ranging from 0.4 to 0.9. Furthermore, female health workers had significantly ($p=0.003$) lower odds of employment compared to male health workers, with an odds ratio of 0.5 (CI 0.3-0.9). The results suggest that age and gender are significant predictors of employment among health workers.

Indian health workers were more likely to be employed than Black African health workers, but the association was not statistically significant ($p > 0.05$). However, White health workers had 1.5 times higher odds of employment compared to Black African health workers, with a statistically significant p-value of 0.040. In addition, Coloured health workers had lower odds of employment compared to Black African health workers, although the association was not statistically significant ($p > 0.05$). This suggests that there are differences in employment status among health workers of different population groups.

Health workers from rural areas were 0.47 less likely to be employed compared to health workers from urban areas, this association was statistically significant with a p-value of 0.001. Furthermore, mid-level health workers had significantly lower odds of employment compared to doctors/dentists (OR=0.38, $p=0.004$). In contrast, the odds of employment for nurses and allied health workers did not significantly differ from those of doctors/dentists. Employment of Health workers outside the health industry was 0.53 less likely than those employed in the health industry which was statistically significant ($p<0.001$). Additionally, a significant ($p<0.001$) difference in the odds of employment between health workers employed in the health industry and those employed outside the health industry. Health workers employed outside the health industry had 0.53 times lower odds of employment compared to those employed within the health industry, and this association was found to be statistically significant. It can be inferred that there are notable disparities in the likelihood of employment among health workers, which can be attributed to multiple factors including the geographical setting, health occupation, and industry of employment.

Table 3.7: Multiple logistic regression of predictors of employment in health workers

Predictors	Adjusted odds ratio	Confidence intervals [95%]	p-value
Age group			
18-25	1 (ref)		
26-35	1.81	1.18 - 2.76	0.006 **
36-45	2.83	1.82 - 4.41	<0.001 ***
46-55	2.65	1.61- 4.14	<0.001 ***
56-64	0.56	0.36 - 0.87	0.011 *
Gender			
Male	1 (ref)		
Female	0.56	0.39 -0.82	0.003 **
Population group			
African/Black	1 (ref)		
Coloured	0.91	0.63 - 1.30	0.617
Indian/Asian	1.98	0.88 - 4.46	0.097
White	1.52	1.01 - 2.27	0.040 *
Geography type			
Urban	1 (ref)		
Rural	0.47	0.31- 0.71	<0.001 ***
Health worker category			
Doctors/Dentists	1 (ref)		
Nurses	0.63	0.32 -1.22	0.175
Mid-level health workers	0.38	0.20-0.73	0.004 **
Allied health workers	0.72	0.35-1.47	0.374
Industry			
Health industry	1 (ref)		
Non-health industry	0.53	0.310- 0.71	<0.001 ***

***: p<0.001, **: p<0.01, *: p<0.05

CHAPTER 4: DISCUSSION

4.1 Introduction

This was one the first studies to analyse the QLFS data on health workers in South Africa. This chapter begins with a summary of key study findings (Section 4.2). Section 4.3 discusses the socio-demographic findings followed by section 4.4 which discusses the findings on occupational and economic activities. The demographic, occupational and economic factors associated with employment are discussed in section 4.5. Section 4.6 concludes with the limitations and strengths of this study.

4.2 Summary of key results

Trends in socio-demographic characteristics

- Nurses constituted the highest proportion of health workers in the QLFS albeit with a decreasing trend.
- The overall median age of health workers remained steady at around 41 years, with nurses being older at 44 years.
- There were more female health workers than males, with the majority of nurses being female.
- The results also showed significant imbalances in the distribution of health workers, with a concentration of health workers in urban areas as compared to rural areas.

Trends in occupational characteristics

- The majority of health workers reported that they did not have more than one job.
- Most healthcare workers were employed in the health industry, and in the public health sector, but with variations by category.
- The private sector had a higher concentration of doctors/dentists and allied health workers compared to the public sector, whereas nurses and mid-level health workers formed the largest proportion in the public sector.

Factors associated with the employment of health workers:

- Age and gender are significant predictors of employment among health workers. Health workers aged 36-45 and 46-55 had higher odds of employment compared to those aged 18-25 years.
- Female health workers were less likely to be employed than male health workers.
- White health workers had higher odds of employment compared to Black African health workers, whereas Coloured health workers had lower odds of employment compared to Black African health workers.
- Health workers from urban areas were more likely to be employed than those from rural areas.
- Mid-level health workers had lower odds of employment compared to doctors/dentists.
- Employment of health workers outside the health industry was less likely than those employed in the health industry.
- The variations in the likelihood of employment among health workers can be attributed to multiple factors, including geographical setting, health occupation, and industry of employment.

4.3 Socio-demographic characteristics

This study highlighted an ageing health workforce, especially of nurses who were older compared to the other professions. The concerns about an ageing workforce of nurses in South Africa are well documented, with almost one in two professional nurses older than 50 years (35). There were very few younger doctors/dentists (18-25 years) in the surveyed health workforce as compared to those approaching retirement age (56-64 years). The 2007 study by Dal Poz *et al.* (59) found that there was a reduced number of younger doctors entering the health workforce. However, the study is more than a decade old. In South Africa, the lower proportion of younger doctors/ dentists in the OLFS could relate to funding constraints and inability of the public sector to absorb new medical and/or dental graduates.

In this MSc study there were more female health workers as compared to males, thus supporting the findings of other studies on the feminisation of the health workforce (9;60). Furthermore, nurses constituted the majority of the health workers surveyed, which is dominated by females. This study also found that 53.0% of doctors/dentists were male. The findings of this study are similar to those of a study that analysed gender equity in 104 countries (38). The multi-country analysis found a predominance of females in the nursing and midwifery professions and a predominance of males in the medical, dental or pharmacy professions (38).

The study findings suggest the need to enhance the gender balance across all health occupations to ensure the delivery of high-quality and equitable healthcare services to all people in South Africa (1, 6, 36). South Africa's 2030 HRH Strategy highlights the increasing feminisation of the health professions and emphasises the need for gender-transformative policies and practice environments (1).

Overall, this study showed that the majority of health workers surveyed were in urban areas compared to rural areas, increasing from 85.0% in 2008 to 88.0% in 2012, although it slightly decreased to 84.0% in 2017. Amongst the health worker categories, the findings showed that there were very few doctors/dentists (5.0%) and allied health workers (7.0%) in rural areas, whilst the proportions of nurses (18.0%) and mid-level workers (21.0%) were slightly higher. These findings are similar to those of prior studies on HRH in Africa and other low-middle-income nations, demonstrating that HRH are concentrated in urban areas (6, 23, 45). In India, a study found that 74.0% of health workers were in their urban areas (50). In South Africa, Zihindulai *et al.* (41) reported that 43.6% of the population living in rural areas have 12.0% of doctors and only 19.0% of nurses servicing them. The implications of the MSc study findings

are that policy intervention is needed to address the maldistribution of health workers between urban and rural areas, through a combination of incentives, and ongoing monitoring of the success of these interventions.

