A survey of the professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng, South Africa

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Date: 9 June 2023

DECLARATION

I, Nonkazimulo Moyo, declare that this research report is my original work. It is being submitted for the degree of Master of Public Health 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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Date: 9 June 2023

DEDICATION

This research report is dedicated to my Heavenly Father for His grace and strength that have enabled me to achieve this milestone.

ABSTRACT

Background

The global goal of Universal Health Coverage (UHC) cannot be achieved without a well-motivated and productive health workforce. Central to their motivation and productivity is the notion of professional quality of life (ProQOL) that captures both the positive and negative emotions of caring work. However, there is a dearth of empirical studies on the ProQOL of pharmacists and rehabilitation therapists, especially in an African setting.

Study aim

The aim of the study was to examine the self-reported ProQOL of pharmacists and rehabilitation therapists at three public sector hospitals in the Gauteng Province of South Africa.

Methodology

During 2021, a cross-sectional analytical study was conducted at three public sector hospitals in the Gauteng Province of South Africa. Following informed consent, all eligible pharmacists, pharmacist assistants, occupational therapists, physiotherapists and speech therapists and audiologists completed a self-administered questionnaire electronically. In addition to socio-demographic information, the questionnaire obtained information on compassion satisfaction, burnout, and secondary traumatic stress using the ProQOL scale (version 5) and work-related experiences during the COVID-19 pandemic. STATA® 17 was used for descriptive and multivariate analysis of the survey data.

Results

A total of 118 pharmacists and rehabilitation therapists completed the survey. The majority were female (83.00%), single (63.46%), with mean age 30.77 years (SD=9.08). The results revealed moderate mean scores for compassion satisfaction (39.62; SD=5.48), burnout (24.26; SD=5.12) and secondary traumatic stress (23.03; SD=6.31).

The predictors of compassion satisfaction were moderate positive COVID-19 experiences score (β=+2.61;95% CI 0.54; 4.68; p=0.014) and high positive COVID-19 experiences score (β =+ 2.68; 95%CI 0.40; 4.96; p=0.021); moderate overall job satisfaction score (β =+ 3.17;

95% CI 0.16; 6.18; p=0.039) and high overall job satisfaction score (β =+ 7.26; 95% CI 4.06; 10.47; p<0.001).

The predictors of burnout were being single (β=+2.02 95% CI 0.07; 3.97; p=0.042), full professional registration (β=+4.23; 95% CI 1.79; 6.67; p=0.001), direct involvement in patient care (β=+3.24; 95% CI 0.22; 6.26; p=0.036) and reporting a heavy workload (β=+ 2.61; 95% CI 0.75; 4.48; p=0.007).

The predictors of secondary traumatic stress were being male (β=+ 3.26; 95% CI 0.36; 6.15; p=0.028), and full registration (β=+ 5.72; 95% CI 2.41; 9.03; p<0.001).

Conclusion

The ProQOL of pharmacists and rehabilitation therapists is influenced by a combination of individual, workplace, and health system factors, suggesting the need for a multifaceted approach to optimise their contribution to the achievement of UHC. Such approach should include provincial health, hospital management, and peer support as well as self-care activities.

Key words

Professional quality of life; compassion satisfaction; burnout; secondary traumatic stress; pharmacists; rehabilitation therapists, public sector, South Africa

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ACRONYMS AND ABBREVIATIONS

CF	Compassion Fatigue
COVID-19	Coronavirus disease of 2019
CS	Compassion Satisfaction
HICs	High Income Countries
HREC	Human Research Ethics Committee
HRH	Human Resources for Health
LMICs	Low-and Middle-Income Countries
MPH	Master of Public Health
NHI	National Health Insurance
OT	Occupational therapist
PA	Pharmacist assistant
PH	Pharmacist
PPEs	Positive Practice Environments
ProQOL	Professional Quality of Life
PT	Physiotherapist
REDCap	Research Electronic Data Capture
SD	Standard deviation
STS	Secondary Traumatic Stress
ST/A/ST&A	Speech therapist/Audiologist/Speech therapist and Audiologist
UHC	Universal Health Coverage

CHAPTER 1: INTRODUCTION

1.1 Background

Human resources for health (HRH), a key building block of the health system, play a vital role in achieving health and development goals [1]. Within the global discourse on HRH, there is increasing scholarly attention on positive practice environments (PPEs) [1]. These are health care settings that seek to support service excellence and quality patient care and that strive to ensure decent working conditions, and the optimal physical and mental well-being of health care providers [2]. This is because PPEs positively influence health care delivery, health care provider performance, and health outcomes of patients [2].

The quality health providers feel relative to their caring work, referred to as the professional quality of life (ProQOL), is an important component of PPEs [3]. The ProQOL includes both the positive (compassion satisfaction) and the negative (compassion fatigue) aspects of care giving [4]. Compassion satisfaction has been described as the sense of gratification and the positive feelings that health care providers derive from the provision of care to alleviate the suffering of other people [5, 6]. Compassion satisfaction also includes health care providers' satisfaction with the relationships they have with their colleagues as well as a sense that their work makes a meaningful contribution to clients and to society [7].

Conversely, compassion fatigue has been described as the cost associated with caring for others or for their emotional pain and is caused by the exposure of health care providers to chronic work-related stress, manifesting as emotional, physical, and psychological exhaustion [6]. Compassion fatigue consists of two parts: burnout and secondary traumatic stress [5], although some research studies have used the term compassion fatigue synonymously with secondary traumatic stress [7, 8]. Burnout is characterised by emotional exhaustion and a reduced sense of personal accomplishment that can occur in response to chronic stressors on the job [9]. Secondary traumatic stress on the other hand has been described as the negative consequences that occur as a result of fear and trauma related to one's work [5], resulting from helping or the desire to help individuals who are traumatised or are suffering [10].

Evidence shows that compassion fatigue has implications for the physical, social, emotional and spiritual well-being, as well as the professional effectiveness of health care providers [11]. Compassion fatigue has been associated with insomnia, poor judgment and discernment, increased risk of cardiovascular disease, depression, mental disorders, low self-esteem, poor work satisfaction and loss of hope [6, 12]. Furthermore, it may lead to a reduced ability for health workers to empathise with their patients and may also be detrimental to the quality of patient care [6, 11]. Some studies have demonstrated a negative correlation between compassion satisfaction and compassion fatigue; hence compassion satisfaction could act as a protective factor against compassion fatigue and a crucial buffer that promotes a good ProQOL [13, 14]. Consequently, the ProQOL of health providers is posited as a balance between these two constructs [7].

Evidence also suggests that health providers with an optimal ProQOL offer quality services to patients and have a higher chance of staying in their jobs in comparison to those with a poor ProQOL [15]. Thus, ProQOL has far-reaching consequences for individuals, the health workforce, and health systems.

In South Africa, there is recognition that HRH investment and transformation are essential for high-quality Universal Health Coverage (UHC) [16]. However, South Africa faces the challenge of inequitable distribution of the health workforce between the public and private health sectors [17]. This is exacerbated by the complex and high burden of disease in the public health sector that caters for the majority of the South African population [18]. The proposed National Health Insurance (NHI) system, a health care financing reform towards UHC, is unlikely to succeed without well-motivated and productive health care providers [19]. Although there is an emerging literature on ProQOL, most of the studies focus on nurses and doctors in stressful environments such as palliative care [20], termination of pregnancy [21], and those who are exposed to maternal and perinatal deaths [22]. The ProQOL of pharmacists and rehabilitation therapists in South Africa is under-researched, yet they provide essential health care services [23], contributing to the physical, mental and social well-being of patients and communities [24]. Furthermore, the majority of rehabilitation therapists [25, 26] and

pharmacists work in the private health sector, which provides care to around 17 percent of the population [17].

Consequently, this Master of Public Health (MPH) research study aimed to generate new knowledge on the ProQOL of pharmacists and rehabilitation therapists at three public sector hospitals in the Gauteng Province of South Africa. Furthermore, the MPH research study was conceived during the COVID-19 pandemic, with South Africa being one of the hardest hit countries [27]. This provided the opportunity to examine the ProQOL of these essential health care workers in the context of a global disaster. It was envisaged that hospital managers could use the results of this study to develop suitable interventions to enhance the ProQOL of these groups of health care workers.

This chapter provides the background to and context of the study along with the literature review of research studies on ProQOL. Section 1.2 defines the various terms used in the research report, provides a brief overview of the role of the selected professions and reviews relevant studies on ProQOL and the factors that influence its components of compassion satisfaction and compassion fatigue. The concluding sections present the statement of the problem and study rationale (Section 1.3), the aims and objectives of the study (Section 1.4), and the structure of the research report (Section 1.5).

1.2 Literature review

1.2.1 Definition of terms

Burnout	A sense of hopelessness and difficulty in doing work effectively which occurs gradually, is associated with high workloads and inadequate support in the work environment and may be an indication that one feels that their efforts are of no value [4].
Compassion fatigue	This involves the negative aspects of being a care provider and is divided into burnout and secondary traumatic stress [4].

Compassion satisfaction	The affirmative feelings a care giver derives from doing their work well. It is often characterised by feelings of being satisfied by the job, happy thoughts and people feeling energised by their work and wanting to keep on doing the work [4].
Health care provider	This term refers to individuals involved in diagnosing, treating and preventing the illness, injury and any other physical or mental impairments of humans through application of evidence-based preventive and curative measures [28]. In this study, health care providers refer to pharmacists and rehabilitation therapists.
Pharmacist	An individual who has been trained to formulate and dispense medication and to provide information pertaining to drugs or medication to patients and other health care providers [29]. In South Africa, pharmacists are required to perform internship for a year as well as an additional year of community service after their studies before they register as qualified pharmacists [30]. Pharmacist assistants and intern pharmacists share the same scope of practice [31]. In this study, the term *pharmacist* includes qualified pharmacists, intern pharmacists, community service pharmacists and pharmacist assistants.
Rehabilitation therapist	A group of health care professionals whose work is aimed at reducing the negative consequences of disease affecting one's functionality [32]. Rehabilitation therapists evaluate problems such as pain, the strength of muscles, as well as motor skills [32] In South Africa, rehabilitation therapists are required to perform a year of community service before full registration [26]. In this study, rehabilitation therapists refer to fully registered speech therapists and community service speech

	therapists, fully registered audiologists and community service audiologists, fully registered occupational therapists, and community service occupational therapists as well as fully registered physiotherapists and community service physiotherapists.
Secondary traumatic stress	This occurs as a consequence of exposure to individuals who have encountered traumatic events and may cause the caregiver to be preoccupied with thoughts of people that they have helped [4]. It often leads to reports of feeling overwhelmed by the trauma of others and may cause sleep disturbances [4].
Universal Health Coverage	Universal Health Coverage is when everyone can access health care services (prevention, cure, rehabilitation and health promotion services) they need without experiencing financial difficulty [33, 34].

1.2.2 Approach to literature review

The literature review was informed by the study objectives. Google Scholar was the primary search engine used to search for literature. The following databases were also used: PubMed, ProQuest, SAGE Journals online, ScienceDirect and The Cochrane Collaboration. The following key words and medical subject headings (MeSH) were used in different combinations during the literature search; Professional quality of life, Burn Out, Compassion satisfaction, Secondary traumatic stress, Compassion fatigue, health care providers, health care professionals, allied health professionals, audiologist, occupational therapist, pharmacist, physiotherapist, speech therapist, high-income countries, low- and middle-income countries and South Africa. A grey literature search was also conducted.

An effort was made to only include results from studies which specifically used the Professional Quality of Life Scale as the data collection tool in the literature review to ensure comparability of results. The literature review foregrounds studies published between 2011 and 2022.

1.2.3. The role of pharmacists and rehabilitation therapists in South Africa's public hospitals

Although pharmacists and rehabilitation therapists are not in constant contact with patients compared to nurses and/or doctors, these professions play crucial roles in the South African public hospital system [17, 35]. They contribute to the well-being and rehabilitation of patients, both as individual professionals, and as members of multi-disciplinary teams [17, 35].

The activities of public sector pharmacists in South Africa include the dispensing of prescription medications and patient education and counselling on appropriate medication use, dosage, and possible side-effects [17]. Pharmacists also work as members of multi-disciplinary teams providing advice on medication dosages, substitutes, extemporaneous compounding, preparation of cytotoxic and other sterile medication, participation in ward rounds, and active monitoring to ensure medication safety [17].

Although the scopes of practice differ across the rehabilitation professions, in general rehabilitation therapists assess and treat individuals across the lifespan [36]. They provide expert care to individuals with physical and cognitive disabilities and communication difficulties through personalised treatment plans that facilitate the optimal reintegration of patients into their communities [36].

Similar to other health professions, pharmacists and rehabilitation therapists face challenges of high workloads, staff shortages, long working hours, poor infrastructure, and inadequate resources [17, 25, 26]. Combined with the dearth of empirical studies, these challenges necessitate an investigation of how these health professionals perceive their caring work, and the factors associated with their ProQOL.

1.2.4. Prevalence of compassion satisfaction, burnout, and secondary traumatic stress.

There is an extensive body of literature on the ProQOL and its components of compassion satisfaction and compassion fatigue. However, most research studies have been done in high-income countries (HICs) with a focus on nurses and doctors, albeit with mixed results. In Australia, studies among critical care and emergency department nurses have found moderate

to high levels compassion satisfaction and low to moderate burnout and secondary traumatic stress levels [37, 38]. However, one of the limitations of the study was the small sample size, thus making it difficult to identify ProQOL differences across socio-demographic variables [38].

Mean ProQOL scores among American acute care nurses indicated moderate levels on all three subscales [12]. Paediatric and oncology nurses on the other hand have reported high compassion satisfaction, although the other ProQOL domains were also moderate [5, 39]. Studies conducted in Canadian oncology nurses [5], Portuguese registered nurses [8], Israeli midwives [40], and Saudi Arabian critical care nurses [13] have also found moderate to high compassion satisfaction levels and low to moderate levels of burnout and secondary traumatic stress.

ProQOL studies from low-and middle-income countries (LMICs) have generally found moderate compassion satisfaction but results on burnout and secondary traumatic stress have been mixed. For instance, in Iran one study found moderate compassion satisfaction, moderate secondary traumatic stress and low burnout among doctors, nurses and midwives [41] while Indian intensive care nurses reported similar levels of compassion satisfaction and secondary traumatic stress but the burnout level was moderate [42]. Another study among palliative cancer centre professional care providers in India found moderate compassion satisfaction and burnout, but secondary traumatic stress was high [43]. Chinese oncology nurses have reported low levels of burnout and secondary traumatic stress, and moderate compassion satisfaction [44]. Similarly, a study among Taiwanese paediatric nurses found moderate compassion satisfaction and low secondary traumatic stress. However, the author did not report on burnout, hence it is unclear whether this aspect was measured in the study [45].

Results from studies on ProQOL in South Africa have been mixed, with some reporting moderate compassion satisfaction, burnout and secondary traumatic stress among South African nurses [22], nursing students [46] and oncology nurses [20]. However, a study conducted among termination of pregnancy providers found high compassion satisfaction [21], while another study among nurses found high secondary traumatic stress [47]. In another study,

professional and lay health workers reported high compassion satisfaction, but burnout and compassion fatigue were reportedly low for professional health workers while moderate levels were reported for lay health workers [48].

There is a dearth of literature available on the ProQOL of pharmacists and rehabilitation therapists. Nonetheless, a study among American occupational therapists found low to moderate burnout and secondary traumatic stress levels, and moderate to high compassion satisfaction [49]. Although the validity of the Japanese ProQOL scale has not been established, pharmacists in Japan have reported high levels of both burnout and secondary traumatic stress [50]. However, it is unclear whether compassion satisfaction was measured [50]. More than 20% of audiologists in New Zealand reported low compassion satisfaction and were at risk of developing both secondary traumatic stress and burnout [51]. During the COVID-19 pandemic, American pharmacists reported moderate to high levels on all three ProQOL domains [52, 53].

A study among Indian audiologists and speech language pathologists found moderate to high compassion satisfaction and low to moderate burnout and secondary traumatic stress [54]. No published studies could be found on the ProQOL of pharmacists and rehabilitation therapists in South Africa.

1.2.4. Socio-demographic characteristics and ProQOL

Studies in the USA [39, 55, 56], USA and Canada [5], Australia [37] and Spain [57] found that young health care providers with less experience reported lower compassion satisfaction and higher levels of burnout and secondary traumatic stress. Conversely, a study from Spain found that younger health care providers reported higher compassion satisfaction, compared to older individuals [14].

Studies in Iran [41] and India [58] have found lower compassion satisfaction scores in younger, less experienced providers. However, in Turkey [59], and Tunisia [60], younger professionals have reported higher compassion satisfaction. Chinese oncology nurses with more years of experience have also reported higher levels of compassion fatigue [44]. One South African

study found that more experienced providers reported higher secondary traumatic stress [21] and another found higher compassion satisfaction in more experienced critical care nurses [61].

Although the results are mixed, significant associations have also been found between ProQOL and marital status. One Spanish study found that being divorced was associated with increased compassion satisfaction, while being married was associated with compassion fatigue [7]. In contrast, another study in Spain found that single participants had higher mean compassion fatigue scores [14].

A study in India found that being married was associated with a higher compassion satisfaction score [58], while in Tunisia both compassion satisfaction and secondary traumatic stress were higher for married professionals [60]. Taiwanese paediatric nurses with partners showed a lower level of compassion fatigue [45]. None of the cited South African studies reported an association between ProQOL and marital status.

With regard to gender, women in some Spanish and American studies have reported higher levels of compassion satisfaction than men [7, 39]. A study in Saudi Arabia found that males reported higher secondary traumatic stress levels compared to women [13]. This is different from the findings of studies in Turkey, India and Tunisia that found higher burnout and secondary traumatic stress among women [58-60]. Similarly, a South African study found higher secondary traumatic stress scores among women [21], but women also reported higher compassion satisfaction compared to men, albeit with geographical differences [21].

A postgraduate qualification may also influence levels of compassion satisfaction. Studies in the United States and Australia found that nurses with master's or doctoral degrees reported higher compassion satisfaction [5, 37, 55]. This was also found in China, where oncology nurses who had acquired additional training reported higher compassion satisfaction, compared to those without training [44]. In contrast, in South Africa, more educated critical nurses reported higher levels of secondary traumatic stress [61].

Occupation has been shown to have significant interactions with ProQOL. Studies in Spain and Saudi Arabia have found that nurses tend to have higher compassion satisfaction scores compared to physicians who reported higher secondary traumatic stress and burnout scores [13, 62]. On the contrary, in Tunisia, the secondary traumatic stress of nursing professionals was significantly higher than that of junior doctors [60]. South African specialist psychiatric nurses reported higher burnout than other nursing categories, while enrolled nursing assistants had the highest compassion satisfaction [47]. Lay health workers in South Africa have also reported moderate burnout in comparison to health professionals who reported low levels [48]. Another South African study reported higher compassion satisfaction levels in health care providers who had managerial responsibilities, compared to their subordinates [21].

Working full-time or part-time may also affect ProQOL, but there is insufficient evidence. In Canada, part-time health care providers reported higher compassion satisfaction and lower compassion fatigue than permanently employed providers [63]. However, none of the studies in LMICs including in South Africa found a statistical association between ProQOL and full-time or part-time work.

1.2.5. Working conditions, job satisfaction and ProQOL

The work environment, including communication, collaboration, and decision-making, also influence the ProQOL of health professionals [7, 12]. An Australian qualitative study among health managers in a public hospital found that poor relationships among the health care providers, a top-down rather than collaborative management approach, and lack of leadership and management skills had a negative impact on the workplace culture [64]. This resulted in staff reporting low morale and feeling tired and burnt out [64].

A study among newly qualified American nurses who were enrolled in a residency programme found that when their cohesion was high, they were less likely to experience low compassion satisfaction or high burnout and secondary traumatic stress [65]. Similarly, compassion satisfaction was higher among American oncology nurses who reported team cohesion, and they were also less likely to experience secondary traumatic stress and burnout [5]. A study among Spanish emergency department nurses found a negative correlation between perceived

social support and compassion fatigue and burnout [14]. In South Africa, one study found a positive association between compassion satisfaction and good relationships with co-workers as well as finding work stimulating [21].

A supportive workplace culture seems to buffer against secondary traumatic stress and burnout [45], with health professionals reporting that they cope better when they experience assistance from other team members or their managers [14]. One study in China found that there is a positive association between training and organisational support, and compassion satisfaction [44].

Other factors such as working in primary health care versus hospitals and urban or rural location were also found to influence ProQOL [7], mediated by workload, patient contact, staffing, and work hours [12, 52]. A Spanish study among nurses found that working in a primary care setting, and in an urban area were associated with higher compassion fatigue and reduced compassion satisfaction [7]. In Australia, an expansion from regional to tertiary level hospital services was cited as one of the reasons for staff burnout [64]. However, another Australian study among critical care nurses a tertiary referral hospital reported higher compassion satisfaction and lower secondary traumatic stress compared to nurses in a hospital which offered less specialised services [37]. In a study involving Chinese oncology nurses, higher compassion fatigue and burnout were found among nurses who worked in secondary hospitals compared to those who worked in tertiary hospitals [44].