4.4 Occupational characteristics and economic activities

The study found that the majority of health workers surveyed during the study period were nurses (60.0%), albeit with decreasing trends as the proportion of other health worker categories increased. This predominance of nurses is similar to the findings of studies in other African or low- and middle-income countries (4, 26, 34, 61, 62). The South African health system is primarily nurse-based, especially at the primary health care level. Doctors or dentists represent individuals with scare skills, and shortages remain a persistent challenge in many African countries (23, 38, 63, 64). In South Africa, the skills-mix vary across the nine provinces, with a higher concentration of doctors and dentists in the urban provinces of Gauteng, Kwa-Zulu Natal, and the Western Cape (1).

In this study, the public sector was found to employ a higher proportion (59.0%) of healthcare workers compared to the private sector (41.0%). This trend is consistent with a study conducted in Cameroon (32), where the majority (65.9%) of healthcare workers were employed in the public sector. However, a greater proportion of doctors/ dentists (58.0%) and allied health workers (65.0%) were employed in the private sector, while nurses (70.0%) and mid-level health workers (52.0%) were dominant in the public sector. The inequitable distribution of healthcare workers between the public and private sectors in South Africa is well documented (7, 65), and it of concern, as the private health sector provides care to less than 20% of the South African population. The analysis of the OLFS provides evidence of the maldistribution of health professionals in South Africa, as Barron et al. (65) highlighted the limitation of health professions registers for obtaining reliable data on the sectoral distribution of health workers. The study findings point to the need for concerted policy Intervention to address the maldistribution of health workers between the public and private health sectors. This was also highlighted in the recommendations contained in the 2030 HRH Strategy (1).

4.5 Factors associated with the employment of health workers

The multiple logistic regression demonstrated a significant association between age and employment, consistent with the findings of Dunga and Sekatane (66). Specifically, individuals in the age groups of 36-45 years and 46-55 years were more likely to be employed, possibly due to the availability of employment opportunities in the health sector for adults with more work experience. However, there is a need for concerted efforts to recruit and retain early-career health professionals as they are the future health workforce (2, 67). Additionally, a younger health workforce is meet the health needs of an ageing population (28), and overcoming the potential crisis created by the combination of an ageing population and an ageing health workforce (29).

Notwithstanding a predominantly female workforce, women were 0.56 times less likely to be employed than men, suggesting a combination of structural and relational barriers to women's engagement in the health labour market, as has been found in other studies (3, 4, 5, 30, 37). South Africa has robust gender equity legislation and policies (73). The study findings highlight again the need for a gender-transformative health system and the implementation of the recommendations of the 2030 HRH Strategy (1).

This study found that health workers were less likely to be employed in rural areas than urban areas. This finding is similar to a study in Peru (26) that found that physicians and nurses were 5 times and 14 times more likely to be employed in urban areas. A combination of factors influences rural employment, including salary differences, resource availability that enable health workers to provide quality care, safety of health workers, and lack of basic amenities such as accommodation and schools for children (68). The unequal distribution of health workers between urban and rural areas presents a significant challenge to healthcare access and delivery in South Africa, highlighting the need to strengthen recruitment, deployment management and retention policies. It is widely acknowledged that an adequate and evenly distributed healthcare workforce is crucial for improving access to quality healthcare services and reducing health inequities (69, 70).

In this MSc study, it was found that health workers were more likely to be employed in the health industry rather than in non-health industries. This was also found by Gupta et al. in an

analysis of several labour force surveys, with health workers 0.5 times less likely to be employed outside the healthcare industry (9). This is both expected and encouraging as the purpose of training health workers is to meet the health and health care needs of a country.

In this MSc study, a minority of health workers in the QLFS reported multiple job holding. This could be due to under-reporting and/or fear of reprisal as the OLFS is an official government assessment. Other studies have found that MJH is a common practice among health workers in South Africa and in other countries (12, 55, 58).

The results demonstrated in this chapter highlight that the South African quarterly labour force survey data can contribute to the understanding of the HRH situation in the country. The QLFS is a useful data source for analysing the health labour market in South Africa because it allows for subgroup analysis. In addition, the QLFS enables for an analysis across different categories such as gender, age-groups, and geographical distribution. The QLFS includes both public and private sector health workers, which provides a more comprehensive understanding of the national HRH situation. The QLFS data is publicly available, this makes it accessible to researchers and policymakers. Despite the advantages of using the QLFS, there are some disadvantages, primarily stemming from the relatively small sample size of health workers included in the survey. As a consequence, concerns may arise regarding the national representativeness of the data, and further limitations may arise should the analysis be extended to sub-national levels, as the number of health workers may not be sufficient. While the valuable insights from this data can be used to improve our understanding of the HRH situation in South Africa, this emphasises the need to have a single robust health workforce database.

4.6 Limitations and Strengths of the Study

Although the QLFS is a representative household survey, it contains a relatively small sample of health workers in South Africa. As a consequence, concerns may arise regarding the national representativeness of the data. Further limitations may arise should the analysis be extended to sub-national levels, as the number of health workers will not be sufficient. The education variable in the QLFS was compromised, with inaccuracies and/or missing data and could not be used for the purpose of this study.

While SASCO codes were used to extract health occupations, psychologists were grouped with psychometricians and therefore excluded from this analysis. Social workers and home-based carers were also excluded, as were traditional or faith healers.

MJH is a common practice in South Africa (71), yet the majority of respondents in the QLFS indicated they did not have more than one job. Despite being de-identified, the data on labour force income are not made available for public use, as it is considered confidential information. Such information could have provided valuable insights in relation to health labour market analysis.

Lastly, the purpose of QLFS is not specifically designed for health workers and/or health workforce planning.

Despite these limitations, the study has several strengths. First, this was one of the first labour market studies to analyse the health worker data from the QLFS over a ten-year period. Second, the analysis of the QLFS generated new knowledge on health labour market in South Africa. The study provides empirical information on the demographic and occupational characteristics of health workers, their economic activities, and the factors associated with their employment. The study demonstrates the maldistribution of health workers between urban and rural areas, and between the public and private health sectors. As the QLFS is a household survey, it includes public and private sector health workers, thus enabling a comprehensive understanding of the national HRH situation. Lastly, the study demonstrated that the QLFS provides valuable information to health workforce researchers and policymakers but underscores the need for a comprehensive and robust health workforce information system to support planning, health policy development and implementation.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The primary objective of this study was to describe trends demographic, occupational characteristics and economic activities of health workers who were surveyed in the QLFS from 1 January 2008 to 31 December 2017. The analysis contributes significantly to filling the knowledge gaps on the occupational characteristics of health workers, their economic activities, and the factors associated with their employment in South Africa. The data from the QLFS data are a useful, relevant, and valid source of information in the absence of a robust routine HRH information system.

The study contributes to the global and national discourse on HRH and the health labour market. Notwithstanding the value of the QLFS analysis, the study findings underscore the need for investment in HRH, and addressing the challenges of an ageing workforce, gender gaps, and inequitable distribution. The inter-linked and inter-dependent recommendations that flow from this study are shown in Table 5, together with the actors responsible for implementation, and elaborated below.

Table 5.1: Recommendations of MSc Study

Recommendation	**Department of Health**	**Statistics South Africa**
1. Invest in the development of robust, HRH information system	**X**	
2. Strategies to address ageing workforce	**X**	
3. Specific interventions to address health worker maldistribution	**X**	
4. Implement recommendations on gender-transformative practice environments	**X**	
5. Review and revise health worker module of QLFS	**X**	

5.2 Investment in HRH information system

The analysis of the QLFS confirms the recommendation of the 2030 HRH Strategy to invest in a single robust HRH information system (1). Although the Strategy was approved in 2020, evidence suggests that implementation is lacking.

This MSc study recommends the allocation of funding for the development of such a HRH information system, and ensuring that the system is user-friendly, accessible, and compatible with existing health information systems in the country. Important aspects for consideration include the training of staff responsible for data collection, management, and analysis, and change management. The data collected through the HRH information system should inform policy and decision-making related to the health workforce, including their recruitment, training, deployment and retention. By investing in a robust HRH information system, the government can ensure that it has accurate and reliable data to inform its decisions related to the health workforce, which is critical for ensuring the sustainability of the healthcare system in South Africa. Such an HRH information system assumes greater importance in the context of the NHI Act which has been signed into law (74).

5.3 Strategies to address the ageing health workforce

The QLFS analysis revealed that the majority of health workers in South Africa were over the age of 40, indicating the need for the recruitment and retention of early career health workers in the various professions. However, strategies to address the ageing health workforce cannot be developed in isolation of an accurate HRH information system and a costed HRH plan that considers demand and supply factors and the links to the NHI reforms.

In South Africa, the majority of health professionals have to do compulsory community service, which provides a pipeline of younger or early-career health professionals. However, evidence suggests that these early-career health professionals are not retained in the public health sector because of lack of funding and/or posts, and poor working conditions. Nonetheless, short-term measures for a more balances age structure could include broader discussions with National Treasury for funding to absorb early-career health professionals, flexibility, possible part-time posts, and twinning the recruitment of early-career health professionals with retirements.

5.4 Interventions to address maldistribution

The significant health workforce disparities between urban and rural areas, and the public and private health sectors should be addressed. The 2030 HRH Strategy recommended the development of specific health policies to address the inequities in the distribution of health

workers, especially of doctors, dentists and rehabilitation therapists. Although there is a rural allowance to attract more health workers, there remain numerous challenges of attracting and retaining health workers in rural areas. These include the lack of adequate infrastructure, social amenities and resources in rural areas, and limited career advancement opportunities.

A multi-faceted approach is needed, which includes a whole-of-government strategy to improve the living and working conditions in rural areas. Other strategies include benefits, such as staff housing, access to professional development opportunities, supportive supervision or management and improving the working conditions in rural health facilities, such as providing functional equipment and supplies that enable quality patient care. In addition, targeted recruitment and retention strategies that focus on recruiting health workers who have a connection to rural communities or who are interested in working in rural areas have been shown to be effective (72).

5.5 Gender-transformative practice environments

The 2030 HRH Strategy also recommends the implementation of gender-transformative policies and programmes at health facilities (1). Given the findings of this MSc study on the dominance of women in the health sector, gender transformative programmes should include at the very least participatory forums or processes in each health facility that foster critical discussions about gender roles, and inequalities, and that allow female health workers a say in decision-making, and co-creation of practical recommendations (37). Safety is a huge concern for all health workers, but more so for women. Hence, a recommendation is to develop local strategies in conjunction with community and/or facility-based governance structures. The Department of Health should also encourage the sharing of good practices among the provincial health departments, and among health facilities.

5.6 Review and revise the QLFS health worker module

This MSc study has demonstrated the value of analysing the QLFS data on health workers. However, the study has highlighted the limitations of the data on education. StatsSA is the custodiam of the QLFS and should strengthen the data verification and cleaning processes to improve the accuracy and reliability of the data, for example on education. This could entail cross-checking self-reported occupations with reported educational qualifications to ensure the accuracy and consistency. Additionally, data quality assurance procedures could be enhanced by implementing data validation checks, conducting regular audits, and providing training to data collectors to ensure the accuracy and completeness of the data.

Additionally, StatsSA and the National Department of Health should consider the review and revision of the health worker module of the QLFS. This could include incorporating more detailed questions on years of experience, or job location decisions, which could inform health policy development.

5.7 Future Research

This was a secondary data analysis of the health worker data in the QLFS survey, focusing on those health workers involved in direct patient care. As HRH include indirect health workers involved in management and/or support activities, further studies are needed to examine the characteristics and economic activities of support workers, and managers in the South African health system, as well as those categories (e.g. social workers, home-based carers) excluded from the MSc analysis.

Other possible research studies are listed below:

- A comparative analysis of the health labour market in South Africa and other countries in the Africa region or LMICs with similar economic and social contexts.
- The factors that influence the supply of different health professional categories in rural versus urban areas.
- Trends in the employment of health workers post- 2017 (the end period of this study).
- Prospective study on the impact of the NHI Act on the job market for healthcare professionals?
- Demographic and occupational characteristics of health workers at provincial and district levels.

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APPENDICES

Appendix 1: Plagiarism Declaration



PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Aphiwe Dinga (Student number: 1589447) am a student registered for the degree of MSc Epidemiology and Biostatistics in the academic year 2023.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature: _____ Date: 30 March 2023

Appendix 2: QLFS Questionnaire

STATS SA
STATISTICS SOUTH AFRICA

Quarterly Labour Force Survey

A. Particulars of the dwelling

Unique no.

A1. PSU segment no.

A2. Dwelling unit Number

A3. Assignment number

A4. Survey Date 2 _ _ 2 0 1 8

A5. Physical identification of the dwelling unit

A6. Telephone number for enumerated household (if any)

A7. Total number of persons in the household

A8. Total number of persons aged 15 years and above in the household

A9. Questionnaire no. for this household (for person no. 01-10=1, etc.)