Studies in the USA [66] and Canada [63] have also found that frontline health care providers who provide direct clinical services to patients with pain or distress have reported significantly higher levels of secondary traumatic stress and burnout compared to those who do not. Similarly, those that provide psychosocial support to patients have reported significantly higher levels of secondary traumatic stress and burnout [63]. Audiologists who reported direct patient contact in New Zealand were more likely to experience higher secondary traumatic stress and burnout [51].

In India and Turkey, health providers in stressful and busy departments such as the emergency department or in family medicine and community health have reported increased burnout [58, 59]. The number of cases seen per week was also found to have a negative correlation with burnout in Indian palliative care workers [43]. Similarly, in South African critical care nurses, those who cared for only one patient had significantly higher compassion satisfaction, lower burnout and lower secondary traumatic stress compared to those who cared for more than one patient [61].

The emerging literature shows that job satisfaction which has been described as a pleasant or positive emotional state that comes as a result of one's job or experiences on the job [6], has a positive correlation with compassion satisfaction [41], and a negative correlation with burnout [7]. A study among American frontline nurses reported that those with high job satisfaction experienced significantly less compassion fatigue and higher compassion satisfaction [56]. However, another study among American paediatric nurses was unable to find significant relationships between job satisfaction and compassion satisfaction or compassion fatigue [39]. In Iran, high and medium job satisfaction were associated with lower burnout and secondary traumatic stress in doctors and nurses [41]. None of the South African studies analysed the relationship between job satisfaction and ProQOL.

1.2.6. The COVID-19 pandemic and ProQOL

Research evidence shows that healthcare providers who are exposed to traumatic and stressful events, such as the COVID-19 pandemic and times of disaster can experience various psychological problems, post-traumatic stress disorder and burnout [52, 67]. During the first year of the COVID-19 pandemic, a literature review of 76 studies that examined the ProQOL of health care providers found high levels of compassion fatigue and burnout [68], with similar findings among American pharmacists [52, 53]. However, only four of the 76 studies used the ProQOL scale [68], thus making it difficult to compare the results across these studies. In another study done in Spain, providers who cared for patients with COVID-19 reported higher levels of secondary traumatic stress and burnout [69], but this was not found in an American study among health care providers [66].

In China, nurses reported increased compassion fatigue after the outbreak of the COVID-19 pandemic [70]. Moderate scores across all ProQOL domains were reported among Indian frontline doctors and nurses [58], Tunisian doctors and nurses [60] and Iranian nurses [71]. In South Africa, critical care unit nurses reported low to moderate compassion satisfaction and moderate to high levels of both burnout and secondary traumatic stress [61]. Some authors have attributed the high compassion fatigue and burnout during the pandemic to potentially stressful factors such as the risk of infection for the healthcare workers and their loved ones, a higher demand for care, a shortage of personal protective equipment, additional duties, having to work extra hours and lack of support [68, 69].

Crisis situations may also lead to an increase in compassion satisfaction possibly as a result of increased social recognition of healthcare providers during the pandemic as well as intrinsic motivation to relieve suffering [69]. A study among American pharmacists found that 99.4% reported high compassion satisfaction during the pandemic [53]. Similarly, Spanish physicians and nurses reported a higher level of compassion satisfaction during the pandemic compared to the period before [69].

Some studies have found no difference in ProQOL before and during the pandemic, such as one among Iranian nursing professionals that showed that there was no significant difference in ProQOL scores before and during the COVID-19 pandemic scores [71]. No published South African studies could be found that examined ProQOL before and during the COVID-19 pandemic, especially among pharmacists and rehabilitation therapists.

1.3. Problem statement and study rationale

Three problems informed this MPH study. Firstly, the majority of ProQOL studies are from HICs, with a dearth of studies on the ProQOL of health care providers in LMICs in general, and South Africa in particular. Secondly, most of the studies focus on nurses and doctors, and/or those in stressful work settings (e.g., oncology, termination of pregnancy). Pharmacists and rehabilitation therapists are relatively neglected in the health policy discourse (e.g., on the NHI), yet they play critical roles in the health system. Thirdly, the majority of studies tend to

focus on compassion fatigue or its sub-components of burnout and secondary traumatic stress, rather than on the positive notion of compassion satisfaction.

There is insufficient evidence on the ProQOL of pharmacists and rehabilitation therapists and the factors that influence their ProQOL, yet these health care providers provide essential health care services, exacerbated by shortages of these professions in the public health sector.

Hence, the rationale for this MPH study was to generate new knowledge on the ProQOL of pharmacists and rehabilitation therapists working in Gauteng public health sector hospitals. The study also set out to examine the socio-demographic, occupational and practice environment factors that influence the ProQOL of these health professionals. The researcher envisaged that the new knowledge generated could contribute to the enhancement of ProQOL, while adding to the body of knowledge on the ProQOL of this group of health care providers in South Africa, and in a LMIC setting.

1.4. Aim and objectives.

The aim of this study was to examine the self-reported ProQOL of pharmacists and rehabilitation therapists, working at three public sector hospitals in Gauteng Province. The specific objectives were to:

1. Describe the socio-demographic characteristics of pharmacists and rehabilitation therapists working at three public sector hospitals in Gauteng.
2. Determine the self- reported ProQOL of the two groups of public sector health care providers, specifically:
    a. Compassion satisfaction
    b. Compassion fatigue, specifically secondary traumatic stress, and burnout
3. Describe the work experiences of pharmacists and rehabilitation therapists during the COVID-19 crisis.
4. Describe the perceived working conditions and job satisfaction of pharmacists and rehabilitation therapists working at three public sector hospitals in Gauteng.
5. Examine the association between:

a. Socio-demographic characteristics and ProQOL
b. Work experiences during COVID-19 and ProQOL
c. Perceived working conditions and ProQOL.
d. Job satisfaction and ProQOL

1.5. Outline of the research report

Chapter 1: This chapter has highlighted the background to, and context of my MPH study on the ProQOL of pharmacists and rehabilitation therapists, including a review of the literature relevant to the study objectives. The problem statement, study rationale, aims and objectives were also outlined.

Chapter 2: This chapter describes the methodology of the MPH study.

Chapters 3 Presents the detailed study findings.

Chapter 4: This chapter provides an integrated discussion of the study findings.

Chapter 5: This chapter concludes the research report, and makes key recommendations based on the study findings, including suggested areas for future research.

CHAPTER 2: METHODOLOGY

2.1. Introduction

This chapter outlines the methodology followed to meet the study objectives. Section 2.2 describes the study setting and design and section 2.3 outlines the steps taken to ensure an ethical approach to the research. Sections 2.4 to 2.11 provide an overview of the study population, eligibility criteria, development of the data collection instrument, the pilot study, preparation for data collection, the actual data collection, and data analysis. Section 2.12 discusses potential bias, limitations and steps taken to prevent bias and overcome limitations.

2.2. Study setting and design

This was a cross-sectional study conducted at three public sector hospitals in the city of Johannesburg in the Gauteng Province of South Africa. A cross-sectional design was chosen as it enabled the researcher to meet the study objectives, examine multiple factors, and identify relationships or associations among variables. In addition, a cross-sectional study design is a convenient way to collect large amounts of data and is relatively inexpensive [72]. Table 2.1 provides information about the selected hospitals.

Table 2.1 : Brief overview of study hospitals

	Type of facility	Services offered	Beds	Staff complement	Number of pharmacists, pharmacist assistants and rehabilitation therapists
Hospital 1	Central hospital	• Quaternary and tertiary health care services • Teaching hospital • Referral hospital	1088	4812	124
Hospital 2	Regional tertiary hospital	• Tertiary and secondary health care services, except maternal and childcare services	500	2159	75
Hospital 3	Regional tertiary mother and child hospital	• Tertiary and secondary health care services, focusing on specialised gynaecological, obstetric, and paediatric services.	320	1400	23

Hospital 1 is a large central, teaching hospital, Hospital 2 is a regional tertiary hospital, and Hospital 3 is a regional tertiary hospital that provides mother and child health services. The selection of the hospitals was based on geographical accessibility, as well as budgetary and logistical considerations.

2.3. Ethical considerations

The Human Research Ethics Committee (HREC) (Medical) of the University of the Witwatersrand, Johannesburg provided ethical approval for the study M200649 (Appendix 1). Each of the three hospitals also provided permission to conduct the study (Appendices 3a-c).

The researcher complied with all the principles of the Singapore Declaration on Research Integrity [73]. Participation in the study was voluntary. A detailed information sheet on the study (Appendix 4) was provided to the participants. The questionnaire was created using The Research Electronic Data Capture (REDCap) a software platform designed to securely capture and store research study data [74]. The REDCap questionnaire (Appendix 5) was designed with a section which allowed participants to provide their consent before they completed the survey. A distress protocol (Appendix 6) was developed detailing the steps that would be taken to provide support to participants should they become distressed or experience discomfort while completing the survey. As the questionnaire was self-administered and in line with the distress protocol, information regarding the mental health support services available in Gauteng was provided to all prospective and actual study participants. This was done at two stages. Firstly, the researcher shared this information with the prospective study participants during the presentations done before data collection. Secondly, the information was included in the participant information sheet (Appendix 4), which was on the first page on the REDCap survey.

During data collection sessions each participant completed the questionnaire on the tablet in a private area. Strict COVID-19 protocols were observed. Each tablet was sanitised before being passed on to the next participant and social distancing was also adhered to. No identifying information was collected during the survey and confidentiality was maintained in reporting the results of the study. The researcher kept all data on a computer that is password protected

and the aggregate data stripped of all personal identifiers was only accessible to the researcher and the supervisors.

2.4. Study population

The study population comprised all pharmacists (including pharmacy assistants) and rehabilitation therapists working in the three hospitals, and registered with the South African Pharmacy Council, and the Health Professions Council of South Africa respectively. According to information provided by the managers and department heads before data collection, there were 222 of these health care providers in the three hospitals at the time when the study was planned. There were no rehabilitation therapy assistants/technicians at the selected public sector hospitals as the managers indicated that the training of this category was stopped.

2.5. Eligibility criteria

All categories of pharmacists including pharmacist assistants were included:

- Qualified pharmacist
- Intern pharmacist
- Community service pharmacist
- Qualified pharmacist assistant

The following categories of rehabilitation therapists were included:

- Occupational therapist
- Community service occupational therapist
- Physiotherapist
- Community service physiotherapist
- Speech therapist
- Community service speech therapist
- Audiologist
- Community service audiologist
- Speech therapist and audiologist

2.6. Study sample

There was no sampling done. The entire population of pharmacists and rehabilitation therapists from the three hospitals was included in the study to ensure representativeness, and sufficient statistical power for analysis. Furthermore, the study aimed to capture the diverse range of experiences and perspectives related to ProQOL and to identify potential differences or similarities in ProQOL experiences across different socio-demographic characteristics.

2.7. Data collection instrument

A survey questionnaire was designed to collect data using the Research Electronic Data Capture (REDCap) software (Appendix 6). The questionnaire consisted of four sections. Section A focused on the basic socio-demographic information of the study participants. Section B contained the Professional Quality of Life version 5 (ProQOL-V) scale, a validated instrument which has been used in more than 200 published papers [38, 75, 76], including in several South African studies [20, 21, 47]. Importantly, the ProQOL-V scale is freely available [77].

The ProQOL-V was used to measure elements of the ProQOL of pharmacists and rehabilitation therapists. The ProQOL-V consists of 30 questions which are sub-divided into the 3 subscales of secondary traumatic stress, burnout as well as compassion satisfaction [4]. There are 10 questions allocated to each subscale, and each question has a Likert scale with a range from 1 (Never) to 5 (Very often) [4]. The questions allow participants to reflect on their work experiences in the 30 days preceding the completion of the questions [4].

As the study was conceptualised at the height of the COVID-19 pandemic, Section C of the questionnaire contained 12 questions on health worker experiences during the COVID-19 pandemic and consisted of positively phrased questions as a proxy for positive COVID-19 experience (6 items) and negatively phrased questions as a proxy for negative COVID-19 experiences (6 items). Section D captured the overall job satisfaction and working conditions of the health workers. The questions in this section have been used in the WiSDOM health professional cohort study, and are therefore validated [78].

2.8. Pilot study

Prior to data collection, the questionnaire was tested on a small sample of pharmacists and rehabilitation therapists from another Gauteng public sector hospital in April 2021. The purpose of the pilot was to determine the clarity of questions, the content validity of the questions, the internal consistency of each of the scales in the questionnaire and the time taken to complete the survey.

2.8.1. Content validity and internal consistency of the scales

As indicated, the ProQOL scale is a validated instrument that has been used in over 200 studies [38, 75, 76], including studies in South Africa [20, 21, 47]; while the questions on job satisfaction and work experiences have been used in the WiSDOM health professional cohort study, and are therefore validated [78].

Nonetheless, five health care providers representative of the target population completed the pilot survey, thus ensuring content validity (Table 2.2). The pilot revealed that the questionnaire took an average of 15 minutes to complete. A minor modification was made to the questionnaire after the pilot. A question was added on employment status as some of the healthcare providers in the public sector had been hired on contractual basis.

The Cronbach alpha coefficients were calculated for each of the scales in the questionnaire to determine the internal consistency of the scales. The alpha coefficients for all the scales (Table 2.2) were 0.8 and above which showed that the internal consistency of the questionnaire was good, and that it had good reliability.

Table 2.2: Alpha reliabilities for pilot survey

Scale	Cronbach alpha
Professional Quality of life	
Compassion satisfaction	0.84
Burnout	0.80
Secondary traumatic stress	0.89
Other	
COVID-19 experiences	0.81
Job satisfaction	0.80

2.9. Preparation for data collection

Submission for ethics approval was done at the beginning of June 2020, a few months into the hard lockdown in South Africa. At that time, most institutions were still implementing processes for remote work. It therefore took almost three months to receive the provisional ethics approval from the Wits HREC; a process which under normal circumstances usually take around one to two months.

Obtaining authorisation to conduct the study from the Gauteng provincial health department as well as the hospital authorities also proved to be very difficult, yet these approvals were a pre-requisite to acquiring the final ethics clearance certificate. One hospital took so long, the supervisor had to intervene by contacting the CEO of the hospital. The supervisor also had to intervene by contacting the head of research at the provincial health department.

Ethics clearance was finally obtained in January 2021. A list of the names and office numbers of all the relevant department heads of the three hospitals was obtained with the help of the supervisor. They were then all contacted telephonically. The telephone calls were made to introduce the study to the departmental heads, to obtain their buy-in and to determine whether there were any existing fora, workshops, or departmental meetings where members of the study population met. A few of the departments had weekly face-to-face meetings, while others had stopped due to the COVID-19 pandemic.

The researcher requested the relevant departmental heads of those clinical departments that continued to have weekly meetings to allow her to attend the meetings to present the study. The researcher also used these meetings as an opportunity for data collection as they allowed for minimum disruption to the work of these health care providers which involved patient care. In the departments that no longer held weekly meetings, some departmental heads were willing to arrange brief staff meetings to enable the researcher to present the details of the study and to collect data.

Presentations were done at the various departments to explain the background of the study. However, due to a fire disaster at one of the hospitals in April 2021, which saw this hospital being shut down and health care providers being re-deployed to other hospitals; contacting the departmental heads of this hospital proved to be difficult. Social networks were therefore used to trace health care providers from this hospital to invite them to participate in the study.

In light of the COVID-19 pandemic and high numbers of infections at the time of data collection [79], study participants were given two options: receive the survey link via email, or enter data directly onto a tablet provided by the researcher. For those health care professionals who opted to receive the link via email, the researcher obtained their email addresses and contact numbers with their permission.

2.10. Data collection

Data collection began in April 2021 and lasted until October 2021, because the fire disaster at one of the study hospitals delayed data collection phase as that hospital was shut down for months.

For the health care providers who opted to enter data directly onto tablets, data collection sessions were scheduled according to their availability. The researcher travelled to the hospitals to perform data collection, using tablets.

Survey links were sent using the REDCap software via email to health care providers who chose this option. REDCap is able to send up to five automated reminder emails if the participant has not yet completed the survey. These reminders were set for each participant before the link was sent out.

2.11. Data management

A Microsoft Excel file with the raw data was extracted from REDCap. The raw data were inspected for accuracy, completeness, and uniformity. Incomplete records and outliers were deleted. The researcher kept all data on a computer that is password protected.

Due to the data distribution of the three variables marital status, professional category and workload, some categories of these variables were combined into one. Widowed, divorced, and engaged participants were grouped together into the 'Other' marital status category. Speech therapists, audiologists and those who fall in both categories were grouped together as 'Speech therapist and/or audiologist.' Those who reported a light and just right workload were grouped together into the 'Appropriate' workload category, while those who reported a heavy and very heavy workload were grouped into the 'Heavy' workload category.

Three of the continuous variables were also categorised. The number of children was categorised to '0 children,' '1 child,' '2 children' and '3 or more children' for descriptive statistics. The participants' public sector and hospital tenure were also categorised to 'less than 2 years,' '2 to 5 years' and 'more than 5 years.' The categorical form of these two variables was used for regression analysis.

Pharmacist assistants can either be trainees or they can be fully registered, as they are not required to do community service. However, five pharmacist assistants indicated that they were registered for community service on the survey. These were added to the internship group, and the group was renamed to "Internship/Learnership". The reason for combining the two groups is that pharmacist assistants and interns in a pharmacy setting in South Africa have similar

scopes of practice, although interns have more responsibilities, and they all work under the direct personal supervision of a registered pharmacist [31].

Although South African audiologists do not perform internship, one audiologist selected this option. This individual was added to the community service group.

2.12. Data analysis

All data were entered into STATA® version 17 for analysis.

2.12.1. Descriptive statistics

The ***sociodemographic characteristics*** were grouped and described according to the 5 professional categories of health care providers that were surveyed. The mean and standard deviation of the continuous socio-demographic variables were calculated for all participants combined and for each professional category. The number and percentage of participants for each categorical variable were also calculated.

The values of ***compassion satisfaction, burnout and secondary traumatic stress scores*** were computed for each participant according to instructions given in the ProQOL manuals [4, 77]. The ProQOL manual encourages the use of the scores in their continuous form in statistical analysis [77]. The concise manual recommends categorising the scores into three sub-groups; low (a score of 23 or less), average (a score between 23 and 41) and high (a score of 42 and above) [4]. Due to the small sample size in this study, the continuous form of the scores was used for statistical analysis.

The mean and standard deviation of the self-reported compassion satisfaction, burnout and secondary traumatic stress scores were calculated. This was done first for all the participants combined, then for each professional category and lastly for all the other categorical socio-demographic variables. One way ANOVA and Bonferroni tests as well as t-tests were performed to compare the mean scores of the outcome variables observed within the socio-demographic categories.

The analysis of the study participants' ***COVID-19 experiences*** was done as follows. Firstly, recoding of the responses was done for the statements on the participants' COVID-19 experiences. 'Strongly disagree,' 'disagree' and 'disagree slightly' were combined to calculate the percentage of participants who disagreed with each statement. 'Strongly agree,' 'agree' and 'agree slightly' were also combined to calculate the percentage of participants who agreed.

Secondly, the 7-point Likert scoring was rescaled to convert it to a 10-point scale for easier calculation of the COVID-19 experiences scores. Rescaling of the Likert scale was done using the formula:

$$New\ score = \left(\frac{Original\ score - 1}{6}\right) \text{ x } 10$$

The statements were grouped into 6 positively phrased and 6 negatively phrased statements. The total potential score of each group of statements was 60. The score of positively phrased questions was named "Positive COVID-19 experiences" and the score of negative statements was named "Negative COVID-19 experiences." The mean score and standard deviation were calculated for each professional category and for all the participants combined. The mean scores were then categorised into tertiles and labelled as follows: lower tertile 'low,' middle tertile 'moderate' and upper tertile 'high.' The categorical form of this score was used during regression analysis.

The total potential score of each statement on the ***job satisfaction scale*** was 10. The mean satisfaction score for every statement on the job satisfaction scale was calculated, first for all the participants combined and then for each professional category. The mean score of each statement was then categorised as follows: 0-4 'low,' 5-7 'moderate' and 8-10 'high.' The categorical form of the satisfaction scores was used during regression analysis.

2.12.2. Multivariate analysis

Multivariate analysis was done through the construction of multiple linear regression models for each outcome variable. Independent variable selection for the regression models was done by performing stepwise regression, with the significance set at 20% for variable inclusion. A p-value ($p<0.05$) was considered statistically significant.