B. Households at selected dwelling unit

B1. Household number for this household

B2. Total number of households at selected dwelling unit

C. Response details

Visit no.	Date (actual) d d m m y y y y	Result code	Next visit (planned) d d m m y y y y
C1.			
C2.			
C3.			
C4.			
C5. FINAL RESULT			

C6. Comments and full details for result code12-37

RESULT CODES

11 Completed
12 Partly completed
21 Non-contact
22 Refusal
23 Other non-response
31 Unoccupied dwelling
32 Vacant dwelling
33 Demolished
34 New dwelling under construction
35 Status change
36 Listing error
37 Non household member

Comment in C6 giving full details for result code 12-37

D. Field staff

		Assignment number	Date checked d d m m y y y y
D1. DSC			
D2. PQM			

SECTION 1 This section covers particulars of each person in the household

The following information must be obtained for every person who has stayed in this household for at least four nights on average per week during the last four weeks.
Do not forget babies. If there are more than 10 persons in the household, use a second questionnaire.

		Person number		
1.0	**Who is the head (or the acting head) of the household?** *(record that person in column 01)*			
1.1	***Record first name and surname*** **First name:** / **Surname:**			
1.2	**Has.....stayed in this household for at least four nights on average per week during the last four weeks?** 1=Yes; 2=No → *End of question for this person*	1 / 2	1 / 2	1 / 2
1.3	**Is.....a male or a female?** 1=Male; 2=Female	1 / 2	1 / 2	1 / 2
1.4	**What is.....'s date of birth and age in completed years?** **Day of birth:** Example of day 0 1; **Month of birth:** Example of month 0 3; **Year of birth:** Example of year 1 9 8 3; **Age** *(less than 1 year = 000)*			
1.5	**What population group does.... belong to?** 1=African/Black; 2=Coloured; 3=Indian/Asian; 4=White; 5=Other, specify in the box at the bottom	1 / 2 / 3 / 4 / 5	1 / 2 / 3 / 4 / 5	1 / 2 / 3 / 4 / 5
1.6	**What is ..... 's present marital status?** 1=Married; 2=Living together with a partner; 3=Widow/Widower; 4=Divorced or Separated; 5=Never Married	1 / 2 / 3 / 4 / 5	1 / 2 / 3 / 4 / 5	1 / 2 / 3 / 4 / 5

		Person number		
1.7	**What is the highest level of education that... has successfully completed?** 98 = NO SCHOOLING 00 = GRADE R/0 01 = GRADE 1/SUB A/CLASS 1 02 = GRADE 2/SUB B/CLASS 2 03 = GRADE 3/STANDARD 1/AET 1 (KHARI RI GUDE, SANLI) 04 = GRADE 4/STANDARD 2 05 = GRADE 5/STANDARD 3/AET 2 06 = GRADE 6/STANDARD 4 07 = GRADE 7/STANDARD 5/AET 3 08 = GRADE 8/STANDARD 6/FORM 1 09 = GRADE 9/STANDARD 7/FORM 2/AET 4 10 = GRADE 10/STANDARD 8/FORM 3 11 = GRADE 11/STANDARD 9/FORM 4 12 = GRADE 12/STANDARD 10/FORM 5/MATRIC (NO EXEMPTION) 13 = GRADE 12/STANDARD 10/FORM 5/MATRIC (EXEMPTION/ BACHELOR'S PASS) ***If code 98 or 00-13, Go to Q1.9*** 14 = NTC 1/N1/NC (v)LEVE L2 15 = NTC 2/N2/NC (v)LEVEL 3 16 = NTC 3/N3/NC(v)LEVEL 4 17 = N4/NTC 4 18 = N5/NTC 5 19 = N6/NTC 6 20 = CERTIFICATE WITH LESS THAN GRADE 12/STD 10 21 = DIPLOMA WITH LESS THAN GRADE 12/STD 10 22 = CERTIFICATE WITH GRADE 12/STD 10 23 = DIPLOMA WITH GRADE 12/STD 10 24 = HIGHER DIPLOMA 25 = POST HIGHER DIPLOMA (MASTERS, DOCTORAL DIPLOMA) 26 = BACHELORS DEGREE 27 = BACHELORS DEGREE AND POST GRADUATE DIPLOMA 28 = HONOURS DEGREE 29 = HIGHER DEGREE (MASTERS/PHD) 30 = OTHER, *specify in the box at the bottom* 31 = DON T KNOW ***If code 14-29, Go to Q1.8*** ***If code 30-31, Go to Q1.9*** ***Diploma or certificate should have been at least six months study duration full time (or equivalent)*** ***Write the appropriate code in the boxes***			

		Person number		
1.8	*If Diploma, Certificate or Degree (Code 14-29 in Q1.7):* **In which field is .....'s highest post-school qualification?** **UNIVERSITY/TECHNIKON/COLLEGE** 01 = AGRICULTURE OR RENEWABLE NATURAL RESOURCES 02 = ARCHITECTURE OR ENVIRONMENTAL DESIGN 03 = ARTS, VISUAL OR PERFORMING 04 = BUSINESS, COMMERCE OR MANAGEMENT SCIENCES 05 = COMMUNICATION 06 = COMPUTER SCIENCES 07 = EDUCATION, TRAINING OR DEVELOPMENT 08 = ENGINEERING OR ENGINEERING TECHNOLOGY 09 = HEALTH CARE OR HEALTH SCIENCES 10 = HOME ECONOMICS 11 = INDUSTRIAL ARTS, TRADES OR TECHNOLOGY 12 = LANGUAGES, LINGUISTICS OR LITERATURE 13 = LAW 14 = LIBRARIES OR MUSEUMS 15 = LIFE SCIENCES OR PHYSICAL SCIENCES 16 = MATHEMATICAL SCIENCES 17 = MILITARY SCIENCES 18 = PHILOSOPHY, RELIGION OR THEOLOGY 19 = PHYSICAL EDUCATION OR LEISURE 20 = PSYCHOLOGY 21 = PUBLIC ADMINISTRATION OR SOCIAL SERVICES 22 = SOCIAL SCIENCES OR SOCIAL STUDIES 23 = OTHER **TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET)** 24 = MANAGEMENT 25 = MARKETING 26 = INFORMATION TECHNOLOGY AND COMPUTER SCIENCE 27 = FINANCE, ECONOMICS AND ACCOUNTING 28 = OFFICE ADMINISTRATION 29 = ELECTRICAL INFRASTRUCTURE CONSTRUCTION 30 = CIVIL ENGINEERING AND BUILDING CONSTRUCTION 31 = ENGINEERING 32 = PRIMARY AGRICULTURE 33 = HOSPITALITY 34 = TOURISM 35 = SAFETY IN SOCIETY 36 = MECHATRONICS 37 = EDUCATION AND DEVELOPMENT 38 = OTHER			