The final multiple linear regression model for each outcome variable included the following variables selected by the stepwise regression; compassion satisfaction (professional registration category, contract type, involvement in patient care, satisfaction with job in general, equipment availability, positive COVID-19 experiences score), burnout (marital status, hospital name, professional registration category, length of public sector tenure, involvement in patient care, workload, satisfaction with job in general, satisfaction with clinical practice environment, positive COVID-19 experiences score), and secondary traumatic stress (gender, hospital name, public sector tenure, professional registration category, negative COVID-19 experiences score, availability of equipment).

2.13. Potential limitations, bias and mitigation strategies

Firstly, due to the cross-sectional design of the study, the results show the ProQOL of pharmacists and rehabilitation therapists at a point in time. This is an inherent limitation of cross-sectional studies. Nonetheless, the study has generated important information on the ProQOL of pharmacists and rehabilitation therapists. Secondly, the study was conducted in three public sector hospitals in Gauteng Province. Hence, the results of the study cannot be generalised to all public sector hospitals. Lastly, the COVID-19 pandemic limited access to potential study participants and required adaptation of the data collection approach. All COVID-19 protocols were followed, and data collection was preceded by extensive consultation with the relevant managers to ensure their support and cooperation.

Two potential sources of bias were also identified for the study, namely *non-response*, and *social desirability bias*. The researcher took all steps to ensure a high response rate and reduce or eliminate non-response bias. These steps included consultation with the managers, presentation to and explanation of the study to potential participants, adjusting data collection to enable participants to complete the survey and sending several email reminders. Although the researcher had no control over the fire disaster at one of the selected hospitals which led to the shutdown of this hospital and redeployment of health care providers to other hospitals [80, 81], she endeavoured to trace potential participants from the affected hospital. Social desirability bias was mitigated through a self-administered and anonymous survey, using a validated instrument, and ensuring non-coercive recruitment methods.

However, this study has several strengths. This was one of the first studies to examine the ProQOL of pharmacists and rehabilitation therapists in South Africa. Furthermore, the study generated new information on the experiences of these health professionals and their working conditions during the COVID-19 pandemic. The study provides a baseline of the ProQOL of pharmacists and rehabilitation therapists in three public sector hospitals in Gauteng. Other researchers conducting similar studies could compare their findings with those of this study. The lessons learned during fieldwork include perseverance and patience, planning for contingencies during emergencies, whether due to a pandemic or fire destruction, and the importance of stakeholder involvement at hospital level.

CHAPTER 3: RESULTS

3.1. Introduction

The researcher could only contact 158 individuals to whom the survey invitations were sent. A total of 118 health care providers participated in the survey translating to a response rate of 74.60%. However, of the 118, there were 14 incomplete records, hence the final sample used for analysis was 104 records.

This chapter presents the results of the study. Section 3.2 describes the socio-demographic characteristics of the participants, Section 3.3 the ProQOL scores, Section 3.4 the experiences of the health care providers during the COVID-19 pandemic, Section 3.5 their perceived working conditions, Section 3.6 their satisfaction with selected aspects of their jobs and Section 3.7 the predictors of the participants' reported ProQOL scores.

3.2. Socio-demographic and occupational characteristics

The socio-demographic characteristics of the 104 participants with complete records are shown in Table 3.1. Pharmacist assistants were the biggest group, accounting for 28.85% of the total sample while speech therapists and audiologists were the smallest and accounted for 14.42%. Pharmacist assistants had the highest mean age of 35.00 years (SD=10.14) while occupational therapists had the lowest mean age of 26.31 years (SD=7.13). Hospital 2 accounted for 59.00% of all participants, and between 50.00% and 73.33% of all the professional categories, except for speech therapists and audiologists where 53.33% were from Hospital 1.

The participants were mostly female (79.81%), and all speech therapists and audiologists were female (100.00%). The majority of participants were single (63.46%) and had no children (59.62%), but 73.33% of the pharmacist assistants had children.

Table 3.1: Socio-demographic characteristics of study participants

		All participants combined	Occupational therapist	Pharmacist	Pharmacist assistant	Physiotherapist	Speech therapist/ Audiologist/ Speech therapist and audiologist
n (%)		104 (100.00)	16 (15.38)	25 (24.04)	30 (28.85)	18 (17.31)	15 (14.42)
Mean age (SD)		30.77 (9.08)	26.31 (7.13)	32.00 (8.72)	35.00 (10.14)	27.56 (6.15)	28.87 (9.02)
Facility	Hospital 1 (%)	33 (31.73)	4 (25.00)	8 (32.00)	7 (23.33)	6 (33.33)	8 (53.33)
	Hospital 2 (%)	59 (56.73)	8 (50.00)	16 (64.00)	22 (73.33)	10 (55.56)	3 (20.00)
	Hospital 3 (%)	12 (11.54)	4 (25.00)	1 (4.00)	1 (3.33)	2 (11.11)	4 (26.67)
Gender	Female (%)	83 (79.81)	15 (93.75)	20 (80.00)	19 (63.33)	14 (77.78)	15 (100)
	Male (%)	21 (20.19)	1 (6.25)	5 (20.00)	11 (36.67)	4 (22.22)	-
Marital status	Married/Engaged (%)	32 (30.77)	3 (18.75)	10 (40.00)	6 (20.00)	7 (38.89)	6 (40.00)
	Single (%)	66 (63.46)	12 (75.00)	14 (56.00)	21 (70.00)	11 (61.11)	8 (53.33)
	Widowed/Divorced (%)	6 (5.77)	1 (6.25)	1 (4.00)	3 (10.00)	-	1 (6.67)
Children	No (%)	62 (59.62)	15 (93.75)	15 (60.00)	8 (26.67)	12 (66.67)	12 (80.00)
	Yes (%)	42 (40.38)	1 (6.25)	10 (40.00)	22 (73.33)	6 (33.33)	3 (20.00)
Number of children	0 (%)	62 (59.62)	15 (93.75)	15 (60.00)	8 (26.67)	12 (66.67)	12 (80.00)
	1 (%)	17 (16.35)	-	-	12 (40.00)	5 (27.78)	-
	2 (%)	14 (13.46)	1 (6.25)	5 (20.00)	7 (23.33)	-	1 (6.67)
	3 or more (%)	11 (10.58)	-	5 (20.00)	3 (10.00)	1 (5.56)	2 (13.33)
Professional registration category	Internship/Learnership (%)	21 (20.19)	-	9 (36.00)	12 (40.00)	-	
	Community Service (%)	17 (16.35)	6 (37.50)	2 (8.00)	-	7 (38.89)	2 (13.33)

		All participants combined	Occupational therapist	Pharmacist	Pharmacist assistant	Physiotherapist	Speech therapist/ Audiologist/ Speech therapist and audiologist
	Full Registration (%)	66 (63.46)	10 (62.50)	14 (56.00)	18 (60.00)	11 (61.11)	13 (86.67)
Contract type	Permanent (%)	62 (59.62)	9 (56.25)	16 (64.00)	16 (53.33)	10 (66.67)	11 (61.11)
	Non-permanent (%)	42 (40.38)	7 (43.75)	9 (36.00)	14 (46.67)	5 (33.33)	7 (38.89)
Mean public sector tenure yrs. (SD)		5.47 (6.61)	3.78 (6.08)	7.58 (6.77)	6.53 (8.22)	3.86 (4.85)	3.59 (3.76)
Public sector tenure (categorised)	<5years (%)	67 (64.42)	13 (81.25)	10 (40.00)	18 (60.00)	13 (72.22)	13 (86.67)
	5years or more (%)	37 (35.58)	3 (18.75)	15 (60.00)	12 (40.00)	5 (27.78)	2 (13.33)
Mean hospital tenure yrs. (SD)		3.97 (5.13)	3.19 (5.25)	5.23 (4.78)	4.86 (6.50)	2.76 (4.04)	2.41 (2.82)
Hospital tenure (categorised)	<5years (%)	75 (72.12)	13 (81.25)	12 (48.00)	21 (70.00)	16 (88.89)	13 (86.67)
	5years or more (%)	29 (27.88)	3 (18.75)	13 (52.00)	9 (30.00)	2 (11.11)	2 (13.33)
Post-graduate training	No (%)	76 (73.08)	11 (68.75)	19 (76.00)	24 (80.00)	12 (66.67)	10 (66.67)
	Yes (%)	28 (26.92)	5 (31.25)	6 (24.00)	6 (20.00)	6 (33.33)	5 (33.33)

Fully registered professionals (63.46%) on permanent contracts (59.62%) and with no postgraduate training (73.08%), accounted for the larger proportions of participants. Pharmacists had the longest tenure both in the public sector (mean=7.58 years; SD=6.77) and in their respective hospitals (mean=5.23 years; SD=4.78), while speech therapists and audiologists had the shortest both in the public sector (mean=3.59 years; SD=3.76) and in the hospitals (mean=2.41 years; SD=2.82).

3.3. Professional quality of life scores

Figure 3.1 shows the mean ProQOL scores by professional category, while Table 3.2 shows the mean scores by the socio-demographic characteristics.

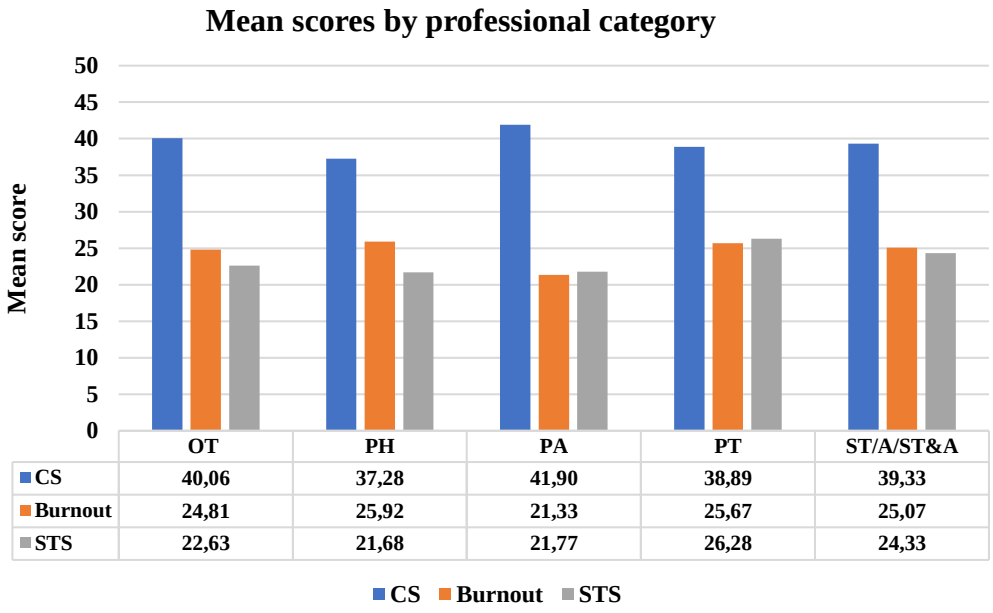
3.3.1. Compassion satisfaction

The overall mean compassion satisfaction score for all the participants combined was 39.62 (SD=5.48) which is moderate. The mean compassion satisfaction score was consistently moderate across all the professional categories, with small variations among the groups (Figure 3.1). Pharmacist assistants had the highest mean compassion satisfaction score of 41.90 (SD=4.99) while pharmacists had the lowest mean compassion satisfaction score of 37.28 (SD=5.38). The variation observed in the mean compassion satisfaction score across the professional categories was statistically significant (p=0.033).

The mean compassion satisfaction score was consistently moderate across all the other socio-demographic characteristics, with small differences within the various categories (Table 3.2). The following groups had higher mean compassion satisfaction scores: Hospital 1 (41.12; SD=5.02), married/engaged participants (40.66; SD=4.92), those with children (40.17; SD=5.27), those with one child (41.65; SD=3.90), those registered for internship (41.23; SD=5.79) and participants on permanent contracts (40.13; SD=5.00). However, these results were only statistically significant for the professional registration category (p=0.001), with the statistically significant difference between the mean score for community service and fully registered providers (p=0.006) and that between community service and intern providers (p=0.001) being the main contributors.

3.3.2. Burnout

The overall mean burnout score was moderate at 24.26 (SD=5.12). Mean burnout scores were moderate for all professional categories (Figure 3.1), except for pharmacist assistants who had a low mean burnout score (21.33; SD=4.68), which was also the lowest compared to the other professional groups. Pharmacists had the highest mean burnout score of 25.92 (SD=5.40). The difference observed in the mean burnout scores across the professional groups was statistically significant (p=0.005).



OT=Occupational therapist

PH=Pharmacist

PA=Pharmacist assistant

PT= Physiotherapist

ST/A/ST&A=Speech therapist/Audiologist/Speech therapist and Audiologist

Figure 3.1:Mean ProQOL scores by professional category

Mean burnout scores were moderate for the other socio-demographic variables, with small variations observed within the categories (Table 3.2). Participants from Hospital 3 had a slightly lower burnout score (23.67; SD=4.46) compared to Hospital 1 (24.61; SD=4.85) and Hospital 2 (24.19; SD=5.44) which had similar scores. 'Widowed/Divorced' participants had the highest mean burnout score (26.17; SD=5.04), and those who had a public sector tenure of

5 years or more (25.50; SD=4.90) and the same hospital tenure (25.45 years; SD=5.74) had a higher burnout score. Interns had the lowest burnout score (22.05; SD=4.58). The observed differences in the mean burnout scores were not statistically significant.

3.3.3. Secondary Traumatic Stress

The mean overall secondary traumatic stress score was 23.03 (SD=6.31), which is moderate. Secondary traumatic stress scores were moderate for all the professional categories (Figure 3.1). Physiotherapists had the highest secondary traumatic stress score 26.28 (SD=7.04), while lower scores were observed for pharmacists (21.68; SD=6.39) and pharmacist assistants (21.77; SD=6.23). However, the difference in the mean secondary traumatic stress scores observed across the professional categories was not statistically significant (p=0.095)

The distribution of scores across the various socio-demographic characteristics shows a mixture of low and moderate secondary traumatic stress (Table 3.2). Hospital 3 had the lowest secondary traumatic stress score (20.92; SD=5.63) of the three hospitals. Males had a higher mean secondary traumatic stress score (25.05; SD=6.95) compared to females (22.52; SD=6.07). 'Widowed/Divorced' participants (26.17; SD=5.04), those with one child (24.59; SD=6.35), fully registered health care providers (24.05; SD=6.71), and those with a public sector tenure of 5 years or more (24.46; SD=6.98), had higher mean secondary traumatic stress scores compared to other groups within their categories.

Participants on temporary employment contracts had a lower mean secondary traumatic stress score (21.64; SD=5.49) than their permanently employed colleagues (23.97; SD=6.68). All the differences observed in the mean secondary traumatic stress scores were not statistically significant.

Table 3.2: Mean scores of compassion satisfaction, burnout, and secondary traumatic stress by socio-demographic characteristics

			Compassion satisfaction		Burnout		Secondary Traumatic Stress	
Characteristic		**N**	**Mean (SD)**	**p**	**Mean (SD)**	**p**	**Mean (SD)**	**p**
Facility	Hospital 1	33	41.12 (5.02)	0.159	24.61 (4.85)	0.853	24.15 (5.66)	0.296
	Hospital 2	59	38.86 (5.69)		24.19 (5.44)		22.83 (6.72)	
	Hospital 3	12	39.17 (5.17)		23.67 (4.46)		20.92 (5.63)	
Gender	Female	83	39.76 (5.59)	0.597	24.24 (4.85)	0.942	22.52 (6.07)	0.101
	Male	21	39.04 (5.08)		24.33 (6.21)		25.05 (6.95)	
Marital status	Married/Engaged	31	40.66 (4.92)	0.379	23.47 (4.52)	0.430	23.16 (7.07)	0.969
	Single	66	39.26 (5.88)		24.47 (5.40)		22.92 (6.08)	
	Widowed/Divorced	7	38.00 (2.37)		26.17 (5.04)		23.50 (5.32)	
Children	Have children	42	40.17 (5.27)	0.401	23.48 (5.15)	0.200	22.64 (6.81)	0.610
	No children	62	39.24 (5.62)		24.79 (5.07)		23.29 (5.98)	
Number of children	0	62	39.24 (5.62)	0.371	24.79 (5.07)	0.576	23.29 (5.98)	0.399
	1	17	41.65 (3.90)		23.23 (4.58)		24.59 (6.35)	
	2	14	38.57 (5.36)		23.14 (5.80)		21.29 (8.43)	
	3 or more	11	39.91 (6.70)		24.27 (5.53)		21.36 (4.74)	

			Compassion satisfaction		Burnout		Secondary Traumatic Stress	
Professional registration category	Internship/Learnership	21	41.23 (5.79)	**0.001***	22.05 (4.58)	0.067	20.32 (4.47)	0.068
	Community Service	17	35.88 (5.81)		24.69 (4.84)		22.56 (5.88)	
	Full Registration	66	39.98 (4.94)		24.89 (5.22)		24.05 (6.71)	
Contract type	Permanent	62	40.13 (5.00)	0.247	24.84 (5.38)	0.162	23.97 (6.68)	0.065
	Non-permanent	42	38.86 (6.10)		23.40 (4.64)		21.64 (5.49)	
Public sector tenure	<5 years	43	39.16 (5.58)	0.662	23.51 (4.24)	0.924	22.35 (5.65)	0.348
	5years or more	24	40.92 (4.98)		25.50 (4.90)		24.46 (6.98)	
Hospital tenure	<5 years	53	39.57 (5.40)	0.304	23.47 (4.23)	0.511	23.06 (6.00)	0.516
	5years or more	22	40.91 (5.52)		25.45 (5.74)		23.82 (7.14)	
Post-graduate training	No	76	39.89 (5.29)	0.756	25.36 (4.95)	0.186	24.57 (7.10)	0.131
	Yes	28	39.51 (5.57)		23.86 (5.15)		22.46 (5.94)	
***p<0.05**								

3.4. Experiences during the COVID-19 pandemic

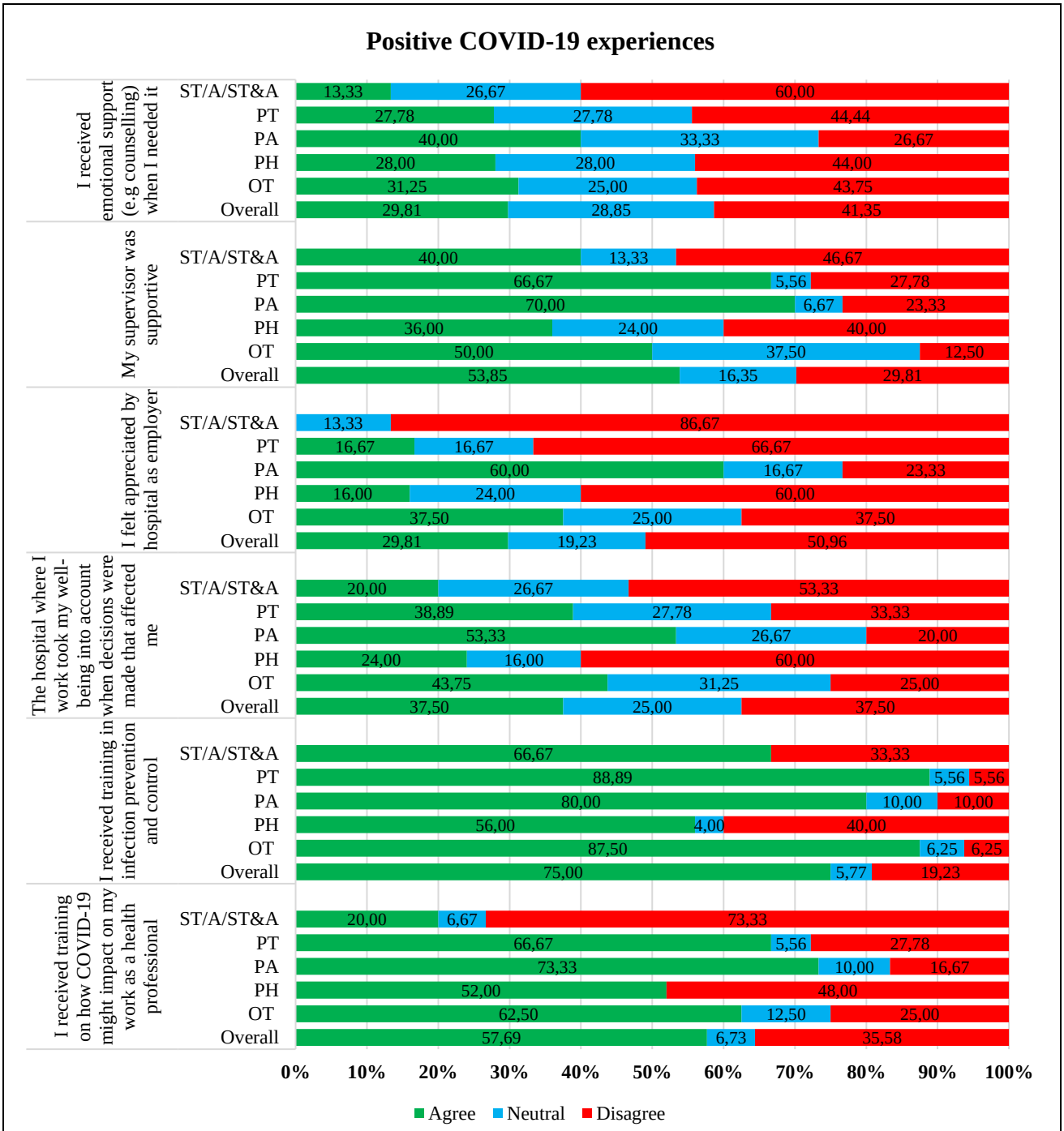
Figure 3.2 shows the responses to positively phrased statements on the health care providers work experiences during the COVID-19 pandemic and Figure 3.3 shows responses to negatively phrased statements.