		Person number		
1.9	**Does ... currently attend any educational institution?** 1 = YES 2 = NO ⟶ *Go to Section 2*	1 2	1 2	1 2
1.10	**Which educational institution does ... currently attend?**			
	1 = PRE-SCHOOL (INCLUDING DAY CARE, CRÈCHE, GRADE R AND PRE-GRADE R IN AN ECD CENTRE)	1	1	1
	2 = ORDINARY SCHOOL (INCLUDING GRADE R LEARNERS WHO ATTEND A FORMAL SCHOOL, GRADE 1-12 LEARNERS AND LEARNERS IN SPECIAL CLASS)	2	2	2
	3 = SPECIAL SCHOOL	3	3	3
	4 = TECHNICAL VOCATION EDUCATION AND TRAINING COLLEGE (TVET)	4	4	4
	5 = OTHER COLLEGE	5	5	5
	6 = HIGHER EDUCATION INSTITUTION (UNIVERSITY OR UNIVERSITY OF TECHNOLOGY)	6	6	6
	7 = ADULT (BASIC) EDUCATION AND TRAINING CENTRE (AET/ABET)	7	7	7
	8 = LITERACY CLASSES (E.G. KHANI GUDE, SANLI)	8	8	8
	9 = HOME-BASED EDUCATION OR HOME SCHOOLING	9	9	9

+ INTERVIEW START TIME h h m m

Person no. **Age** +

INDIVIDUAL 1

SECTION 2
This section covers economic activities in the last week for persons aged 15 years and above

2.0	*Interviewer to answer* *Is the person him/herself responding to questions?* 1=Yes → **Go to Q 2.2** 2=No	1 2
2.1	*Give person number for the proxy respondent*	
2.2	**Do you have a landline or cellular telephone where you can be contacted?** 1=Yes 2=No → **Go to Q 2.4** 3=Don't Know → **Go to Q 2.4**	1 2 3
2.3	**May I please have a number where I can contact you at a later stage?**	

2.4	**In the last week (Monday to Sunday)....**	**Yes**	**No**
	(a) Did you work for a wage, salary, commission or any payment in kind (including paid domestic work), even if it was for only one hour? *Examples: a regular job, contract, casual or piece work for pay, work in exchange for food or housing, paid domestic work.*	1	2
	(b) Did you run or do any kind of business, big or small, for yourself or with one or more partners, even if it was for only one hour? *Examples: Commercial farming, selling things, making things for sale, construction, repairing things, guarding cars, brewing beer, collecting wood or water for sale, hairdressing, creche businesses, taxi or other transport business, having a legal or medical practice, performing in public, having a public phone shop, etc.*	1	2
	(c) Did you help without being paid in any kind of business run by your household, even if it was for only one hour? *Examples: Commercial farming, help to sell things, make things for sale or exchange, doing the accounts, cleaning up for the business, etc.*	1	2
	If yes to any part of Q 2.4 go to Section 4, otherwise go to Q 2.5		

2.5	**In the last week (Monday to Sunday), even though you did not do any work for pay, profit or did not help without pay in a household business, ...**	**Yes**	**No**
	(a) Did you have a paid job that you would definitely return to? → ***If yes, go to Q 2.7, otherwise continue*** *Examples: a regular job, contract, casual or piece work for pay, work in exchange for food or housing, paid domestic work.*	1	2
	(b) Did you have a business that you would definitely return to? → ***If yes, go to Q 2.7, otherwise continue*** *Examples: Commercial farming, selling things, making things for sale, construction, repairing things, guarding cars, brewing beer, collecting wood or water for sale, hairdressing, creche businesses, taxi or other transport business, having a legal or medical practice, performing in public, having a public phone shop, etc.*	1	2
	(c) Did you have an unpaid job in any kind of business run by your household that you would definitely return to? → **Go to Q 3.1** *Examples: Commercial farming, help to sell things, make things for sale or exchange, doing the accounts, cleaning up for the business, etc.*	1	2

2.7	**What was the main reason you were absent from your job/business in the last week (Monday to Sunday)?**	
	01 = Health Reasons 02 = Vacation Leave → ***Go to Section 4***	01 02
	03 = Caring For Family Or Other (Except Maternity/Paternity Leave)	03
	04 = Maternity or Paternity Leave → ***Go to Section 4***	04
	05 = Other Family/Community Obligations (Funerals, Meetings)	05
	06 = Strike/Stay-Away/Lockout	06
	07 = Problems With Transport	07
	08 = Bad Weather	08
	09 = Study Or Training Leave	09
	10 = Unrest (Violence)	10
	11 = Temporarily Laid Off/Reduction In Economic Activity	11
	12 = Seasonal Work	12
	13 = Start A New Job/Business At A Definite Date In The Future → ***Go to Q 3.1***	13
	14 = Other Reason, specify	14
2.7a	**Including the time that you have been absent, will you return to that same job/business...**	
	1 = Within 3 months? → ***Go to Section 4***	1
	2 = After 3 months?	2
	3 = Not sure to return	3
2.7b	**Do you continue to receive pay from your job/business during your absence from work?**	
	1 = Yes → ***Go to Section 4***	1
	2 = No → ***Go to Q3.1***	2

SECTION 3
This section covers unemployment and economic inactivity for persons aged 15 years and above

3.1 **In the last four weeks,....**

(a) Were you looking for any kind of work?

1 = Yes → 1

2 = No → 2

(b) Were you trying to start any kind of business?

1 = Yes → 1

2 = No → 2

If No in both Q3.1a and Q3.1b → Go to Q 3.3 otherwise continue

3.1c **In the last four weeks what kind of working/ business arrangement were you looking for?**

1 = Full-time → 1

2 = Part-time → 2

3 = Any working arrangement → 3

3.2 **In the last four weeks what have you done to search for paid work (job) or to start a business?**

Mark all applicable options

01 = Waited/Registered At Employment Agency/Trade Union → 01

02 = Enquired At Workplaces, Farms, Factories Or Called On Other Possible Employers → 02

03 = Placed/Answered Advertisment(s) → 03

04 = Searched Through Job Advertisment(s) / Searched The Internet → 04

05 = Sought Assistance From Relatives Or Friends → 05

06 = Looked For Land, Building, Equipment Or Applied For Permit To Start Own Business Or Farming → 06

07 = Waited At The Street Side Where Casual Workers Are Found → 07

08 = Sought Financial Assistance To Look For Work Or Start A Business → 08

09 = Other, specify → 09

10 = Nothing → ***Go back to Q 3.1*** / ***Go to Q 3.6*** → 10

3.3 **Was this because you had already arranged to take up paid work (job) or to start a business at some later date?**

1 = Yes → 1

2 = No → ***Go to Q 3.4*** → 2

3.3a **How soon are you expecting to start working in this job or business?**

1 = Within 1 Month or less → ***Go to Q 3.6*** → 1

2 = In more than 1 Month to 3 Months → 2

3 = In more than 3 Months → 3

3.4 **Would you have liked to work for pay or start a business last week (Monday to Sunday)?**

1 = Yes → ***Go to Q 3.8*** → 1

2 = No → 2

3.5 **What was the main reason you did not want to work last week (Monday to Sunday)?**