3.4.1. Responses to the COVID-19 experiences statements

In terms of training, 57.69% that they received training on how COVID-19 might impact their work and on infection prevention and 75.00% of all participants combined agreed and control respectively (Figure 3.2). However, 73.33% of speech therapists and audiologists and 48.00% of pharmacists disagreed with the statement that they received training on the impact of COVID-19, and 40.00% of pharmacists and 33.33% of speech therapists and audiologists disagreed that they received training on infection prevention and control.

Although 37.50% of all participants disagreed that their well-being was considered when the hospital made decisions that affected them, 60.00% of pharmacists and 53.33% of the speech therapists and audiologists disagreed with the statement. However, 53.33% of the pharmacist assistants agreed with this statement. Overall, 50.96% of all participants disagreed with the statement that they felt appreciated by their employer, ranging from 37.50% of occupational therapists; 60.00% of pharmacists; 66.67% of physiotherapists; and 86.67% of the speech therapists and audiologists. In contrast, the majority (60.00%) of pharmacist assistants agreed with the statement that they felt appreciated by their employer.

Regarding supervisor support, 53.85% of all the participants agreed that their supervisor was supportive. Likewise, 70.00% of pharmacist assistants, 66.67% of physiotherapists and 50.00% of occupational therapists agreed that they received support from their supervisor. In contrast, smaller numbers of pharmacists (36.00%) and speech therapists and audiologists (40.00%) agreed with the statement. In terms of emotional support, only 29.81% of the participants agreed that they received emotional support, while 41.35% disagreed. Similarly, 60.00% of speech therapists and audiologists, 44.44% of physiotherapists, 44.00% of pharmacists and 43.75% of occupational therapists also disagreed. Pharmacist assistants were the group with the smallest percentage of people who disagreed with the statement (26.67%), with 40.00% responding in the affirmative.



OT=Occupational therapist

PH=Pharmacist

PA=Pharmacist assistant

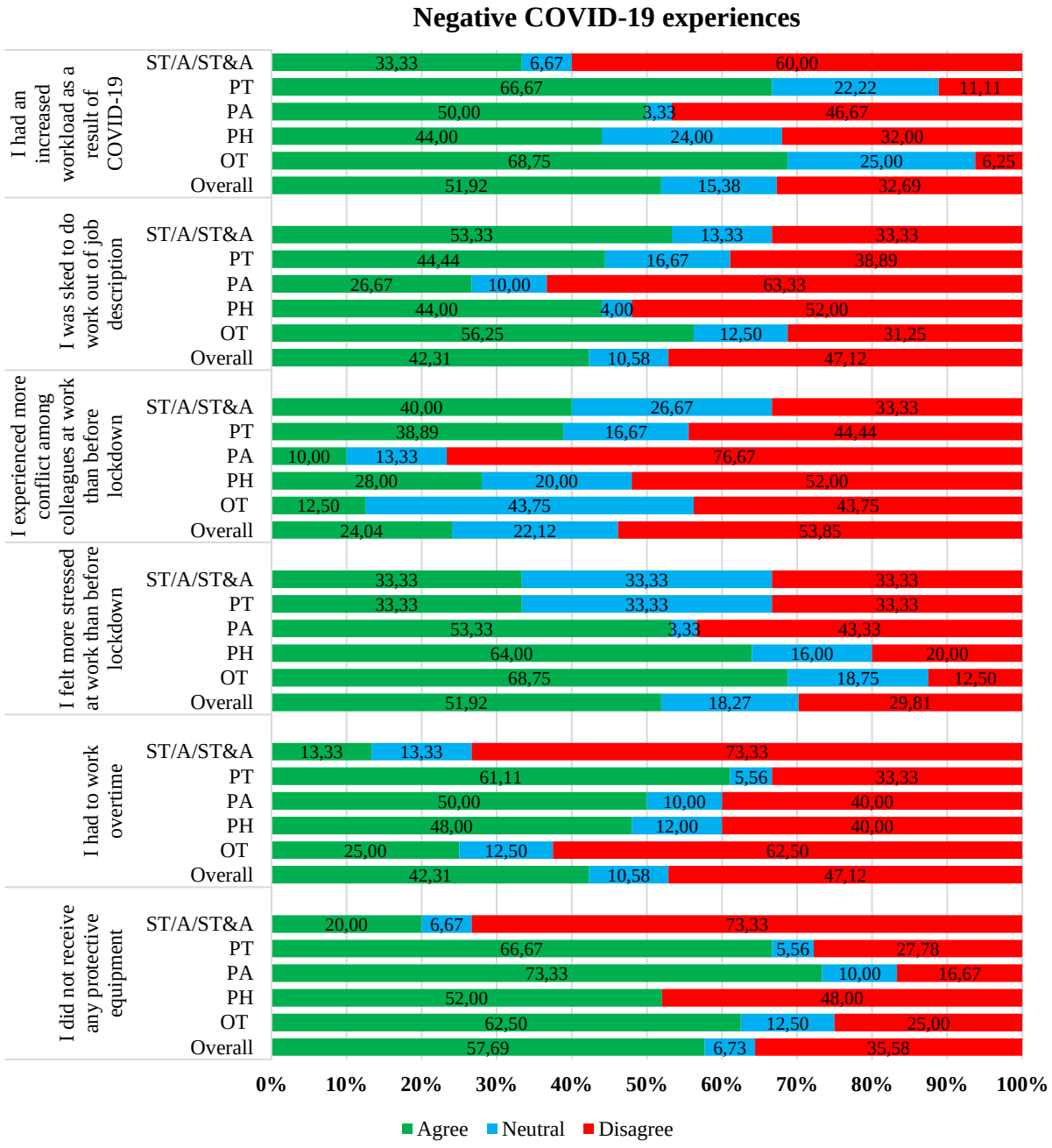
PT= Physiotherapist

ST/A/ST&A=Speech therapist/Audiologist/Speech therapist and Audiologist

Figure 3.2: Positive experiences during COVID-19

Figure 3.3 shows that the majority of all the participants (57.69%) indicated that they did not receive personal protective equipment (PPE) and among the professional groups, ranging from

52.00% of pharmacists to 73.33% of pharmacist assistants. In contrast, 73.33% of speech therapists and audiologists disagreed with the statement, suggesting that they received PPE.



OT=Occupational therapist

PH=Pharmacist

PA=Pharmacist assistant

PT= Physiotherapist

ST/A/ST&A=Speech therapist/Audiologist/Speech therapist and Audiologist

Figure 3.3: Negative COVID-19 experiences

Of all participants combined, 42.31% agreed that they had to work overtime, ranging from 48.00% of pharmacists to 61.11% of physiotherapists. However, 73.33% of speech therapists and audiologists and 62.50% of the occupational therapists disagreed with the statement.

The majority (51.92%) of all participants combined agreed that they felt more stressed at work than before the lockdown, ranging from 53.33% of pharmacist assistants to 68.75% of occupational therapists. In terms of conflict, overall, 24.04% of the participants agreed that they experienced more conflict among colleagues and comparably, ranging from a low of 10.00% of the pharmacist assistants and 12.50% of occupational therapists, to highs of 38.89% of physiotherapists to 40.00% of speech therapists and audiologists. It is noteworthy that 43.75% of the occupational therapists were neutral on this issue.

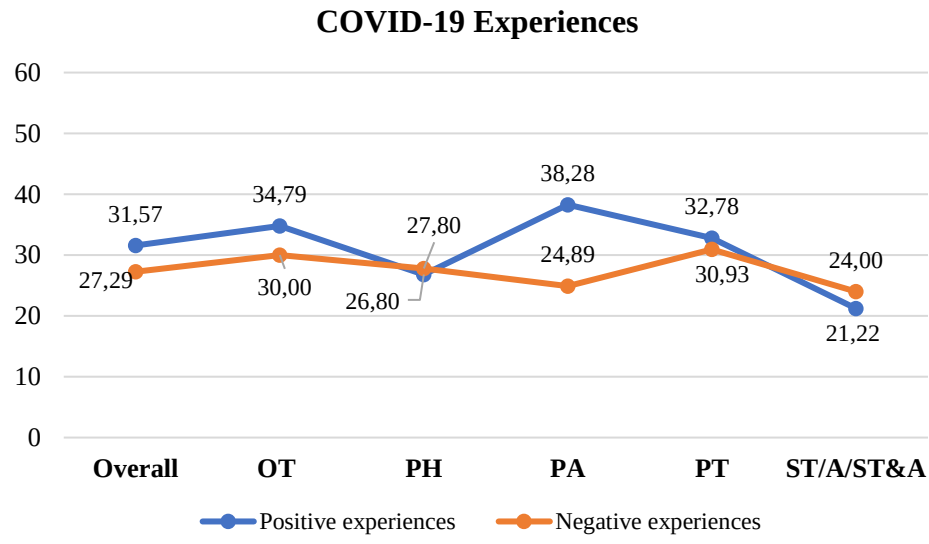
Overall, 42.31% and 51.92% of the participants agreed that they were asked to do work beyond their job description and had an increased workload respectively. Similarly, sizeable numbers of occupational therapists (56.25%), speech therapists and audiologists (53.33%); physiotherapists (44.44%) and pharmacists (44.00%) also indicated that they were asked to take on additional roles. A substantial percentage of occupational therapists (68.75%), physiotherapists (66.67%) and pharmacist assistants (50.00%) and pharmacists (44.00%) also agreed that their workload increased as a result of COVID-19.

3.4.2. Scores of COVID-19 experiences

Figure 3.4 shows the mean overall scores of the positive and negative COVID-19 experiences. The mean overall score of positive experiences for all participants was 31.57 out of 60.00 (SD=13.32). Pharmacist assistants had the highest mean score on the positive experiences during COVID-19 (38.28 out of 60.00; SD=12.35), while speech therapists and audiologists had the lowest mean score (21.22 out of 60.00; SD=10.26).

The mean score of negative experiences for all participants combined was 27.29 out of 60.00 (SD=11.47). Physiotherapists and occupational therapists had the highest negative experiences scores of 30.93 out of 60.00 (SD=12.70) and 30.00 out of 60.00 (SD=8.32) respectively. Speech

therapists and audiologists and pharmacist assistants had the lowest scores of 24.00 out of 60.00 (SD=9.84), and 24.89 out of 60.00 (SD=12.52) respectively.



OT=Occupational therapist

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PT=Physiotherapist

ST/A/ST&A= Speech therapist/Audiologist/Speech therapist and Audiologist

Figure 3.4: Mean score of COVID-19 experiences

3.5. Working conditions

The reported working conditions of the health care providers by professional category are shown in Table 3.3. All the participants were directly involved in patient care, except for 7 pharmacist assistants, 1 pharmacist and 1 speech therapist and audiologist. Of the 95 (91.35%) that indicated that they were directly involved in patient care, the majority of pharmacist assistants (56.52%) and pharmacists (87.50%) reported that they experienced a lack of medication for their patients in the preceding month of the survey. Greater proportions of physiotherapists (72.22%), speech therapists and audiologists (71.43%), pharmacists (58.33%), and occupational therapists (56.25%) also reported that their facility had experienced non-functioning equipment in the month preceding the survey. The majority of participants (74.04%) reported a heavy workload.

Table 3.3: Current working conditions by professional category

Working conditions		All participants combined (n; %)	Occupational therapist	Pharmacist	Pharmacist assistant	Physiotherapist	Speech therapist/ Audiologist/ Speech therapist and audiologist
Lack of medication in past month	No (%)	49 (51.58)	12 (75.00)	3 (12.50)	10 (43.48)	15 (83.33)	9 (64.29)
	Yes (%)	46 (48.42)	4 (25.00)	21 (87.50)	13 (56.52)	3 (16.67)	5 (35.71)
Lack of or non-functioning equipment in past month	No (%)	40 (42.11)	7 (43.75)	10 (41.67)	14 (60.87)	5 (27.78)	4 (28.57)
	Yes (%)	55 (57.89)	9 (56.25)	14 (58.33)	9 (39.13)	13 (72.22)	10 (71.43)
Workload	Appropriate (%)	27 (25.96)	2 (12.50)	6 (24.00)	12 (40.00)	2 (11.11)	5 (33.33)
	Heavy (%)	77 (74.04)	14 (87.50)	19 (76.00)	18 (60.00)	16 (88.89)	10 (66.67)

3.6. Job satisfaction scores

The job satisfaction scale had 5-Likert scale questions and the highest score for each question was 10. Figure 3.5 shows the mean satisfaction scores for all the participants combined. The highest mean score was on satisfaction with collegial relationships 7.35 out of 10 (SD=2.12) and the lowest was on satisfaction with the salary 4.58 out of 10 (SD=2.48).

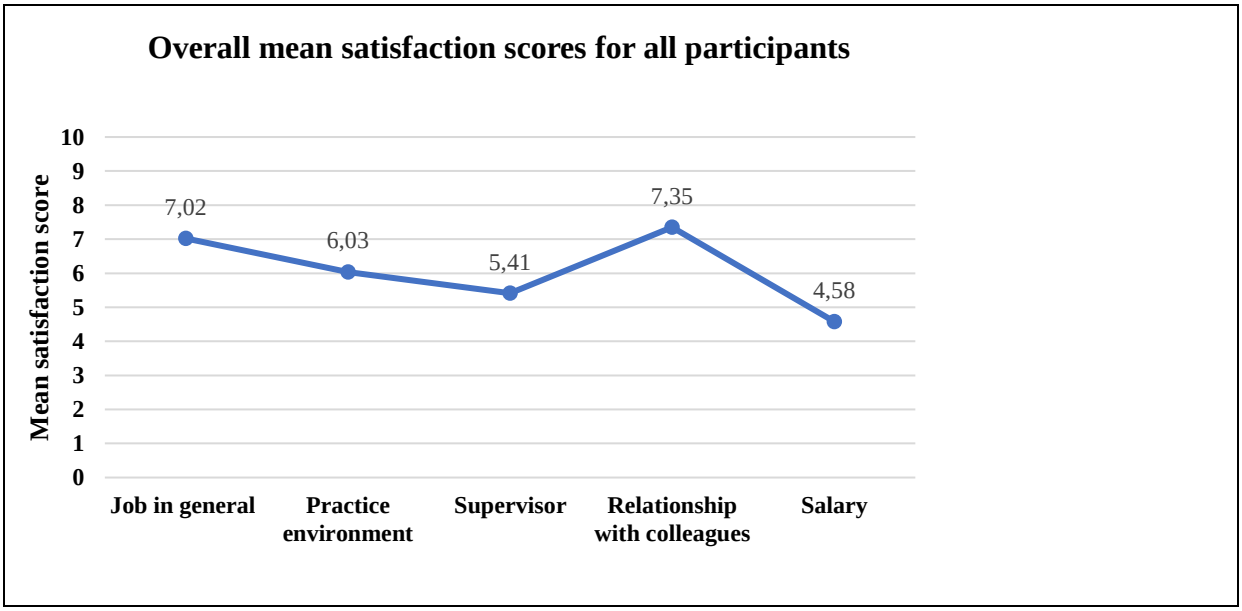
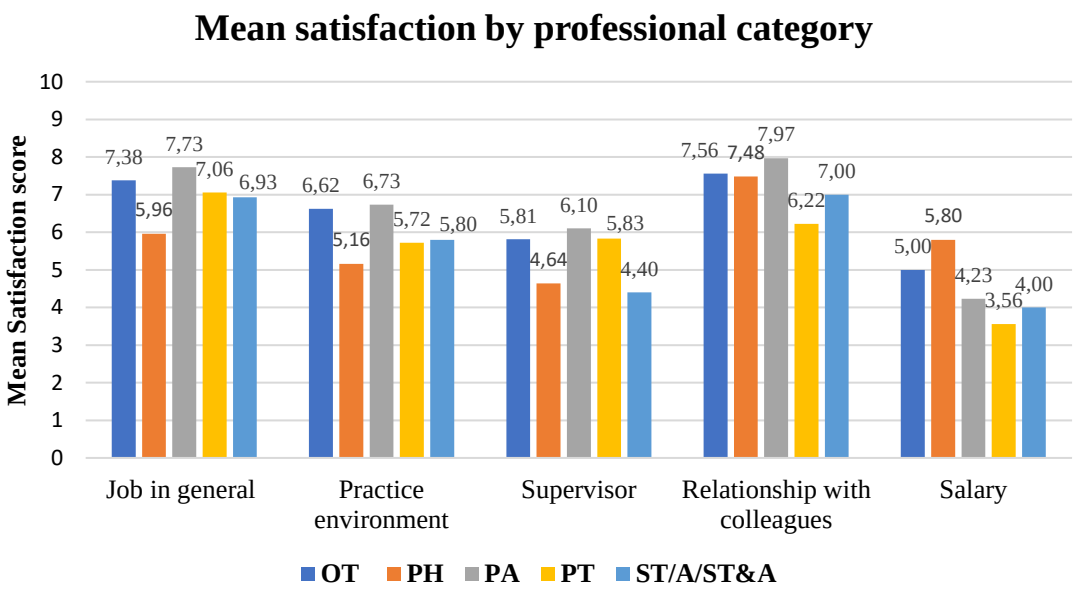


Figure 3.5: Mean satisfaction scores for all participants

Figure 3.6 depicts the mean satisfaction scores by professional category. Pharmacist assistants had the highest mean score in their satisfaction with the job in general 7.73 out of 10 (SD=1.53), clinical practice environment 6.73 out of 10 (SD=1.55), supervisor 6.10 out of 10 (SD=2.98) and relationship with co-workers 7.97 out of 10 (SD=2.06).

Pharmacists had the lowest mean score in their satisfaction with their job in general 5.96 out of 10 (SD=2.05) and clinical practice environment 5.16 out of 10 (SD=2.21), but they had the highest mean satisfaction score with their salary 5.80 out of 10 (SD=2.20). Physiotherapists scored the lowest on their satisfaction with colleague relationships 6.22 out of 10 (SD=2.76) and salary 3.56 out of 10 (SD=2.48).



OT=Occupational therapist

PH=Pharmacist

PA=Pharmacist assistant

PT= Physiotherapist

ST/A/ST&A=Speech therapist/Audiologist/Speech therapist and Audiologist

Figure 3.6: Mean satisfaction scores by professional category

3.7. Predictors of ProQOL

Several variables had statistically significant effects on the scores of compassion satisfaction, burnout, and secondary traumatic stress.

3.7.1. Predictors of compassion satisfaction

The three variables that had significant associations with compassion satisfaction are shown in Table 3.4. Community service was associated with a 4.73 unit decline in the compassion satisfaction score, and this was statistically significant [95% CI -7.60; -1.87 (p=0.001)]. In contrast, moderate and high scores of positive experiences during the COVID-19 pandemic were significantly associated with a 2.61-unit increase [95% CI 0.54; 4.68 (p=0.014)] and 2.68 unit increase [95%CI 0.40; 4.96 (p=0.021)] in compassion satisfaction scores respectively. The 'job in general' satisfaction score was also associated with an increase in compassion satisfaction. Having a moderate score predicted a 3.17 unit increase in the compassion

satisfaction score [95%CI 0.16; 6.18 (p=0.039)] while a high score was associated with a 7.26 unit increase in the compassion satisfaction score [95%CI 4.06; 10.47 (p<0.001)].

Table 3.4: Predictors of compassion satisfaction

Compassion satisfaction				
Variable		**β**	**95% CI**	**p**
Professional registration category	Internship	0	base	-
	Community Service	-4.73	-7.60; -1.87	**0.001***
	Full Registration	-2.06	-4.91; 0.79	0.155
Positive COVID-19 experiences	Low	0	base	-
	Moderate	2.61	0.54; 4.68	**0.014***
	High	2.68	0.40; 4.96	**0.021***
Job in general satisfaction score	Low	0	base	-
	Moderate	3.17	0.16; 6.18	**0.039***
	High	7.26	4.06; 10.47	**<0.001***
***p<0.05**				

3.7.2. Predictors of burnout

Burnout was significantly associated with several socio-demographic characteristics as well as the 'job in general' satisfaction score as shown in Table 3.5.