1 = Scholar/Learner or Student → 1

2 = Housewife/Homemaker (Family Considerations/Child Care) → 2

3 = Health Reasons → 3

4 = Retired Or Too Old For Work → 4

5 = No Desire To Work → 5

6 = Too Young To Work → 6

7 = Pregnancy → 7

8 = Disabled or Unable to work → 8

9 = Other, specify → 9

→ ***Go to Q 3.12***

3.6 **For how long have you been without work and trying to find paid work (job) or start a business?**

01 = Less Than 3 Months → 01

02 = 3 Months - Less Than 6 Months → 02

03 = 6 Months - Less Than 9 Months → 03

04 = 9 Months - Less Than 1 Year → 04

05 = 1 Year - Less Than 3 Years → 05

06 = 3 Years - 5 Years → 06

07 = More Than 5 Years → 07

08 = Don t Know → 08

3.7 **What was your main activity before you started looking for paid work (job)?**

1 = Working → 1

2 = Managing A Home → 2

3 = Going To School → 3

4 = Other, specify → 4

→ ***Go to Q 3.9***

3.8	**What was the main reason why you did not try to find paid work (job) or start a business in the last four weeks?**	
	01 = Awaiting The Season For Work	01
	02 = Waiting To Be Recalled To Former Job	02
	03 = Health Reasons	03
	04 = Pregnancy	04
	05 = Disabled Or Unable To Work (Handicapped)	05
	06 = Housewife/Homemaker (Family Considerations/Child Care)	06
	07 = Undergoing Training To Help Find Work	07
	08 = No Jobs Available In The Area	08
	09 = Lack Of Money To Pay For Transport To Look For Work	09
	10 = Unable To Find Work Requiring His/Her Skills	10
	11 = Lost Hope Of Finding Any Kind Of Work	11
	12 = No Transport Available	12
	13 = Scholar Or Student	13
	14 = Retired/Too Old to Work	14
	15 = Too Young To Work	15
	16 = Other Reason, Specify	16
3.9	**If a suitable paid work (job) had been offered, would you have been able to start work last week (Monday to Sunday)?**	
	1 = Yes → **Go to Q 3.12**	1
	2 = No	2
	3 = Don't Know	3
3.10	**If circumstances had allowed, would you have started a business last week (Monday to Sunday)?**	
	1 = Yes → **Go to Q 3.12**	1
	2 = No	2
	3 = Don't Know	3
3.11	**What was the main reason why you were not available for paid work (job) last week (Monday to Sunday)?**	
	1 = Scholar Or Student	1
	2 = Housewife/Homemaker (Family Considerations/Child Care)	2
	3 = Health Reasons	3
	4 = Retired/Too Old to Work	4
	5 = No Desire To Work	5
	6 = Too Young To Work	6
	7 = Pregnancy	7
	8 = Disabled or unable to work	8
	9 = Other, specify	9

3.11.b	**If paid work (job) or business opportunity became available, how soon can you start work or a business?**	
	1 = Within A Week	1
	2 = Within Two Weeks	2
	3 = Within Four Weeks	3
	4 = Later than four weeks from now	4
	5 = No desire to work	5
	6 = Don't Know	6
3.12	**Have you ever worked for pay or profit or helped unpaid in a household business?**	
	Work could be: *Formal work for salary, wage, profit or unpaid work in household business;* *informal work such as making things for sale, selling things or providing a service for payment;* *work on a farm or land for a wage or as part of the household's farming business*	
	1 = Yes	1
	2 = No → **Go to Q 3.19**	2
3.13	**How long ago was it since you last worked?**	
	01 = Less Than 3 Months	01
	02 = 3 Months - Less Than 6 Months	02
	03 = 6 Months - Less Than 9 Months	03
	04 = 9 Months - Less Than 1 Year	04
	05 = 1 Year - Less Than 3 Years	05
	06 = 3 Years - 5 Years	06
	07 = More Than 5 Years → **Go to Q 3.19**	07
	08 = Don't Know	08
3.14	**What was the main reason you stopped working in your last job/business?**	
	01 = Health Reasons	01
	02 = Caring For Own Children/Relatives	02
	03 = Pregnancy	03
	04 = Other Family/Community Responsibilities	04
	05 = Going To School	05
	06 = Lost Job/Job Ended/Laid Off/ Business Sold/Closed Down	06
	07 = Changed Residence	07
	08 = Dissatisfied With Job	08
	09 = Retired/Too Old to Work	09
	10 = Other, specify	10

3.15.a **What kind of work did you do in your last job/business?**

Work includes all the activities mentioned earlier.
Record at least two words: Car sales person, Office cleaner, Vegetable farmer, Primary School teacher, etc.

3.15.b **What were your main tasks or duties in this work?**

Examples: Selling fruit, repairing watches, keeping accounts feeding and watering cattle, teaching children.

3.16.a **What was the name of the establishment / institution / business / organisation that you worked for (the one that paid your salary?**

For government or large organisations, give the name of the establishment and branch or division:
e.g. Education Dept - Rapsie Primary School; Harmony Gold Mining - Maintenance Div.
For individuals who worked from home and their businesses don't have names write "Own house"
For individuals who worked in private household write "Private household"
For individuals who worked for businesses without names write "No Name"

3.16.b **What were the main goods or services produced at your place of work or its main functions?**

Examples: Repairing cars, Selling commercial real estate, Sell food wholesale to restaurants, Retail clothing shop, Manufacture electrical appliances, Bar/restaurant, Primary Education, Delivering newspapers to homes. For domestic workers write "private household".

3.17 **In your last job/business, were you_____**

1 = Working for someone else for pay? *(Including paid domestic workers, gardeners or security guards)*

Payment in cash or in kind (e.g. food, accommodation).
Option 1 includes all employees: Full-time, part-time, casual work and piecework. ☐ 1

2 = An employer (employing one or more paid employees)? ☐ 2

3 = Own-account worker (not employing any employees)? ☐ 3

4 = Helping without pay in a household business? ☐ 4

3.19 **How do you support yourself?**

Mark all applicable options

	YES	NO
a = Did you do odd jobs during the last week (Monday to Sunday)? **→ If yes, go back to Q 2.4, otherwise continue**	☐ 1	☐ 2
b = Are you supported by persons in the household?	☐ 1	☐ 2
c = Are you supported by persons not in the household?	☐ 1	☐ 2
d = Are you supported by charity, church, welfare, etc.?	☐ 1	☐ 2
e = Do you receive Unemployment Insurance Fund (UIF)?	☐ 1	☐ 2
f = From savings or money previously earned?	☐ 1	☐ 2
g = Do you receive old age or disability pension?	☐ 1	☐ 2
h = Do you receive child support/foster care grants?	☐ 1	☐ 2
i = Do you receive any other welfare grants?	☐ 1	☐ 2
j = Do you have any other sources of support, e.g. bursary, study loan?	☐ 1	☐ 2

→ Go to Q 5.9

SECTION 4
This section covers main work activity in the last week for persons aged 15 years and above

4.1 **In the last week (Monday to Sunday) did you have more than one job/business?**

1 = Yes 1
2 = No 2
3 = Don't Know 3

If yes, read out: The question that follows refer to your main job/business. That is the one where you usually work the most hours per week, even if you were absent from it the last week.

4.2.a **What kind of work do you usually do in the main job/business that you had during the last week (Monday to Sunday)?**

Work includes all the activities mentioned earlier.

Record at least two words: Car sales person, Office cleaner, Vegetable farmer, Primary School teacher, etc.

4.2.b **What are your main tasks or duties in this work?**

Examples: Selling fruit, repairing watches, keeping accounts feeding and watering cattle, teaching children.

4.3.a **What is the name of the establishment / institution / business / organisation that you work for (the one that pays your salary)?**

For government or large organisations, give the name of the establishment and branch or division:
e.g. Education Dept - Repele Primary School; Harmony Gold Mining – Maintenance Div.
For individuals who worked from home and their businesses don't have names write "Own house"
For individuals who worked in private household write "Private household"
For individuals who worked for businesses without names write "No Name"

4.3.b **What are the main goods or services produced at your place of work or its main functions?**

Examples: Repairing cars, Selling commercial real estate, Sell food wholesale to restaurants, Retail clothing shop, Manufacture electrical appliances, Bar/restaurant, Primary Education, Delivering newspapers to homes. For domestic workers write "private household".

4.4 **When did you start working for this employer or started running this business? Give year and month.**

*State year in **four** figures, e.g. 2001*

*State month in **two** figures, e.g. 08 for August*

4.5	**In the job/business, that you had during the last week (Monday to Sunday) were you……**	
	1 = Working for someone else for pay? *(Including paid domestic workers, gardeners or security guards)* *Payment in cash or in kind (e.g. food, accommodation).* *Option 1 includes all employees: Full-time, part-time, casual work and piecework.* → **Go to Q 4.6**	1
	2 = An employer (employing one or more paid employees)? → **Go to Q 4.13**	2
	3 = Own-account worker (not employing any employees)? → **Go to Q 4.13**	3
	4 = Helping without pay in a household business? → **Go to Q 4.13**	4

FOR EMPLOYEES ONLY (option 1 in Q 4.5)

4.6	**Does your employer contribute to any pension/retirement fund for you?**		
	1=Yes		1
	2=No		2
	3=Don't Know		3
4.7	**Are you entitled to any paid vacation leave?**		
	1=Yes		1
	2=No		2
	3=Don't Know		3
4.7. b	**Are you entitled to any…**	YES	NO
	1=paid sick leave?	1	2
	2=maternity / paternity leave?	1	2
4.7. c	**In the last twelve months, did you take…**	YES	NO
	1=paid vacation leave?	1	2
	2=paid sick leave?	1	2
	3=maternity / paternity leave?	1	2
4.8	**Does your employer pay UIF contributions for you?**		
	1=Yes		1
	2=No		2
	3=Don't Know		3
4.9	**Are you entitled to medical aid benefits from your employer?**		
	1=Yes		1
	2=No		2
	3=Don't Know		3

4.10	**Does your employer deduct income tax (PAYE / SITE) from your salary/wage?**	
	1=Yes	1
	2=No	2
	3=Don't Know	3
4.11	**Are you employed on the basis of……**	
	1= A written contract?	1
	2= A verbal agreement?	2
4.12	**Is the contract/agreement of a……**	
	1= Limited duration?	1
	2= Permanent nature? → **Go to Q 4.12b**	2
	3= Unspecified duration? → **Go to Q 4.12b**	3
4.12. a	**What is the duration of your contract or agreement?**	
	1=Less than a year	1
	2=1 year to less than 3 years	2
	3=3 years or more	3
4.12. b	**Are you a member of a trade union or other workers' organisations?**	
	1=Yes	1
	2=No	2
	3=Don't Know	3
4.12. c	**Who determines your annual salary increase?**	
	1=Negotiation between myself and employer at company	1
	2=Negotiation between union and employer	2
	3=Bargaining Council or other sector bargaining arrangement	3
	4 = Employer only	4
	5 = No regular annual salary increase	5
	6 = Other, specify	6
	→**Go to Q 4.15**	

FOR EMPLOYERS AND OWN-ACCOUNT WORKERS AND PERSONS HELPING UNPAID IN HOUSHOLD BUSINESSES (Options 2, 3, and 4 in Q 4.5)

4.13	**Is your business (or household business where you work) registered for VAT?** 1=Yes 2=No 3=Don t Know	 1 2 3
4.14	**Is the business (or household business where you work) registered for income tax?** 1=Yes 2=No 3=Don t Know	 1 2 3
4.14.a	**Does your business or the business where you work belong to any organisation / association that protects your business interests?** 1 = Yes 2 = No 3 = Don t Know	 1 2 3

FOR ALL EMPLOYED PERSONS (employees, employers, own account workers and persons helping unpaid in household businesses)

4.15	**Is the establishment / institution / business / organisation you work for (the one that pays your salary) classified as ....**	
	1 – National/Provincial/Local government?	1
	2 – Government controlled business (e.g. Eskom/Telkom)?	2
	3 – A private enterprise?	3
	4 – Non-profit organisation (NGO/CBO)?	4
	5 – A private household?	5
	6 – DON'T KNOW	6
4.16	**How many employees are there at your place of work?**	
	01 – 0	01
	02 – 1	02
	03 – 2 - 4	03
	04 – 5 - 9	04
	05 – 10 - 19	05
	06 – 20 - 49	06
	07 – 50 OR MORE	07
	08 – DON'T KNOW	08
4.16.a	**Are you satisfied with your main job?**	
	1 – Yes	1
	2 – No	2

Ask for those with one job (Option 2 in Q4.1)

4.18	**How many hours do you usually work each week (Monday to Sunday)?**	
4.19	**Thinking of each day last week (Monday to Sunday), how many hours did you actually work.....**	
	Day	Hours
	On Monday?	
	On Tuesday?	
	On Wednesday?	
	On Thursday?	
	On Friday?	
	On Saturday?	
	On Sunday?	
	Total hours actually worked	
	→ *Go to Q 4.22*	

Ask for those with more than one job (Option 1 in Q 4.1)

4.20	**How many hours do you usually work each week (Monday to Sunday).....**	
	1. In your first job/business?	
	2. In your second job/business?	
	3. In all other job/businesses?	
	Total hours for all jobs/businesses	

4.21 Thinking of each day last week (Monday to Sunday), how many hours did you actually work.....

Day	Hours in ..... First job/ business	Second job/ business	All other jobs/ businesses
On Monday?			
On Tuesday?			
On Wednesday?			
On Thursday?			
On Friday?			
On Saturday?			
On Sunday?			
Total hours			