Being single was associated with a 2.02 unit increase in the burnout score [95% CI 0.07; 3.97 (p=0.042)] and being a fully registered health care provider was significantly associated with a 4.23-unit higher burnout score [95%CI 1.79; 6.67 (p=0.001)]. Direct involvement in patient care was similarly associated with a 3.24-unit higher burnout score [95% CI 0.22; 6.26 (p=0.036)] and reporting a heavy workload also predicted a 2.61-unit higher burnout score [95% CI 0.75; 4.48 (p=0.007)].

In contrast, working at Hospital 3 was associated with a 3.34-unit lower burnout score [95% CI -6.14; -0.54 (p=0.020)] and having served for more than 5 years in the public sector predicted a 2.54 unit decline in the burnout score [95% CI -4.75; -0.33 (p=0.025)]. Similarly, reporting a high 'job in general' satisfaction score predicted a 5.79 unit decrease in the burnout score [95% CI -9.28; -2.29 (p=0.001)].

Table 3.5: Predictors of burnout

Burnout				
Variable		**β**	**95% CI**	**p**
Marital status	Married/Engaged	0	base	-
	Single	2.02	0.07; 3.97	**0.042***
	Widowed/Divorced	2.54	-1.20; 6.28	0.180
Facility	Hospital 1	0	base	-
	Hospital 2	-1.47	-3.32; 0.37	0.116
	Hospital 3	-3.34	-6.14; -0.54	**0.020***
Professional registration category	Internship	0	base	-
	Community Service	1.47	-1.29; 4.23	0.293
	Full Registration	4.23	1.79; 6.67	**0.001***
Public sector tenure (categorised)	<5years	0	base	-
	5years or more	-2.54	-4.75; -0.33	**0.025***
Patient care	Yes	3.24	0.22; 6.26	**0.036***
	No	0	base	-
Workload	Appropriate	0	base	-
	Heavy	2.61	0.75; 4.48	**0.007***
Job in general satisfaction score	Low	0	base	-
	Moderate	-2.82	-5.92; 0.27	0.073
	High	-5.79	-9.28; -2.29	**0.001***
***p<0.05**				

3.7.3. Predictors of secondary traumatic stress

Four variables had significant interactions with the secondary traumatic stress score (Table 3.6). Being male was associated with in an increase in the secondary traumatic stress by 3.26 units [95% CI 0.36; 6.15 (p=0.028)], and full registration was associated with a 5.72-unit higher secondary traumatic stress score [95% CI 2.41; 9.03 (p=0.001)].

Conversely, working at Hospital 3 was significantly associated with a 4.76-unit lower secondary traumatic stress score [95% CI -8.82; -0.89 (p=0.017)]. Having served for more than 5 years in the public sector similarly predicted in a 4.11-unit decline in the secondary traumatic stress score [95% CI -7.11; -1.11 (p=0.008)].

Table 3.6: Predictors of secondary traumatic stress

Secondary Traumatic Stress				
Variable		**β**	**95% CI**	**p**
Gender	Female	0	base	-
	Male	3.26	0.36; 6.15	**0.028***
Facility	Hospital 1	0	base	-
	Hospital 2	-1.13	-3.76; 1.50	0.397
	Hospital 3	-4.85	-8.82; -0.89	**0.017***
Professional registration category	Internship	0	base	-
	Community Service	2.09	-1.75; 5.93	0.283
	Full Registration	5.72	2.41; 9.03	**0.001***
Public sector tenure	<5years	0	base	-
	5years or more	-4.11	-7.11; -1.11	**0.008***
***p<0.05**				

CHAPTER 4: DISCUSSION

4.1. Introduction

The COVID-19 pandemic has amplified the critical role of the health workforce in the response to crises, and the delivery of essential health services [82]. Evidence suggests that positive practice environments and the performance of the health workforce are inextricably linked [82]. Within this context, this MPH study with a good response rate of 74.60%, was one of the first studies to examine the professional quality of life (ProQOL) of pharmacists and rehabilitation therapists in three Gauteng public sector hospitals.

This chapter highlights the key findings of the study (Table 4.1), followed by a discussion in line with the study objectives and the existing literature on ProQOL, and its intersection with the COVID-19 pandemic, work experiences, working conditions, and job satisfaction (Sections 4.2 to 4.5). The concluding section 4.6 outlines the scholarly contribution of my MPH study.

4.2. Socio-demographic and occupational characteristics

The study participants at the three hospitals were spread almost equally between pharmacists (52.88%) and rehabilitation therapists (46.67%).

The mean age of the participants was 30.77 years (SD=9.08) indicating a young population of pharmacists and rehabilitation therapists. This is also demonstrated by the mean public sector tenure of 5.47 years. This is encouraging, as concerns have been raised about an ageing workforce of nurses in South Africa [83]. However, the youthful study participants could be because more than one third (36.54%) of participants were either in an internship or community service position. Furthermore, the youthful demographic could reflect the selection of the three hospitals, which are all teaching hospitals. Hence, this demographic might not be representative of other public sector hospitals in Gauteng.

Table 4.1: Key study findings

• The majority of participants were female (79.81%), single (63.46%) with a mean age of 30.77 years (SD=9.08) and a mean public sector tenure of 5.47 years (SD=6.61).
• The mean score of compassion satisfaction was 39.62 (SD=5.48). Predictors of compassion satisfaction were community service registration (β=-4.73; 95%CI -7.60; -1.87; p=0.001), moderate COVID-19 experiences score (β=+2.61;95% CI 0.54; 4.68; p=0.014) and high positive COVID-19 experiences score (β =+ 2.68; 95% CI 0.40; 4.96; p=0.021); moderate overall job satisfaction score (β =+ 3.17; 95% CI 0.16; 6.18; p=0.039) and high overall job satisfaction score (β =+ 7.26; 95% CI 4.06; 10.47; p<0.001). • The mean burnout score was 24.26 (SD=5.12). Predictors of burnout were being single (β=+2.02 95% CI 0.07; 3.97; p=0.042), full professional registration (β=+4.23; 95%CI 1.79; 6.67; p=0.001), direct involvement in patient care (β=+3.24; 95% CI 0.22; 6.26; p=0.036), and reporting a heavy workload (β=+ 2.61; 95% CI 0.75; 4.48; p=0.007). In contrast, protective factors against burnout included a public sector tenure of 5 years or more (β=-2.54; 95% CI -4.75; -0.33; p=0.025) and a high 'job in general' satisfaction score (β=- 5.79; 95% CI -9.28; -2.29; p=0.001). • The mean secondary traumatic stress score was a moderate score of 23.03 (SD=6.31). Predictors of secondary traumatic stress were being male (β=+ 3.26; 95% CI 0.36; 6.15; p=0.028), and full registration (β=+ 5.72; 95% CI 2.41; 9.03; p<0.001). In contrast, protective factors were working at Hospital 3 (β=- 4.76; 95% CI -8.82; -0.89; p=0.017) and a public sector tenure of 5 years or more (β=- 4.11; 95% CI -7.11; -1.11; p=0.008).
• With regard to positive COVID-19 experiences; 57.69% participants agreed that they received training on impact of COVID-19, 75.00% agreed that they received training on infection prevention and control and 53.85% agreed that they received support from their supervisor. Only 37.50% agreed that their well-being was considered in decision-making, 29.81% agreed that they felt appreciated by the hospital and 29.81% agreed that they received emotional support. • In terms of negative COVID-19 experiences; 51.92% of participants said they felt more stressed at work, 57.69% indicated that they did not receive personal protective equipment, 42.31% had to work overtime and 42.31 % were asked to do work beyond their job description and 51.92% said they had an increased workload as a result of the pandemic. However, only 24.04% indicated that they experienced more conflict among colleagues.
• 95 (91.35%) of participants indicated that they were directly involved in patient care. • Of these, 48.42% reported a shortage of medication, and 57.89% reported lack of or non-functioning equipment in the month preceding the survey. • 74.04% of participants reported a heavy workload.
• Satisfaction scores with the job in general, practice environment and relationship with colleagues were above 6 out of 10 for all participants combined, with the highest being satisfaction with collegial relationships (7.35 out of 10; SD=2.12). • Satisfaction with the supervisor and salary scored 5.41 (SD=2.81) and 4.58 (SD=2.48) out of 10 respectively.

This study found that the majority of pharmacists and rehabilitation therapists (83.00%) in the three hospitals were women, who also comprised 100.00% of speech therapists and audiologist. This demographic is in line with global trends, which show that 70.00% of health care providers are women [84]. Although the study found that men had a higher mean secondary traumatic stress score (25.05; SD=6.95) compared to women (22.52; SD=6.07), the Working for Health action plan underscores the importance of ongoing efforts in the health system towards gender equality, the creation of supportive environments, and appointment of women in leadership and decision-making roles [82].

4.3. Self- reported professional quality of life

This study found moderate mean scores of compassion satisfaction (39.62; SD=5.48), burnout (24.26; SD=5.12) and secondary traumatic stress (23.03; SD=6.31). Although there is a dearth of research on the ProQOL of pharmacists and rehabilitation therapists to enable a direct comparison, the findings of this study concur with those of other ProQOL studies in South Africa [20, 22, 46, 61], as well as studies conducted during the pandemic in India [58], Tunisia [60] and Iran [71]. However, the level of compassion satisfaction found in this study differs from the high level reported in the USA and Spain during the pandemic [52, 53, 62] which has been attributed to the perceived social recognition and acknowledgement of health care providers [69].

There could be two reasons for this difference. Firstly, the MPH study examined the ProQOL of a multidisciplinary group of health care providers; five distinct groups, with different lines of work, and working in three different hospitals. This creates variability in their work contexts, experiences, and patient profiles. This complex mix of factors could have influenced the ProQOL scores, shown by the study finding that the difference observed in the mean compassion satisfaction and burnout scores across the professional categories was statistically significant (p=0.033).

Secondly, the structural and systemic factors of health systems in LMICs, are different to those in HICs [6]. For instance a review done by Manyisa and Van Aswegen found that workload, the burden of HIV and AIDS, shift work, long hours of work, poor infrastructure, inadequate resources and shortages of staff negatively impacted working conditions in public sector

hospitals in most LMICs [85]. These factors could have diminished the positive impact of social recognition in the South African context, thus influencing the reported ProQOL in this study.

Among the socio-demographic variables, working at Hospital 3 predicted a 3.34-unit lower burnout score (p=0.020) and a 4.85-unit lower secondary traumatic stress score (p=0.017). The reason for this could be the size of Hospital 3 as well as the population they serve. Hospital 3 is the smallest of the three hospitals and is also a mother and child hospital. It therefore provides a work context that is unique and different from the other two hospitals. Previous research has not investigated the effect of hospital size on ProQOL, but rather the level of health care services offered [7, 37, 44, 64]. However, the smaller Hospital 3 in this study possibly provided a more close-knit community, thus creating a more supportive environment and promoting a sense of belonging for the health care providers. Furthermore, the volumes of patients at Hospital 3 attend are lower compared to the other two hospitals, reducing the workload burden. In addition, the participants at Hospital 3 might also experience more supportive management. These factors could explain the protective effect against burnout and secondary traumatic stress. Nonetheless, more research is needed to explain the lower burnout and secondary traumatic stress scores at Hospital 3.

This study also found that gender had significant interactions with secondary traumatic stress; being male was associated with a 2.92-unit higher secondary traumatic stress score [95% CI 0.36; 6.15 (p=0.028)]. This finding is similar to a study in Saudi Arabia [13], but different from the findings from other LMICs [58-60] and South Africa [21] where women have reported higher secondary traumatic stress. This finding could be explained by the tendency of African men to self-adjust rather than seek social support when faced with difficult situations and emotional stress, as well as the cultural expectation that men should suppress their emotions and avoid seeking help for mental health concerns [86].

Being single predicted a higher burnout score, supporting results from a study in Spain which found that single participants had higher mean compassion fatigue scores [14]. In the same Spanish study, burnout was also found to be negatively associated with perceived social

support [14]. Single people may have fewer social connections or support systems, which can lead to feelings of isolation and loneliness. This may make it harder to cope with work-related stressors. Additionally, single people may also feel pressure to work longer hours or take on additional responsibilities because they do not have family obligations or commitments. This can lead to a lack of work-life balance and increase the risk of burnout. Furthermore, the effect of the lack of social support during the pandemic cannot be ruled out, given the increased isolation and loneliness that characterised the pandemic [87], thus affecting single health care providers adversely.

Being registered for community service was associated with a lower compassion satisfaction score ($p=0.001$). Although I could not find comparable studies, the lower compassion satisfaction in this group could be attributed to the young age and inexperience of this group. This is because community service in South Africa is compulsory for newly qualified health care providers prior to full registration to practice [88]. Greater emotional exhaustion has also been reported in younger American emergency department nurses [55]. This is because younger and less experienced providers tend to have limited coping strategies for work-related challenges [60] and may be more prone to experiencing a low sense of accomplishment [54], leading to lower compassion satisfaction.

Fully registered health care providers were more likely to experience burnout and secondary traumatic stress ($p=0.001$ and $p<0.001$ respectively). The explanation for this could be because the majority of participants in the current study (64.42%), and thus a sizeable number of the fully registered health care providers, had a public sector tenure of less than 5 years. Therefore, the high burnout and secondary traumatic stress in this group may be because of insufficient experience to deal with the responsibilities and pressure that come with their more established roles. A study done in China found that being a senior staff nurse was associated with higher burnout and secondary traumatic stress [70]. Similarly, higher burnout was also reported by Tunisian doctors and nurses with less than 5 years of experience [60].

The low compassion satisfaction and higher burnout and secondary traumatic stress of younger, less experienced health care providers is concerning as it could influence their decisions to stay

in the South African public health sector. South Africa is already faced with the challenge of maldistribution of health care providers between the public and private sectors [89], in addition to the brain drain to more developed countries [90], as health care providers seek for better opportunities.

A public sector tenure of more than 5 years was associated with lower burnout and lower secondary traumatic stress scores in this study. This could be because of the more experienced health care providers' knowledge, expertise and ability to cope better with difficult situations and work-related stress [5]. These results differ from the positive correlation found between burnout and seniority in Israeli midwives [40], high compassion fatigue and burnout reported by Chinese oncology nurses with more years of experience [44], and the high burnout in more experienced Indian audiologists and speech language pathologists [54]. However, a study among American oncology nurses found lower secondary traumatic stress in more experienced nurses [5]. Lower burnout was also reported by experienced American emergency department nurses [55] and Australian critical care nurses [37].

4.4. ProQOL and COVID-19 experiences

This MPH study found that moderate and high scores of positive COVID-19 experiences were associated with higher compassion satisfaction. Positive COVID-19 experiences included training on the impact of the pandemic, training received on infection control, and supervisor support, and obtained high percentage agreement of 57.69%, 75.00% and 53.85% respectively. In the current study, a higher score of positive COVID experiences was associated with a higher compassion satisfaction score. This could be because training helped health care providers feel more confident and competent in their ability to protect themselves thus enhancing their feelings of safety and allowing them to focus on providing care to their patients. Supervisor support could have also enhanced job satisfaction and given the healthcare providers a sense of fulfilment in their work. Other studies in Spain, the USA, Taiwan, and China have also shown that relevant training and supervisor support could mitigate the negative effects of compassion fatigue and enhance compassion satisfaction [14, 44, 45, 55].

However, only 37.50% of the participants agreed that their well-being was considered in decision-making, and 29.81% agreed that they felt appreciated and that they received emotional support. Speech therapists and audiologists had the lowest mean score (21.22 out of 60; SD=10.26) of positive experiences during the pandemic. Further research is needed on why this health professional category experienced the COVID-19 pandemic in such a negative manner.

One in two (51.92%) of participants agreed with a statement that said they felt more stressed at work during the pandemic. Other studies have also found that the pandemic had negative effects on the mental health of health professionals [91]. Of concern is that the majority (57.69%) of participants agreed with a statement that they did not receive personal protective equipment during the pandemic. Although there were variations, the reported lack of personal protective equipment ranged from 20.00% of speech therapists and audiologists to 73.33% of pharmacist assistants.

Although this MPH study did not demonstrate statistical significance of the relationship between ProQOL and the afore-mentioned factors, other studies have found that the work environment, including communication, collaboration, and decision-making, adversely affect the ProQOL of health professionals [7, 12]. Additionally, the lack of personal protective equipment may increase stress and anxiety levels in health care workers who may feel that they are not adequately protected while working, and they may feel that they are at higher risk of contracting COVID-19, increasing their fear of infecting family members and loved ones [92], and this can negatively affect their ProQOL [93]. Hence, these issues need to be addressed.

4.5. ProQOL, working conditions and job satisfaction.

The majority of participants (91.35%) indicated that they were involved in direct patient care, with 48.42% of these reporting a lack of medication, and 57.89% reporting the lack of or non-functioning equipment in the month preceding the survey. The majority of participants (74.04%) reported a heavy workload. This is concerning as health care providers who are directly involved in patient care are prone to compassion fatigue as a result of constant exposure to the suffering of patients [51, 63, 66]. Although there is insufficient research on the link

between ProQOL and the availability of resources, one study found that resource adequacy may contribute to gratification and fulfilment in health care providers [94], which in turn may increase compassion satisfaction. Conversely, a lack of resources can lead to lack of job satisfaction and poor professional fulfilment [95], as well as burnout [47].

This MPH study found that direct involvement in patient care and reporting a heavy workload predicted higher burnout ($p=0.036$ and $p=0.007$ respectively). The work burden of the health care providers seems to have increased as a result of the COVID-19 pandemic, with 51.92% reporting an increased workload, 42.31% reporting that they had to work overtime and 61.11% of the physiotherapists reported that they had to work overtime. As COVID-19 primarily manifested as respiratory conditions, this could explain the increased reported work burden of physiotherapists [96].

The heavy workload experienced by health care providers in this study was exacerbated by the resource constraints that included a lack of medication and a lack of or non-functioning equipment reported by those at the frontline of service delivery. Other studies have also shown that high workloads may cause exhaustion in health care providers leading to burnout [7, 85]. Among Chinese frontline nurses, work pressure was found to be associated with increased compassion fatigue [70] while Canadian frontline hospital palliative care workers reported higher compassion fatigue and burnout [63]. In a survey of American pharmacists, workload was cited as one of the top four main drivers of burnout [52].

The study also found that the highest satisfaction score of 7.4 out of 10 was for collegial relationships, whereas one of the lowest scores was for the supervisor of 5.41 out of 10. This is noteworthy as previous research among American nurses has shown the importance of team cohesion in promoting compassion satisfaction and buffering against compassion fatigue [65]. Among Chinese oncology nurses, support from supervisors or colleagues was protective against burnout [44], while positive collegial relationships predicted higher compassion satisfaction among South African termination of pregnancy providers [21]. Supportive supervision constitutes a critical component of an enabling work environment, and can be addressed at individual unit and/or hospital level [82].

Satisfaction with salary obtained a score of 4.58 out of 10. Remuneration is an important factor in the ProQOL, of health care providers as it may have an influence on their motivation and job satisfaction [97]. Low remuneration could be a source of financial insecurity [97], which in turn may adversely affect the mental well-being of health care providers. In Iran, a study found that a higher salary was associated with increased compassion satisfaction among nurses and doctors [41]. However, remuneration is a broader public sector issue, which cannot be addressed at individual hospital level.

Although the practice environment is part of the overall job, this study did not find a statistically significant relationship between ProQOL and satisfaction with the practice environment, or satisfaction with any of the other individual elements of collegial relationships, supervisor, and remuneration. However, compassion satisfaction and burnout had significant interactions with participant satisfaction with the job in general. A moderate and high job satisfaction score predicted higher compassion satisfaction ($p= 0.039$ and $p<0.001$ respectively) and a high job satisfaction score predicted lower burnout ($p=0.001$). This was also found in studies among American acute care nurses [56], Iranian nurses and doctors [41] and Ugandan midwives [98]. This is because health care providers who are satisfied with their job, are more likely to feel a sense of fulfilment which may offset the negative effects of burnout [99], thus promoting a good ProQOL.

4.6. Scholarly contribution of the MPH study

Hitherto, the majority of studies have focused on the ProQOL of nurses and doctors who are the majority of frontline health service providers. My MPH study makes an important scholarly contribution to the discourse on the ProQOL of pharmacists and rehabilitation therapists. Although the findings from this study were in line with other studies on ProQOL, it adds to the existing knowledge in several ways. Firstly, the study focused on pharmacists and rehabilitation therapists in the public health sector, who tend to be neglected as their numbers are small, compared to those of nurses and doctors. Secondly, my study provides empirical evidence on the factors that influence each of the sub-components of ProQOL, namely compassion satisfaction, burnout, and secondary traumatic stress.

Thirdly, the study also generates new knowledge on how the experiences during the COVID-19 pandemic influenced the ProQOL of the study population. As the pandemic was a unique event, the study was both fortuitous and novel. The study findings provide an important ProQOL baseline, which could serve to assess the ProQOL of health care providers, specifically pharmacists and rehabilitation therapists at other hospitals in the Gauteng Department of Health and in South Africa. As far as I know, this is one of the first studies that has examined the ProQOL of pharmacists and rehabilitation in South Africa using the ProQOL scale. This provided the opportunity to validate this tool in the South African context, and could serve as a basis for contextual and cross-cultural comparisons in future ProQOL research. Lastly, the study contributes to the evidence recommended in the Working for Health action plan for 2022 to 2030 [82].

The final chapter of my research report contains recommendations that emerged from my study findings and makes suggestions for future research.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The study found moderate levels of compassion satisfaction, burnout, and secondary traumatic stress, suggesting a mixed picture of ProQOL of the study population of pharmacists and rehabilitation therapists. Although the ideal would be high compassion satisfaction scores, and low burnout and secondary traumatic stress scores, such a perfect situation is both unrealistic and unachievable. However, the study has identified positive factors which could be built on and enhanced, as well as negative factors which need to be addressed.

5.2. Recommendations

A safe and healthy working environment is more likely to reduce conflicts in the workplace, and improve the performance, productivity and retention of staff [100]. Although this study identified systemic factors which cannot be changed overnight (such as lack of, or non-functioning equipment), the strategies described below could be implemented to create or improve the hospital practice environments.

Consequently, the recommendations are centred on fostering supportive management and positive practice environments within a resource-constrained setting such as the South African public health sector. As the study took place at the height of a global pandemic, the recommendations also refer to the implementation of strategies under such contexts of uncertainty and crises.

Table 5.1 provides a summary of the recommendations, followed by a short description of each recommendation.

Table 5.1: Recommendations on enhancing professional quality of life

Recommendation	Individual Health Care Provider	Hospital or Clinical Managers	Gauteng Department of Health
Advocate for adequate resources		X	X
Implement employee wellness programmes	X	X	X
Communication and collaboration		X	X
A positive work culture built on teamwork	X	X	X
Workload management	X	X	
Mentorship for younger professionals	X	X	
Peer support groups	X	X	
Career development opportunities		X	X
Implementation of non-financial incentives		X	X

5.2.1. Advocate for adequate resources

Hospital managers should advocate for additional finances to the Gauteng Department of Health to enable the employment of staff as well as the procurement of equipment, and medication. This will ensure that frontline health care providers can perform their duties optimally and provide quality patient care. This is important as some of the occupational stress experienced by health care providers may be related to resource constraints.

The provision of personal protective equipment during pandemics is non-negotiable and will help to alleviate the stressful effects of being a frontline health worker with heavy workloads during a disaster. Additionally, when providers feel safe, they are likely to focus on helping their patients, thus enhancing their compassion satisfaction.

5.2.2. Implement employee wellness programmes

The implementation of health and safety, and employee wellness programmes is mandatory in all workplaces, including the public health sector [101]. Although training during the COVID-19 pandemic seems to have been satisfactory, the pandemic has also highlighted the negative mental health consequences for frontline health workers.

Hospital management should ensure that health and safety measures, as well as the employee wellness programmes of the Gauteng Department of Health [102] are implemented. This should be done in collaboration with clinical supervisors and the health care providers. Furthermore, non-governmental organisations (NGOs) such as Lifeline Johannesburg and The Central Gauteng Mental Health Society provide free pamphlets and telephone consultation [103, 104], hence a simple step could be the distribution of appropriate materials and contact details of relevant NGOs.

5.2.3. Communication and collaboration

Open communication channels should be encouraged between management and staff, so that managers can provide guidance and updated information during a pandemic. Ideally, these communication channels or forums should be established during non-crisis situations. Communication can be enhanced by optimising existing technology, such as holding virtual meetings. This will ensure that health care providers are kept informed of the relevant actions being taken for their protection, and that they understand their role in the mitigation of public health crises. Effective communication is also essential among the health care providers as it may enable them to work together cohesively. This may alleviate some of the negative mental effects associated with working under difficult circumstances.

The primary role of hospital managers is to implement the vision of the Gauteng Department of Health by overseeing and coordinating the activities of the health workforce and hospital operations [105]. Hospital managers should ensure collaboration of management with health care providers and their participation in decision-making is imperative, particularly those decisions that affect them. This could be done by collaborating closely with clinical supervisors, and representative organisations of health care providers, such as professional associations and/or unions.

At least annually, a meeting or event could be organised that involves frontline health care providers and that gives them the opportunity to voice their concerns and challenges, and to suggest recommendations for change. This will ensure that they have a voice in decision-

making. Such an event or meeting could also be used to acknowledge and thank health care providers for the work that they do, thus contributing to their compassion satisfaction.

5.2.4. A positive work culture built on teamwork

In this study, health care providers valued their relationships with their colleagues. Management should capitalise on this value attached to inter-professional collaboration and ensure that all team members feel valued and supported. Importantly, the combination of enhanced communication, collaboration, voice in decision-making and teamwork could create a virtuous cycle, with positive effects for patient care at these hospitals, and for the well-being of the health workforce.

5.2.5. Workload management

Management should assist health care providers to manage their heavy workloads effectively through prioritising tasks based on importance and urgency, effective time management, delegation of tasks based on capacity and interests, as well as assessing and adjusting workloads to ensure that the providers do not become overwhelmed. Innovation should be encouraged among health care providers, and they should be allowed to suggest new approaches and solutions to simplify tasks and tackle some of the challenges they face in the delivery of health care.

5.2.6. Mentorship for younger professionals

Younger health care providers with little experience may have limited personal resources to handle and cope with job stressors. Mentorship is a proven strategy for improving job satisfaction and maximising the potential of employees in organisations [106]. Managers could organise mentoring circles which bring together a group of health care providers with different experience levels to share knowledge, experiences and insights on how to navigate some of the common challenges they face in their daily work. This could also contribute to improving the skills, knowledge, confidence, and job satisfaction of the young and less experienced, thus enhancing their ProQOL.

5.2.7. Peer support groups

Colleagues and peers have been shown to be the first line of support for most health care providers as such support is usually easily and immediately accessible [107]. Although all health care providers could benefit from peer support groups, these support groups might benefit male and single health care in particular. The peer support groups could provide a safe and supportive space for health care providers to share their experiences and feelings with their peers thus reducing feelings of isolation, increasing social support, and improving mental and emotional well-being. In the case of men, targeted ProQOL campaigns to address the cultural masculine norms which make men internalise their emotions rather than seek help may also encourage them to seek support**.**

The peer support groups could also include awareness of, or teaching on, self-care strategies such as getting enough sleep, regular exercise, healthy eating, reducing alcohol intake, practising breathing and relaxation techniques, practising self-awareness, and monitoring one's workload [108]. The combination of peer support and self-care activities could contribute to the ProQOL of health care providers and enhance their compassion satisfaction.

5.2.8. Career development opportunities

Experienced health care providers with longer tenure in the public health sector reported positive ProQOL, notably lower burnout and lower secondary traumatic stress. Customised career development opportunities could assist in maintaining or improving these lower scores. Such opportunities could include job rotations, skills development workshops and conferences, and specific training programmes based on professional need and/or interest.

5.2.9. Implementation of non-financial incentives

Recognition and appreciation are effective ways to acknowledge the hard work, dedication, and commitment of health care providers. Recognition awards for areas like service excellence, leadership and innovation in health care may act as powerful motivators for health care providers, increasing their job satisfaction, and encouraging them to continue delivering quality health care services. These can be implemented at hospital level, and do not need provincial

policies. Such awards could enhance compassion satisfaction and reduce burnout and secondary traumatic stress.

5.3. Recommendations for future research

This study identified a number of factors associated with the compassion satisfaction, burnout, and secondary traumatic stress of pharmacists and rehabilitation therapists. In light of the proposed South African NHI, the ProQOL of all health care providers is of paramount importance as the necessary health care reforms cannot be achieved without a motivated and healthy workforce.

Firstly, ProQOL research among pharmacists and rehabilitation therapists should employ larger, more diverse samples and mixed, complementary research methodologies to confirm the predictors of compassion satisfaction, burnout, and secondary traumatic stress.

There is a need for more research on compassion satisfaction, or the positive aspects of working as a health care provider, thus contributing to the implementation of enabling work environments. There is also an emerging body of literature on burnout using other tools such as the Maslach Burnout Index, Well Being Index, Copenhagen Burnout Inventory, Burnout Scale Inventory, although these studies have mainly been done in HICs [14, 65, 109-126]. Hence, further studies should investigate and compare compassion satisfaction, burnout and secondary traumatic stress using these other instruments together with the ProQOL tool.

The difference observed in the ProQOL scores of health care providers at Hospital 3 is an interesting finding. This warrants future comparative studies that compare the ProQOL of health care providers among types of hospitals (central, regional, district or specialised ones); between hospitals and primary health care clinics, and between public and private health care facilities. Such research will help to identify the unique stressors and challenges faced by health care providers in different work settings in South Africa, thus enabling the development of more targeted interventions.

The fact that men had higher secondary traumatic stress than women in this study also warrants further research, as does the finding that single health care providers experienced higher burnout in this study. The former may suggest the existence of under-recognised mental health issues among men in the health workforce which need to be addressed. Future research should consider the ways in which gender norms and expectations shape the experiences of male health care providers as well as their help-seeking behaviour, and how this impacts their ProQOL. Future ProQOL research for the latter could investigate the role of mediating factors such as work-life imbalance and perceived social support in the relationship between marital status and ProQOL.

Due to the variability observed in the COVID-19 experiences among the professional categories in this study, qualitative studies should explore why speech therapists and audiologists experienced the pandemic in such a negative manner.

This study found that there was a positive association between longer public sector tenure and compassion satisfaction. As this was a cross-sectional study, the direction of association is unclear, namely whether increased compassion satisfaction leads to longer tenure in the public sector, or the reverse. Hence, further research should examine the relationship between compassion satisfaction and public health sector retention, using more robust study designs such as case control studies.

As this MPH study was a cross-sectional study, longitudinal, mixed methods studies could reveal the impact of working conditions, job satisfaction, supervisor satisfaction as well as satisfaction with the practice environment, salary and colleague relationships on ProQOL over time, and how interventions aimed at improving these factors can lead to better ProQOL for health care providers, and a sustainable public health care system.

5.4. Conclusion

The health system's backbone and its most vital, valuable asset is the health workforce, as they determine its functioning and effectiveness [82]. A mentally healthy workforce, measured through inter alia the ProQOL tool, is thus very important as it contributes to optimal patient and population health outcomes and the performance of the entire health system.

This study examined the ProQOL of South African pharmacists and rehabilitation therapists in three public sector hospitals in Gauteng. The study found that the ProQOL of pharmacists and rehabilitation therapists is influenced by a combination of individual, workplace, and health system factors, suggesting the need for a multifaceted approach to optimise their contribution to the achievement of UHC. Such an approach should include provincial health, hospital, management, and peer support as well as self-care activities.

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APPENDIX 1: Plagiarism declaration report

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

FACULTY OF HEALTH SCIENCES

PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Nonkazimulo Moyo (Student number: 869128) am a student registered for the degree of Master of Public Health 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: Moyo Date: 9 June 2023

APPENDIX 2: Ethics clearance certificate

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

Office of the Deputy Vice-Chancellor (Research and Postgraduate Affairs

TO:	Ms N Moyo School of Public Health Centre for Health Policy Medical School University E-mail: 869128@students.wits.ac.za
CC:	Supervisor: Professor L Rispel and Dr P Ditlopo <Laetitia.Rispel@wits.ac.za> and <HREC-Medical Research Office@wits.ac.za>
FROM:	Mr Iain Burns Human Research Ethics Committee (Medical) Tel: 011 717 1252 E-mail: Iain.Burns@wits.ac.za
DATE:	2021/01/06
REF:	R14/49
PROTOCOL NO:	**M200649** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)
PROJECT TITLE:	A survey of the professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng, South Africa

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

R49 Ms N Moyo

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M200649

NAME: (Principal Investigator)	Ms N Moyo
DEPARTMENT:	School of Public Health Centre for Health Policy Medical School University
PROJECT TITLE:	A survey of the professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng, South Africa
DATE CONSIDERED:	2020/06/26
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Professor L Rispel and Dr P Ditlopo
APPROVED BY:	Dr N Naran, Co-Chairperson, HREC (Medical)
DATE OF APPROVAL:	2021/01/06

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **June** and therefore reports and re-certification will be due in the month of **June** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Moyo
Signature of Principal Investigator

07 Jan 2021
Date

APPENDIX 3a: Charlotte Maxeke Hospital Ethics Approval

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL (CMJAH)
Clinical Department

Enquiries: Ms. TT Mahlangu
Tel: (011) 488-3365
Email: Thandi.Mahlangu4@gauteng.gov

Physical Address: Room 262A,17 Jubilee, Parktown 2193 Postal Address: Private Bag x39, Johannesburg 2000

09 December 2020

Ms N. Moyo

STUDY TITTLE: A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPIST AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

Department: Pharmacy

No.	DOCUMENTS REQUIRED FOR STUDENT RESEARCH	TICK
1.	Covering letter from the APPLICANT/COMPANY	X
2.	Protocol	X
3.	Support letter from the Head of Department	X
4.	Ethics clearance certificate	
5.	NHRD Registration	
	DOCUMENTS REQUIRED FOR ANY COMPANY RESEARCH	
1.	Covering letter from the APPLICANT/COMPANY	
2.	Research Protocol	
3.	Support letter from the Head of Department	
4.	Ethics clearance certificate	
5.	Approval from the Department of Health	

Checked BY: (Clinical) Ms. T.T Mahlangu **Signature:** _____ **Date:** _____

Checked BY: (CEO's office) Mr. S. Zwane **Signature:** _____

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL (CMJAH)
Office of the Clinical Director

Enquiries: Ms. TT Mahlangu
Tel: (011) 488-3365
Email: Thandi.Mahlangu4@gauteng.gov

Physical Address: Room 262A,17 Jubilee, Parktown 2193 Postal Address: Private Bag x39, Johannesburg 2000

09 December 2020

Dear Ms N. Noyo

STUDY TITTLE: A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPIST AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

Permission to conduct the above-mentioned study is provisionally approved. Your study can only commence once Ethics approval is obtained. Please forward a copy of your Ethics Clearance Certificate as soon as the study is approved by the Ethics Committee. This will enable the CEO's office to grant you the final approval to conduct the study.

Supported/Not Supported

Dr PN Africa
Acting Clinical Director
Date: 09/12/2020

Approved/Not Approved

Ms. G Bogoshi
Chief Executive Officer
Date: 2020/12/10

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Pharmacy
Enquiries: Ms. A.A Animashahun
Tell: 011-488 3926
Email: Abiola.Animashahun@gauteng.gov.za
DATE: 09th December 2020

Ms Gladys Bogoshi
Chief Executive Officer
CMJAH

A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPIST AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

This is to confirm that we are aware that Ms Nonkazimulo Moyo will be conducting the above-mentioned study and we are in support of the study.

Regards,

Ms. AA Animashahun
Date: 2020-12-09

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

University
of the Witwatersrand
Johannesburg

Department of Surgery:

Charlotte Maxeke Johannesburg Academic Hospital

Post net Suite #235, Private Bag x2600, Houghton 2041 • Telephone +27 (0)11 488-3373 • Fax +27 (0)11 488-4322 • Email: Thembekile.mthembu@wits.ac.za

04th December 2020

Ms. G Bogoshi
Office of the CEO
Charlotte Maxeke Johannesburg Academic Hospital

Dear CEO

Re: Research Project:

Good day. This is to inform you that Nonkazimulo Moyo is planning to conduct a study titled**: A survey of the professional quality of life of pharmacists and rehabilitation therapists at three public sector hospital in Gauteng, South Africa.**

The CMJAH research committee is aware of the study and fully support it. There will be no cost implication to the Hospital. Nonkazimulo Moyo will applied for ethical approval from the Human Ethics Committee of University of the Witwatersrand.

Yours sincerely

Prof T E Luvhengo
Clinical Head of Surgery Department
Charlotte Maxeke Johannesburg Academic Hospital

APPENDIX 3b: Helen Joseph Hospital Ethics Approval

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Gauteng Department of Health
Helen Joseph Hospital
Enquiries: Dr. M. Mukansi
Research Committee: Chairperson
Tel :(011) 489-0306/1087
Fax :(011) 489 1038
E mail:Murimisi.mukansi@wits.ac.za

20 November 2020

To whom it may concern

Subject: HELEN JOSEPH HOSPITAL RESEARCH COMMITTEE APPLICATION

PROTOCOL TITLE: A survey of the professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng, South Africa.

Protocol Ref No: MS Nonkazimulo Moyo

Ethics Clearance: Pending

Principal investigator: MS Nonkazimulo Moyo

Department: Helen Joseph Hospital

Committee Recommendations
The Committee is giving you Conditional access while awaiting the final ethical clearance certificate from the University of Witwatersrand HREC.

It is the duty of the researcher to collect the data to the relevant department after the Research Committee approved the study.

Dr. M. Mukansi
Chairperson of HJH Ethic and Research Committee

APPENDIX 3c: Rahima Moosa Hospital Ethics Approval

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

RAHIMA MOOSA MOTHER AND CHILD HOSPITAL

Enquiries : Karen Marshall
Tel : (011) 470 9284
Fax : 086 553 4623
Email : Karen.Marshall@wits.ac.za

TITLE OF RESEARCH PROJECT:
"A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPISTS AT TWO PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA"

NAME OF SUPERVISOR:
PROFESSOR LAETITIA RISPEL

NAME OF RESEARCHER:
MS. NONKAZIMULO MOYO
Centre of Health Policy
University of the Witwatersrand

NHRD REF NO: GP_202009_037

Dear Ms. Moyo,

Permission is granted for you to conduct the research as indicated in the title above.

The terms under which this permission is granted is contained in the Researcher Declaration form that you have signed. Failure to comply with these conditions will result in the withdrawal of such permission.

It is crucial for you to inform the Research Coordinator, Karen Marshall of the actual start and end dates of your study. This could be done by e-mail.

Should the study commence more than 12 months after receipt of this approval letter you will have to go through the process of applying again.

You are strongly advised to keep a signed copy of the declaration form so as to ensure that the terms of this agreement are complied with at all times.

Yours sincerely,

DR FREW BENSON
ACTING CHIEF EXECUTIVE OFFICER
2020:03:02

ADDRESS: Cnr FUEL & OUDSTHOORN STREET CORONATIONVILLE 2093 / PRIVATE BAG X20 NEWCLARE 2112 JHB

APPENDIX 4: Participant Information Sheet

A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPISTS AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

Good day,

My name is Nonkazimulo Moyo. I am a student from the University of the Witwatersrand School of Public Health. I am conducting research to investigate the professional quality of life of pharmacists and rehabilitation therapists, and I would be very grateful if you would agree to participate in the study. The questionnaire will only take about 15 minutes to complete.

Why am I doing this study?

I am conducting the study as partial fulfilment for my post-graduate studies. In this study, I wish to investigate the professional quality of life of pharmacists and rehabilitation therapists.

Did I get permission to conduct the study?

Permission to conduct the study was obtained from the Wits University Human Research Ethics Committee, the Gauteng Provincial Department of Health as well as the hospital management.

What am I asking you to do?

I invite you to participate in a survey. Participation is voluntary and you are free to withdraw from the survey at any time. There is no wrong or right answer, all answers and ideas are valuable and appreciated, and will add important information to the study. You are also free to refuse to answer any questions you might feel uncomfortable to answer.

How do I know that the information you provide will not be shared with other people?

The information you provide in the survey will be kept confidential. All the questionnaires will not bear your name or any personal information. Access to all material will be strictly limited to me and my supervisors only.

Are there any benefits or risks of participating in the study?

There is no compensation for participating in the study, participation is voluntary. There will also be no negative consequences if you refuse to participate.

Although the questions relate to your professional quality of life, some of the questions may trigger unpleasant memories or feelings about certain incidents. I would like to give you the contact numbers of organisations that could assist you should you experience any distress or discomfort.

1. Lifeline Johannesburg- contact number 011 728 1331
2. The Gauteng Mental Health Society- contact number 011 614 9890

Who can you contact if you need any further information?