4.22	**Last week (Monday to Sunday), would you have liked to work more hours than you actually worked, provided the extra hours had been paid?**	
	1 = Yes, in the current job	1
	2 = Yes, in taking an additional job	2
	3 = Yes, in another job with more hours	3
	4 = No → *Go to Section 5*	4
	5 = DON'T KNOW → *Go to Section 5*	5
4.23	**How many additional hours could you have worked last week (Monday to Sunday)?**	
4.24	**Do you want to work more hours at your current rate of pay?**	
	1 – Yes	1
	2 – No	2
	3 – DON'T KNOW	3
4.25	**If extra work became available, would you be able to start such work in the next four weeks?**	
	1 – Yes	1
	2 – No	2
	3 – DON'T KNOW	3

SECTION 5

This section covers earnings in the main job for employees, employers and own-account workers aged 15 years and above

5.1	*Copy response from Q4.5* 1 – Working for someone else for pay → *Go to Q 5.2* 2 – An employer (employing one or more employees) → *Go to Q 5.6* 3 – Own-account worker (not employing any employees) → *Go to Q 5.6* 4 – Helping without pay in a household business → *Go to Q 5.9*	1 2 3 4

FOR EMPLOYEES

5.2	**In your main job, what is the easiest way for you to tell us your wages or salary before taxes or any other deductions? Would it be.....** 1 = Monthly? 2 = Weekly? 3 = Fortnightly (Every two weeks)? 4 = Daily? 5 = Hourly? 6 = Annually? 7 = Refused/Don't Know → *Go to Q 5.8*	1 2 3 4 5 6 7
5.3	**Do you usually receive any tips or commission?** 1 = Yes 2 = No	1 2
5.4.a	**What is your** *(choose one)* **annual/monthly/ weekly/daily/hourly wage or salary before deductions?** *(Include tips and commissions)* R → *Go to Q 5.9*	
5.4.b	*If amount not stated* 1 = Don't know 2 = Refused → *Go to Q 5.8*	1 2

FOR EMPLOYERS AND OWN-ACCOUNT WORKERS

5.6	**What is the easiest way for you to tell us your earnings after expenses? Would it be.....** 1 = Monthly? 2 = Weekly? 3 = Fortnightly (Every two weeks)? 4 = Daily? 5 = Hourly? 6 = Annually? 7 = Refused/Don't Know → *Go to Q 5.8*	1 2 3 4 5 6 7
5.7.a	**What are your** *(choose one)* **annual/monthly/ weekly/daily earnings after expenses?** *(Include tips and commissions)* R → *Go to Q 5.9*	
5.7.b	*If amount not stated* 1 = Don't know 2 = Refused → *Go to Q 5.8*	1 2

For those who don't know, refused or prefer to provide ranges, please use the Prompt Card. Indicate earnings using the weekly, monthly or annual figures as indicated on the Prompt Card (do not forget to include tips and commission).

5.8	Weekly	Monthly	Annually	
01	None	None	None	01
02	R1 - R46	R1 - R200	R1 - R2 400	02
03	R47 - R115	R201 - R500	R2 401 - R6 000	03
04	R116 - R231	R501 - R1 000	R6 001 - R12 000	04
05	R232 - R346	R1 001 - R1 500	R12 001 - R18 000	05
06	R347 - R577	R1 501 - R2 500	R18 001 - R30 000	06
07	R578 - R808	R2 501 - R3 500	R30 001 - R42 000	07
08	R809 - R1 039	R3 501 - R4 500	R42 001 - R54 000	08
09	R1 040 - R1 386	R4 501 - R6 000	R54 001 - R72 000	09
10	R1 387 - R1 848	R6 001 - R8 000	R72 001 - R96 000	10
11	R1 849 - R2 540	R8 001 - R11 000	R96 001 - R132 000	11
12	R2 541 - R3 695	R11 001 - R16 000	R132 001 - R192 000	12
13	R3 696 - R6 928	R16 001 - R30 000	R192 001 - R360 000	13
14	R6 929 - R8 654	R30 001 - R37 500	R360 001 - R450 000	14
15	R8 655 - R12 500	R37 501 - R54 167	R450 001 - R650 000	15
16	R12 501 - R14 423	R54 168 - R62 500	R650 001 - R750 000	16
17	R14 424 - R16 346	R62 501 - R70 800	R750 001 - R850 000	17
18	R16 347 - R19 231	R70 801 - R83 300	R850 001 - R1 000 000	18
19	R19 232 or more	R83 301 or more	R1 000 001 or more	19
20	Don t know	Don t know	Don t know	20
21	Refuse	Refuse	Refuse	21

Ask for all persons aged 15 years and above

5.9	In the last week (Monday to Sunday)...	YES	NO
	(a1) Did you do any work on your own or the household's plot, farm, food garden, cattle post or kraal or help in growing farm produce or in looking after animals for the household's own consumption? *Examples: ploughing, harvesting, looking after livestock.*	1	2
	(a2) *If yes*, for how many hours?		
	(b1) Did you fetch water or collect wood/dung for household use?	1	2
	(b2) *If yes*, for how many hours?		
	(c1) Did you produce any other goods for household use? *Examples: Clothing, furniture, clay pots, etc.*	1	2
	(c2) *If yes*, for how many hours?		
	(d1) Did you do any construction or major repair work on your own home, plot, cattle post or business or those of the household?	1	2
	(d2) *If yes*, for how many hours?		
	(e1) Did you catch any fish, prawns, shells, wild animals or other food for household consumption?	1	2
	(e2) *If yes*, for how many hours?		

h h m m

9.0 INTERVIEW END TIME ☐☐☐☐

End of questions for individual 1

Thank the respondent for his/her co-operation

Appendix 3: Ethics Waiver

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL

Human Research Ethics Committee (Medical)

Research Office Secretariat:
Faculty of Health Sciences, Phillip Tobias Building, 3rd Floor, Office 301/2/4, 29 Princess of Wales Terrace, Parktown, 2193
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Website: www.wits.ac.za/research/about-our-research/ethics-and-research-integrity/

Ref: W-CBP-190222-2

22/02/2019

TO WHOM IT MAY CONCERN:

Waiver: This certifies that the following research does not require clearance from the Human Research Ethics Committee (Medical)

Investigator: Aphiwe Dinga (Student Number: 1589447)

Supervisor: Laetitia Rispel and Duane Blauuw

Department: Public Health

Project title: Occupational Characteristics and Economic Activities of Health Workers in the quarterly Labour Force Survey: 2008-2017

Reason: Review of information in the public domain

CB Penny

Doctor CB Penny
Chairperson: Human Research Ethics Committee (Medical)

Copy – HREC (Medical) Secretariat: Rhulani Mkansi and Zanele Ndlovu.

Appendix 4: Turn it in report

Dinga Aphiwe Final RR_31 March 23 cleaned final.docx

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