Should you have any questions regarding this study and your rights as a research participant **or** if you wish to report any problems you have experienced related to the study, please contact:

Prof C. Penny Human Research Ethics Committee (HREC) chair Email:Clement.Penny@wits.ac.za Tel: 011 717 2301	**Ms Zanele Ndlovu** Administrative officer The Human Research Ethics Committee Email:zanele.ndlovu@wits.ac.za Tel:011 7171252/2700/1234	**Mr Rhulani Mkansi** Administrative officer The Human Research Ethics Committee Email:Rhulani.Mkansi@wits.ac.za Tel:011 7171252/2700/1234

If you have questions about the research, you may also contact me or my supervisors:

Nonkazimulo Moyo **Cell: 0749327934** **Email:**869128@students.wits.ac.za	**Dr Prudence Ditlopo** **Tel: 011 717 3433** **Email:**prudence.ditlopo1@wits.ac.za	**Professor Laetitia Rispel** **Tel: 011 717 2043** **Email:**Laetitia.Rispel@wits.ac.za

APPENDIX 5: Questionnaire

A SURVEY OF PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPISTS AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

1. **Questionnaire number** ☐☐☐

2. **Health Facility Code** ☐☐☐

3. **Date of survey:** **DD/MM/YY** ☐☐☐☐☐☐

Good day. Thank you for agreeing to participate in the survey of professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng. The survey should take not more than 20 minutes to complete

The detailed Study Information Sheet has been provided for you. Please make sure that you have read and understood the information about the survey.

CONSENT

I agree voluntarily to complete the questionnaire**. *Click on the relevant response***

☐ **Yes**

☐ **No**

SURVEY INSTRUCTIONS

1. Thank you for agreeing to participate in the survey of professional quality of life of pharmacists and rehabilitation therapists at three public sector hospitals in Gauteng.

2. Please answer ALL the survey questions on each page. Some of the pages may be longer than your screen. Scroll down by using the scroll bars on the right.

3. Once you have completed all the questions, you can continue by pressing the **Next Page** >> button at the bottom. You will be able to go back again to modify your answers should you wish to do so.

4. It should be clear how to answer each question. For some questions, you need to choose an answer from the list. For other questions, you need to type your answer in the box provided. For questions where the answer is a number, please enter this as a number and not by writing the number in words (Enter 5 NOT Five). The screen will indicate where you have made a mistake and you will need to correct your answer before being able to continue to the next page.

Click the **Next Page** >> button below to start the survey.

SECTION A: DEMOGRAPHIC INFORMATION

1. **Your date of birth?** date menu on REDCap

2. **What is your gender?**

   ☐Female …….1

   ☐Male…….2

3. **What is your marital status?**

   ☐Married……1

   ☐Singe……2

   ☐Divorced……..3

   ☐Widowed…….4

   ☐Other……...5 *Specify*_____

4. **Do you have children?**

☐No…….0

☐Yes……1

IF NO SKIP TO QUESTION 6, IF YES;

5. **How many children do you have? _____**

6. **When did you start working in the public sector?**

		/			/					
Day			Month			Year				

7. **When did you start working at this hospital?**

		/			/				
Day			Month			Year			

8. **Have you done any postgraduate training after completing your professional training?**

☐No…….0

☐Yes……1

Some questions are missing

SECTION B: PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)

COMPASSION SATISFACTION AND COMPASSION FATIGUE (PROQOL) VERSION 5 (2009)

When you *[help]* people you have direct contact with their lives. As you may have found, your compassion for those you *[help]* can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a *[helper]*.

Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days*.

	Question	1 Never	2 Rarely	3 Some times	4 Often	5 Very often
1	I am happy.	1	2	3	4	5
2	I am preoccupied with more than one person I *[help]*.	1	2	3	4	5
3	I get satisfaction from being able to *[help]* people.	1	2	3	4	5
4	I feel connected to others.	1	2	3	4	5
5	I jump or am startled by unexpected sounds.	1	2	3	4	5
6	I feel invigorated after working with those I *[help]*.	1	2	3	4	5
7	I find it difficult to separate my personal life from my life as a *[helper]*.	1	2	3	4	5
8	I am not as productive at work because I am losing sleep over traumatic experiences of a person I *[help]*.	1	2	3	4	5
9	I think that I might have been affected by the traumatic stress of those I [help].	1	2	3	4	5
10	I feel trapped by my job as a *[helper]*.	1	2	3	4	5
11	Because of my [helping], I have felt "on edge" about various things.	1	2	3	4	5
12	I like my work as a *[helper]*.	1	2	3	4	5
13	I feel depressed because of the traumatic experiences of the people I *[help]*.	1	2	3	4	5
14	I feel as though I am experiencing the trauma of someone I have *[helped]*.	1	2	3	4	5
15	I have beliefs that sustain me.	1	2	3	4	5
16	I am pleased with how I am able to keep up with *[helping]* techniques and protocols.	1	2	3	4	5
17	I am the person I always wanted to be.	1	2	3	4	5
18	My work makes me feel satisfied.	1	2	3	4	5
19	I feel worn out because of my work as a *[helper]*.	1	2	3	4	5
20	I have happy thoughts and feelings about those I *[help]* and how I could help them.	1	2	3	4	5

21	I feel overwhelmed because my case *[work]* load seems endless.	○ 1	○ 2	○ 3	○ 4	○ 5
22	I believe I can make a difference through my work.	○ 1	○ 2	○ 3	○ 4	○ 5
23	I avoid certain activities or situations because they remind me of frightening experiences of the people I *[help]*.	○ 1	○ 2	○ 3	○ 4	○ 5
24	I am proud of what I can do to *[help]*.	○ 1	○ 2	○ 3	○ 4	○ 5
25	As a result of my [helping], I have intrusive, frightening thoughts.	○ 1	○ 2	○ 3	○ 4	○ 5
26	I feel "bogged down" by the system.	○ 1	○ 2	○ 3	○ 4	○ 5
27	I have thoughts that I am a "success" as a *[helper]*.	○ 1	○ 2	○ 3	○ 4	○ 5
28	I can't recall important parts of my work with trauma victims.	○ 1	○ 2	○ 3	○ 4	○ 5
29	I am a very caring person.	○ 1	○ 2	○ 3	○ 4	○ 5
30	I am happy that I chose to do this work.	○ 1	○ 2	○ 3	○ 4	○ 5

SECTION C: EXPERIENCES DURING THE COVID-19 PANDEMIC

The COVID-19 pandemic has affected every aspect of our lives. Thinking about your work experiences in the hospital since the lockdown on 27 March 2020, please indicate how strongly you would agree or disagree with each statement by circling the corresponding number. PLEASE INDICATE A RESPONSE FOR EACH STATEMENT – DO NOT LEAVE ANY OUT.

	Statement	Strongly Disagree	Disagree	Disagree slightly	Neither disagree nor agree	Agree slightly	Agree	Strongly agree
a.	I had training on how COVID-19 might impact on my work as a health professional	1	2	3	4	5	6	7
b.	I received training in infection prevention and control	1	2	3	4	5	6	7
c.	I did not receive any protective equipment	1	2	3	4	5	6	7
d.	The hospital where I work took my well-being into account when decisions were made that affected me	1	2	3	4	5	6	7
e.	I had to work overtime	1	2	3	4	5	6	7
f.	I felt more stressed at work than before the lockdown	1	2	3	4	5	6	7
g.	I felt appreciated by the hospital as my employer	1	2	3	4	5	6	7
h.	I experienced more conflict among colleagues at work than before the lockdown	1	2	3	4	5	6	7
i.	My supervisor at the hospital was supportive	1	2	3	4	5	6	7
j.	I was asked to do work that falls outside my job description	1	2	3	4	5	6	7
k.	I had an increased workload as a result of COVID-19	1	2	3	4	5	6	7
l.	I received emotional support (e.g. counselling) when I needed it	1	2	3	4	5	6	7

SECTION D: CURRENT WORKING CONDITIONS

1. **In your current work, are you directly involved with patient care?**

   ☐No…….0

   ☐Yes……1

   IF NO SKIP TO QUESTION 4, IF YES;

2. **In the past month, did your facility experience lack of any drugs/medicines for patients that you attended to?**

   ☐No…….0

   ☐Yes……1

3. **In the past month, did your facility experience lack of, or non-functioning, equipment for patients that you attended to?**

   ☐No…….0

   ☐Yes……1

4. **How would you describe your workload?**

   ☐Light……...1

   ☐Very light……...2

   ☐Just right…….3

   ☐Heavy…….4

   ☐Very heavy…….5

5. On a scale of 1 to 10 (1 being very dissatisfied and 10 being very satisfied), how satisfied are you with each of the following aspects of your job:

a)	Your job in general	1	2	3	4	5	6	7	8	9	10
b)	Your clinical practice environment	1	2	3	4	5	6	7	8	9	10
c)	Your supervisor	1	2	3	4	5	6	7	8	9	10
d)	Your relationship with colleagues	1	2	3	4	5	6	7	8	9	10
e)	Your salary	1	2	3	4	5	6	7	8	9	10

THANK YOU FOR PARTICIPATING IN THIS SURVEY

APPENDIX 6: Distress Protocol

A SURVEY OF THE PROFESSIONAL QUALITY OF LIFE OF PHARMACISTS AND REHABILITATION THERAPISTS AT THREE PUBLIC SECTOR HOSPITALS IN GAUTENG, SOUTH AFRICA

Steps to be taken should a participant become distressed

Should a participant become upset or show signs of emotional distress or discomfort such as crying or shaking while completing the survey questionnaire, the following actions will be taken:

1. The researcher/ field worker will suggest to the participant that the survey be terminated.
2. If the participant feels they are unable to continue, the survey will be terminated.
3. The researcher (who is a health worker)/ field worker will spend time with the participant to find out what might have triggered the reaction and provide support within the scope of their abilities, if appropriate.
4. The participant will be encouraged to call and speak to Lifeline or the Gauteng Mental Health Association.

Contact details provided to participants

The following contact details will be provided to all prospective and actual study participants:

1. Lifeline Johannesburg contact number 011 728 1331
2. The Central Gauteng Mental Health Society contact number 011 614 9890

APPENDIX 7: Literature Review Table

Low and middle income countries

Author	Year published	Setting	Design	Study Period	Sample Size	Population	Aim	Findings	Other comments
Xia et al	2022	Wuhan, China	Cross-sectional online survey	March 2020- not clear when the survey was closed	1582	Frontline nurses	To investigate the compassion satisfaction and compassion fatigue among Chinese frontline nurses during the COVID-19 pandemic in Wuhan, China and to explore the related factors.	• Moderate compassion satisfaction 36.99(SD 6.71), burnout 24.14 (SD 5.33) and secondary traumatic stress 24.53 (SD 5.24). • Mean age 30.83 (SD=5.09) and 95.1% were women • Work pressure was associated with lower compassion satisfaction and increased compassion fatigue. • Working in Wuhan, having more weekly working hours and being a senior staff nurse were associated with higher burnout • Working in Wuhan and being a senior staff nurse associated with higher STS	Study conducted during pandemic Oral ethics approval and oral consent?
Amin et al	2015	India	Cross-sectional survey	July to Sep 2013	129	Intensive care unit nurses	To study the levels of perceived stress in Neonatal Intensive Care Unit nurses and its association with professional quality of life domains	• Mean age 28.37 (SD8.20) • Majority (77.2%) satisfied with salary benefits • CS- 18.6% low, 62.0% moderate, 19.4% high • Burnout- 26.4% low, 50.4% moderate, 23.3% high • STS- 21.7% low, 55.0% moderate, 23.3% high • Perceived stress (stress for life in general) was positively correlated with burnout and STS • Perceived stress was negatively correlated with CS	• It is not clear what kind of stressful 'life in general' situations were used to measure perceived stress (Personal? Work-related?) • Actual ProQOL scores not reported
Ravi et al	2016	India	Cross-sectional e-mail survey	Not stated	155	Audiologists and speech language pathologists	The study aimed to investigate professional quality of life as reported by audiologists and speech language pathologists working in India	• Mean CS 40.19 (SD 5.49), burnout 21.98 (SD 4.25) and STS 22.47 (SD 5.17) • Moderate to high CS, low to moderate burnout, low to moderate STS • Women reported higher CS than men • No significant effect of type of work settings on any of the subscales of ProQOL • Higher burnout among professionals with greater experience (more than 21 years) • A significant relationship was found between the occupation type and STS levels.	We are not told which occupational group had higher or lower STS
Yu et al	2016	China	Cross sectional survey	March to June 2013	650	Oncology nurses	To describe and explore the prevalence of predictors of professional quality of life (compassion fatigue, burnout and compassion satisfaction) among Chinese oncology nurses	• CS 31.81 (SD 6.49), burnout 21.14 (4.95) and STS 21.39 (SD 4.84) • Moderate compassion satisfaction, low burnout and low secondary traumatic stress • Higher compassion fatigue and burnout were found among oncology nurses who had more years of nursing experience • Nurses who worked in secondary hospitals had higher CF and burnout compared to those in tertiary • Training and support from organizations were identified as significant protectors of compassion satisfaction • Burnout had a negative relationship with training and support from a significant other(leaders, colleagues NOT family and friends)	
Kaur et al	2018	India	Cross-sectional, descriptive, and	Not stated	65	21 nurses, 18 nursing aids,14 doctors, 6	To explore the professional quality of	• CS 54.6 (SD = 6.55), burnout 54.9 (SD = 6.01), and STS 70 (SD = 6.97)	Study reported T scores of ProQOL

			quantitative study			counsellors, 3 social workers and 1 pastor, 1 physiotherapist, 1 pharmacist	life among professional care providers at cancer palliative care centres	• Mean age 32.5 yrs (SD=11.78) • Average CS and BO while STS was high • CS was found to have a significant positive correlation with the number of years in palliative care • Number of cases seen per week was found to have a negative correlation with BO • number of cases seen per week was found to have positive correlation with STS • nurses and nursing aids had significantly higher BO than other professional groups • Professionals working at hospice were seen to have significantly higher STS than professionals working at hospital settings • no significant differences found on scores on CS, BO, and STS based on gender • Professionals who had reported having undergone additional training in palliative care had significantly higher CS than those who had no training	
Keshavarz et al	2019	Iran	Cross-sectional study	2018	464	Doctors, nurses, and midwives	To evaluate the professional quality of life among health-care providers including physicians, nurses, and midwives and its related factors	• Mean age 32.29(6.88) • 56.% reported moderate job satisfaction • Mean CS 38.84 (6.23), mean burnout 13.53 (4.34), mean STS 27.05 (5.70) • High and medium job satisfaction, age 40–50 years, and higher monthly income significantly predicted CS • High and moderate job satisfaction, daily work shift, daily and night work shift combinations, contractual employment, and a 2–10-year work experience significantly predicted burnout. • High and medium job satisfaction, daily work shifts, male gender, and higher monthly income significantly predicted STS	• Author explains that when they analysed the translated version of ProQOL, 5 burnout items were deleted – this explains the low mean burnout score • Wording on relationship between job satisfaction and burnout as well as STS confusing! You have to look at the numbers to see that they have a negative relationship
Tomar	2020	India	Descriptive quantitative cross-sectional	25 May to 10 June 2020	418	Nurses and doctors	To investigate the psychological impact of COVID-19 among frontline workers battling against COVID-19 and to explore the association of quality of life, resilience and mental health outcomes	• Mean CS 41.61 (3.62), burnout 30.41 (7.85) , STS 25.88 (6.74) • Majority of respondents were women • Being married and being over 40 years associated with higher CS • Being a woman and working in ED associated with higher burnout • Being a woman and being a nurse associated with higher STS.	COVID- 19 study ProQOL scores reported by unit, no overall mean scores reported
Zakeri et al	2021	Iran	Cross-sectional	April to July 2019, and April to July 2020	508	Nurses	To compare the compassion satisfaction, compassion fatigue and hardiness among nurses before and during the COVID-19 outbreak.	• Mean scores of compassion satisfaction and compassion fatigue were 38.78 (6.57) and 47.87 (9.81), respectively, before COVID-19. The mean scores of compassion satisfaction and compassion fatigue were 38.19 (6.52) and 49.70 (11.35) respectively, during COVID-19. • Moderate CS and CF both before and during COVID-19 • Scores of CS, CF did not differ significantly during the COVID-19 compared with before the COVID-19	COVID-19 study It is not clear whether the score of compassion fatigue refers to STS alone or a combination of burnout and STS, and also not clear how author arrived at that score and why they say it is moderate when ProQOL manual says scores above 43 are high

Omri et al	2022	Tunisia	Cross-sectional study		274	Senior doctors, junior doctors, nurses	To measure the level of positive (compassion satisfaction) and negative (secondary traumatic stress and burnout) aspects of professional quality of life ProQOL and to determinate predictor factors of each component among HCWs staff at two University Hospitals in the governorate of Sousse, Tunisia.	• Mean CS 35.09 (7.08), burnout 28.54(5.44), STS 29.72(7.62) • Overall moderate levels of CS, STS and burnout • Junior doctors had the highest burnout, and lowest CS, while senior doctors had the highest CS and nurses had the highest STS • Women had higher STS than men • Married professionals had higher CS and STS • Those with less than 5yrs work experience had higher CS, and burnout • Those who experienced feelings of fear getting or transmitting COVID had higher STS	
Vancampfort, D & Mugisha, J	2022	Uganda	Cross-sectional study	Jan 2021 to March 2021	108	Mental health nurses	(a) to explore levels of CS, STS, and symptoms of burnout among Ugandan mental health nurses working in regional referral hospitals in Uganda during the Covid-19 pandemic (b) to investigate associations between CS,STS and symptoms of burnout and sedentary levels, physical activity (PA) levels, sleep quality, and harmful drinking.	• Mean age 34.8 ± 10.0 years, 55.6% female • Large proportions of Ugandan mental health nurses reported at least moderate levels of burnout (98.1 %), while almost half (42.6 %) of mental health nurses reported to experience at least moderate levels of traumatic stress. None of the mental health nurses report high levels of compassion satisfaction. • 98.1 % scored above the cut-off for moderate burnout and 42.6 % scored above the cut-off for moderate STS. • None scored above the cut-off for high compassion satisfaction • *Associations found not relevant to my study*	
Yilmaz et al	2022	Turkey	A descriptive, descriptive-relational and cross-sectional study	Not stated	796	Doctors, nurses, midwives, other medical staff	To determine the levels of CS, BO and CF among healthcare workers during the COVID-19 pandemic, as well as the influencing factors.	• Mean scores of the dimensions of CS 32.93±8.83 (moderate), BO 18.39±6.91 (low) and CF 16.09±8.27 (low) • Highest CS in those younger than 25 years, single, working as radiology technicians) or in the radiology unit, those with less than five years of professional experience and those with no COVID-positive colleagues • Doctors, healthcare workers in the COVID-19 intensive care, those with six to ten years of professional experience, and those with COVID-19 positive co-workers had the highest burnout • Highest CF was seen in women, Emergency Medical Technician (EMT)-paramedics • (17.85±8.88), those working in family medicine and community health (18.31±7.68), those with six to ten years of professional experience, those with COVID-positive workmates	
South Africa									
Author	**Year published**	**Setting**	**Design**	**Study Period**	**Sample Size**	**Population**	**Aim**	**Findings**	**Other comments**
Mason and Nel	2012	South Africa	Exploratory and descriptive study	Not stated	80	Nursing students	To investigate prevalence of CF, burnout and	• Moderate to high risk of compassion fatigue, burnout and moderate to high compassion satisfaction. • No investigation of factors influencing ProQOL.	Study does not report on factors that predispose the nursing students for CS

							CS among students who were enrolled for the academic programme in Nursing Science at a South African university. Specific research questions were: • What is the prevalence of CF, burnout and CS among nursing students? • Are nursing students at risk for the development of CF and burnout? • What factors predispose nursing students for CS? • What are the relationships between CF, burnout and CS?		although this is one of the research questions.
Mashego et al	2016	South Africa	Not stated	Not stated	83	Nurses	This study investigated the prevalence and levels of burnout, compassion fatigue and compassion satisfaction among nurses with exposure to maternal and perinatal deaths.	• Burnout 30.7(5.3) , Compassion fatigue 31.1(8.9), Compassion satisfaction 37.9(8.8)- all moderate • CS- 7% low, 54% moderate, 39% high • Burnout- 8% low, 92% moderate • CF- 15% low, 75% moderate, 10% high • No statistically significant associations	
Mathias, C.T & Wentzel, D.L	2017	South Africa	Quantitative descriptive study	October 2015	67	Nursing students	To describe compassion satisfaction, compassion fatigue and burnout among undergraduate nursing students at a tertiary nursing institution	• Average CS, burnout and STS • Burnout- 6% low level, 94% average level • CS- 3% low level, 95.5% average level, 1.5% a high level • CF- 53.7% low level, 44.7% average, 1.5%) high level	
Teffo et al	2018	South Africa	Cross - sectional study	2014 to 2015	103	TOP providers	Aim not clearly stated- (compassion satisfaction, burnout and secondary traumatic stress (STS) among termination of pregnancy (TOP) providers?)	• High CS, average burnout and STS • CS score increased with TOP providers belief in making a difference and enjoying relationship with other nurses • Higher CS scores for females in Gauteng; North West females had lower CS than males • finding work stimulating decreased STS • STS increased when the providers were female and aged 40–49 years	
Wentzel, D.L & Brysiewicz, P	2018	South Africa	Cross-sectional survey	October 2016 to January 2017	83	Oncology nurses	To survey compassion fatigue, burnout and compassion satisfaction in three settings.	• CS 41.48 (4.61) burnout 23.35 (4.03) STS 26.93 (5.36) • Moderate CS, moderate burnout and STS • no significant association between age groups and years of experience for CS, burnout and CF	
Maila et al	2020	South Africa	Quantitative descriptive survey	August 2018 to October 2018	163	Nurses (Psychiatric nurse specialists, registered nurses, enrolled nurses, enrolled nursing assistants)	To investigate the professional quality of life amongst nurses in psychiatric observation units.	• CS 41.6 (0.4). burnout 24.6 (0.4), STS 27.36(0.5) • Moderate CS and burnout, high STS • Enrolled nursing assistants had higher CS • Psych nurse specialists had the highest burnout	Used cut- off points recommended by Stamm to determine ProQOL levels
Jensen et al	2022	South Africa	Mixed methods,	In-depth	165	Professional and lay	To explore occupational	• High compassion satisfaction for both professional and lay health	

			cross-sectional study	interviews between Nov 2018 and Jul 2019; Quantitative survey between Jan and March 2020		health workers	stress and professional quality of life among health workers that were conducted in preparation for a task-shifting intervention to improve antenatal mental health services in Cape Town.	workers • Moderate burnout and CF for lay health workers, low burnout and CF for professional health workers – difference between the two groups was statistically significant	
Ndlovu et al	2022	South Africa	Cross-sectional study	Jan to May 2020	154	Critical care nurses	To describe the demographic factors associated with professional quality of life of critical care nurses working in Gauteng, SA.	• Low to moderate CS, moderate to high burnout and STS • No association between ProQOL and age or nursing categories • More experienced nurses reported higher CS • More educated nurses reported higher STS • Nurses with bachelor's degrees had higher STS than those with diplomas • Nurses caring for only one patient had higher CS, lower burnout and STS than those caring for more than one	

High income countries

Author	Year published	Setting	Design	Study Period	Sample Size	Population	Aim	Findings	Other comments
Severn et al	2011	New Zealand	Cross-sectional postal survey research	Not stated	82	Audiologists	To investigate occupational stress, compassion fatigue, burnout, and compassion satisfaction amongst audiologists.	• 25% of audiologists a high level of compassion satisfaction, 22% had low compassion satisfaction. • 20% showed high level risk for acquiring burnout,26% had low risk for burnout. • 22% were at risk of developing compassion fatigue,29% were at low risk. • A significant relationship was found between increasing age of the audiologist and risk of acquiring burnout • Increasing age of the audiologist predicted low compassion satisfaction • Stress associated with time demands, and accountability showed a significant correlation with compassion satisfaction. • Stress associated with time demands, accountability, management, administration or equipment, patient contact, and clinical protocol were predictors of burnout • Stress associated with time demands, patient contact, accountability and administration or equipment were predictors of compassion fatigue	Results of levels of compassion fatigue are also not clear. It is not clear whether correlation between CS and predictors is positive or negative
Slocum-Gori et al	2013	Canada	Not clear- but author mentions this was an online survey sent via email	Data collection ended in Jan 2010 but no indication when it started	630	Hospital palliative care workers (clinical, administrative, allied and volunteers)	The purpose of this study was to: 1) understand the complex relationships among Compassion Satisfaction, Compassion Fatigue and Burnout within the hospice and palliative care workforce and 2) explore how key practice characteristics –	• Negative correlation between Compassion Satisfaction and Burnout, negative correlation between Compassion Satisfaction and Compassion Fatigue, positive correlation between Compassion Fatigue and Burnout • Participants who assisted with provision of; relief from physical, emotional and/or spiritual pain or distress, psychosocial support to patients and/or families, emotional support to other team members reported higher compassion fatigue and burnout than those who did not • Part-time workers had higher compassion satisfaction, lower compassion fatigue and lower burnout levels than full-time • Administrative staff had the lowest compassion satisfaction and compassion fatigue, while nurses had the highest compassion	

							practice status, professional affiliation, and principal institution – interact with the measured constructs of Compassion Satisfaction, Compassion Fatigue and Burnout.	fatigue and medicine practitioners had the highest burnout levels	
Li et al	2014	USA	Not stated	September 2007 to March 2010	251	New nursing graduates entering residency programme	To determine whether factors such as group cohesion and organizational commitment would be protective and moderate the association between stress exposure and posttraumatic stress symptoms and other negative nurse outcomes, thus facilitating positive outcomes.	• High organizational support predicted increased job satisfaction. • Higher levels of current PTSD increased likelihood of burnout, but when group cohesion was high, current trauma was less likely to be related to burnout. • When group cohesion was high, current stress and PTSD symptomatology were less likely to reduce compassion satisfaction. • Pre-existing PTSD and current stress exposure influenced development of CF/STS, but group cohesion also served as a protective factor against CF/STS	
Smart et al	2014	USA	Cross-sectional survey	August 2010 (1month)	139	Physicians, registered nurses, and nursing assistants	To explore differences in levels of self-reported professional quality of life among groups of healthcare workers and explore relationships among individual and organizational variables.	• Average levels of compassion satisfaction, burnout, and secondary traumatic stress. • General medical workers showed evidence of higher burnout than those in critical care areas (ED and critical care units) • Working on night shift was associated with higher burnout and less compassion satisfaction • Average hours of sleep per night predicted secondary traumatic stress • Shift worked, average hours of sleep per night, average hours of activity per week, marital status, and working in critical care departments or not predicted burnout • Average hours of sleep per night was implicated in predicting secondary traumatic stress • No variables predicted compassion satisfaction	It is not clear how some socio-demographics affected ProQOL e.g. author does not tell us which marital status predicts burnout
Hunsaker et al	2014	USA	Non-experimental, descriptive, and predictive study using self-administered survey	Not stated	284	Emergency department nurses	1. To determine prevalence of compassion satisfaction, compassion fatigue, and burnout in emergency department nurses throughout the United States. 2. To examine which demographic and work-related components affect the development of compassion satisfaction,	• Low to average levels of compassion fatigue and burnout • Average to high levels of compassion satisfaction • The older the nurse the higher the level of CS, the younger the nurse, the higher the burnout and CF score; no difference between males and females. • Those who had master's or doctorate degrees had significantly lower burnout levels • The more the years of practice, the higher the CS and the lower the burnout; no statistically significant relationship between years and CF level. • Those who perceived receiving support from the manager had a higher level of CS, lower level of CF and burnout • Age and manager support positively predicted CS • Manager support negatively predicted CF • Age and manager support negatively predicted burnout	Paper also has results on univariate analysis using Pearson correlation, t-tests and One way ANOVA- I have included those in literature review

							compassion fatigue, and burnout in this nursing specialty.		
Kelly et al	2015	USA	Cross-sectional electronic survey	May 2013	491	Acute care nurses	To examine compassion fatigue and compassion satisfaction in acute care nurses across multiple specialties in a hospital-based setting	• Moderate CS and burnout, and low STS • Younger nurses more likely to experience higher levels of burnout and STS and lower levels of CS than older ones • Highly satisfied (job satisfaction) nurses experienced significantly less CF and higher CS than their less satisfied counterparts. • Being nominated for a recognition award was a significant predictor of lower CF and higher CS.	
Duarte et al	2016	Portugal	Cross-sectional	Not stated	280	Registered nurses	The main goal of this study was to explore how empathy and self-compassion related to professional quality of life	• Mean scores showed moderate CS, burnout and STS. • Predictors (personal characteristics) are not relevant to my study	
Higuchi et al	2016	Japan	Cross-sectional	Not stated	380	Pharmacists	Study aimed to investigate the following: 1) the prevalence of psychological distress and burnout/CF among hospital pharmacists; 2) the extent of correlation of specific demographic characteristics (e.g., sex and years of experience) with psychological distress and burnout/CF; and 3) whether high levels of ALT-and ADHD-like symptoms contribute to psychological distress and burnout/CF in hospital pharmacists.	• About 49.2% above cut-off for burnout and 29.2% above cut-off for CF/STS indicating relatively high prevalence of burnout and CF and STS	• Validity of Japanese ProQOL scale not established • CS not reported • High level for BO was 27 or greater and a high CF/STS was 17 or greater.
Wu et al	2016	USA and Canada	Quantitative, descriptive, non-experimental	June to Aug 2014	486 American and 63 Canadian	Oncology nurses	• To examine oncology nurses' experiences of compassion fatigue, burnout, and compassion satisfaction • To identify any differences in experiences of compassion fatigue, burnout, and compassion satisfaction between oncology nurses in the	• America: CS 42.37 (5.27) Burnout 22.66 (5.74) , STS 22.65 (5.77) • Canada: CS 42.6 (4.7), burnout 22.49 (4.84), STS 22.41(5.6) • Moderate to high CS and low to moderate burnout and STS in both groups American nurses • Younger nurses (categorized as aged 40 years or younger) were more likely to experience moderate to high levels of secondary traumatic stress • More experienced nurses (experience of 26 years or greater) were found to have the lowest levels of secondary traumatic stress • Higher levels of education (those holding master's or doctoral degrees) were most likely to experience high levels of compassion satisfaction • When nurses felt that their workplace encompassed a cohesive teamwork environment at all times. They were not only least likely to experience compassion fatigue and burnout, but also were able to	

							United States and Canada.	derive more compassion satisfaction from it Canadian nurses • No significant findings between demographic characteristics to levels of secondary traumatic stress, burnout, and compassion satisfaction	
Cohen et al	2017	Israel	Quantitative study, of correlational nature	Not stated	93	Midwives	To study midwives' professional quality of life and traumatic experiences.	• CS 43.1 (6.0), burnout 13.23 (4.85), STS 12.6 (6.6) • CS - 1.1% scored in the low range, 25.8% scored in the mid-range and 74.1% scored in the high range. • Burnout - 97.8% scored in the low range, while 2.2% scored in the mid-range. • STS- 92.4% scored in the low range and 7.6% scored in the mid-range • Positive correlation between burnout and seniority	
Jakimowicz et al	2017	Australia	Cross-sectional survey	2015	117	Critical care nurses	To examine factors predicting and contributing to compassion satisfaction and compassion fatigue experienced by critical care nurses in Australian intensive care units	For the whole sample • CS 35.49(6.00), burnout 25.47(5.31), STS 21.43(4.64) • Average compassion satisfaction and burnout, and low STS • Nurses with postgraduate qualifications had higher compassion satisfaction scores • CS increased with increasing duration of practice • Burnout scores reduced with increasing age, years of tenure and practice; burnout was predicted by lower years of tenure • No significant associations between the demographic and occupational variables and STS Analysis by site • Burnout scores significantly decreased with years of practice at both sites • CS scores significantly increased with years of practice at Site A, • STS scores decreased as years of practice increased at Site A • Compassion satisfaction and STS were predicted by place of work (higher CS and lower STS at Site A- tertiary referral metropolitan hospital, offered more specialised treatments compared to site B which offered ventilatory and cardiovascular care, monitoring and renal support, accepted patients from more remote hospitals but transferred patients requiring more specialised treatments to a higher-level critical care setting such as Site A.	
Roney et al	2018	USA	Descriptive correlational research design	June 15, 2016 to August 1, 2016	318	Paediatric nurses	To describe levels of compassion satisfaction, compassion fatigue, and job satisfaction among paediatric nurses in the United States and determine if there was a relationship among these constructs.	• High CS and moderate CF • Significant relationship between female gender and the compassion satisfaction subscale • No other significant relationships between sociodemographic variables (*age, years (number) as a registered nurse, years (number) in current position, highest degree completed; current job title, number of hours worked per week; career prior to nursing (if any); location of work (hospital, home care, school, outpatient setting, other); if hospital, type of hospital; employer type (for profit, not-for-profit); and state of current residence*) and CF and CS • Mean level of job satisfaction was within the low range of satisfaction • No significant relationship between job satisfaction and CS or CF	
Chen et al	2018	Taiwan	Cross-sectional descriptive study	April to July 2014	173	Female paediatric nurses	To explore the level of and the association between, compassion satisfaction and fatigue	• Moderate compassion satisfaction • Low CF • Nurses who declared having a partner in their marital relationship, showed a lower CF	Study excluded burnout- justification for this has been outlined in the paper

							of paediatric nurses; to determine the association between personal traits and compassion satisfaction and fatigue; to identify the determinants of compassion satisfaction and fatigue.	• Paediatric nurses showed a low CF, which could be the result of the workplace culture of informal and formal support schemes created for them in the children's hospital • This children's hospital initiates bonuses and programmes for group social activities and regular debriefing with priests and managers for the staff.	
O'Callaghan et al	2019	Australia	Quantitative cross-sectional survey	2015	86	Emergency dept nurses	Aim not clear- "Given that little is known about the compassion status of emergency nurses internationally and nationally, and that much other evidence is dated, this study aimed to conduct a cross-sectional survey to examine the current situation in two Australian emergency departments."	• CS 38.3 (SD 5.0), burnout 26.6 (SD 5.4), STS 24.6 (SD 4.5) • Average to high CS and low to average burnout and STS • No significant correlation of any of the three scales with an individual demographic variable	Author points out that this study may not be sufficiently powered to identify differences in ProQOL for socio-demographics.
Dosil et al	2020	Spain	Cross-sectional (only mentioned in discussion)	Not stated	973	Doctors, nurses, auxiliaries/technicians	To evaluate the levels of stress, anxiety, depression, post-traumatic stress and compassionate fatigue in health professionals	• Majority of participants had low STS, moderate CS and burnout • Older participants showed higher burnout • Auxiliaries/technicians had higher CS than nurses and doctors, and doctors had higher burnout	
Okoli et al	2020	USA	Correlational design	Nov 2018 to April 2019	764	Advanced practice providers (MD, APRN, PA), Nursing staff, Social work/psychology. Nursing Care Technicians/Nursing Assistants, Therapists. Pharmacy, Other	1. Examine the differences in CS, BO, and STS by discipline and work setting, and 2. Assess demographic, work-related, and behavioural factors associated with CS, BO, and STS.	• Average CS and burnout, but low STS • Being female associated with greater CS scores • Working with adult populations and experiencing workplace violence being associated with lower CS scores • Being a social worker/psychologist, working with adult population, longer duration of workday, and having experienced workplace violence were associated with greater BO scores • Being 51 years or older associated with lower BO scores • Being a social worker/ psychologist, witnessing or experiencing workplace violence associated with greater STS scores • Greater age associated with lower STS scores	
Ruiz-Fernandez et al	2020	Spain	Multi-centre, descriptive, cross-sectional design	Jan to Dec 2018	1521	Nurses	To analyse the quality of life of professionals and its links to socio-demographic variables and work context among nursing professionals working in different care settings in the Andalusian Public Health System (Spain).	• CF significantly higher in married participants than in divorced participants • CF significantly higher in urban areas than in rural areas • CS lower in urban, primary care settings • CF significantly higher in primary care than in hospital care • Older age- lower levels of CS • Women have significantly higher CS than men • Mean score for CS in divorced participants is significantly higher than in single and married participants	
Ruiz-Fernandez et al	2020	Spain	Cross-sectional online survey	30 March 2020 to 16	506	Physicians and nurses	To evaluate CS, burnout and CS and perceived	• High CF in majority and medium to high CS and burnout • Levels of CF and burnout remained moderate to high similar to	

				April 2020			stress in healthcare professionals during the COVID-19 health crisis in Spain.	studies before crisis, but CS seemed to be increasing/improving • Physicians had higher CF and burnout , while nurses had higher CS • Those working in COVID-19 units and in emergency depts had higher CF and burnout • Other socio-demographic characteristics (age, sex, marital status, employment status and work shift) had no association with ProQOL	
Alharbi et al	2020	Saudi Arabia	Cross-sectional	Not stated	321	Critical care nurses	To examine the relationship between nurse demographic characteristics and the development of compassion fatigue, as indicated by level of burnout and compassion satisfaction in critical care nurses in Saudi Arabia.	• CS 35.39 (7.26), burnout 31.74 (5.35), STS 27.42 (5.72) • Majority of ppts in average risk category for CS, burnout and STS, although 20% reported very low CS • Males had higher STS, but no gender difference for burnout and CS • Age not significant for all three • CS higher in nurses with Masters degrees • Nurses working in neonatal ICU, ICU, CCU had the highest CS, while those in burn unit had the lowest • Those with < 1 yr experience had the highest CS, followed by those with 11-20 years •	
Ruiz-Fernandez et al	2021	Spain	Descriptive, cross sectional study	January 2018 to Dec 2018	253	Emergency dept nurses	To analyse the ProQOL of ED nurses based on their perceived health, perceived social support and main socio-demographic and socio-occupational variables.	• High levels of CF, moderate burnout, and low levels of compassion satisfaction. • Mean CF scores significantly higher in single participants • Mean CS significantly higher in participants under 35 years of age • Mean CS score significantly higher in the group with<10 years of work experience • Mean burnout significantly higher in the group with 10 to 20 years of work experience • CF and perceived affective social support, were significantly and negatively correlated • Compassion satisfaction and perceived affective social support were significantly and positively correlated • Burnout also found to be significantly and negatively correlated with the total score for perceived social support	
Dwyer et al	2021	USA	Cross-sectional online survey	April 15 - April 30, 2020	613	Health care providers- over 25 professions	To understand the key factors of burnout, compassion fatigue, and compassion satisfaction among healthcare employees during the pandemic within the U.S. in April 2020.	• Low burnout and CF- only low and moderate (no ppts in high category) • Moderate CS(only 5 scored low CS, the others scored high) • No significant differences in CF, burnout, or CS between those who had or had not provided this direct care to COVID-19 positive patients. • ProQOL not significantly related to participants' ages or years working in healthcare. • No difference in ProQOL scores between nurses and physicians • Clinical healthcare workers reported significantly higher CF compared to participants not involved in direct clinical service.	
Jones et al	2021	USA	Cross-sectional online survey	March to Nov 2020	484	Pharmacists	To describe the prevalence of burnout and secondary traumatic stress (STS) in health-system pharmacists during the coronavirus disease 2019 (COVID-19) pandemic.	• Almost all respondents (99.4%) had moderate or high likelihood of compassion satisfaction • (65.3%) had moderate or high likelihood of burnout, and about half (51.4%) moderate or high likelihood of STS. • The top 4 main drivers of pharmacist burnout cited by respondents were factors related to (1) workload, (2) efficiency and resources, (3) culture, and (4) work-life integration.	
Lluch et al	2022	Literature review- 76 articles from	Literature review	Feb to May 2020	Not stated	Health professionals (physicians, nurses, nursing assistants,	To determine the level of burnout, compassion fatigue, and compassion	• Average level of burnout was high • Higher burnout scores were reported for nurses in some studies, while others reported higher burnout in physicians	Articles reviewed used different kinds of instruments

		HICs and LMICs				psychologists, etc.)	satisfaction, as well as their associated risks and protective factors, in healthcare professionals during the first year of the COVID-19 pandemic.	• Majority of studies found health workers on the frontline against COVID-19 suffered higher burnout • Work stress had a positive influence on burnout • Resilience and social support were related to lower burnout • CF levels generally high • Working with COVID pts increased STS • Being a woman associated with higher CF • High CS in some studies, and moderate to high in some	CS was only studied in 4 out of the 76 studies
Mohammad et al	2022	USA	Cross-sectional, online survey	Apr to May 2021 & Oct to Dec 2021	1126 (484 early group and 642 in second group)	Pharmacists	To describe the changing pattern of the prevalence of burnout and STS in health-system pharmacists throughout the pandemic (early to 20 months into the pandemic).	• Significantly more respondents were identified with moderate–high likelihood of burnout (83.8% vs 65.3%) and moderate–high probability of STS (63.2% vs 51.4%;) in the 20-month group vs the early group. • Approximately 99% of respondents in both groups were identified with moderate–high probability of CS.	

Other

Author	Year published	Setting	Design	Study Period	Sample Size	Population	Aim	Findings	Other comments
Ray et al	2013	Canada	Nonexperimental, cross sectional study	Not stated	169	Frontline mental health care professionals: • Nurse (RN/RPN) • Allied health • Case manager Mental health worker	To determine the relationships among compassion satisfaction (CS), compassion fatigue (CF), work life conditions and burnout among FMHPs	• Mean scores CS (M = 36.92, SD = 6.25) and CF (M = 11.83, SD = 6.74) indicating high CS and low CF	ProQOL results on associations not clear, therefore not cited in literature review, only cited background of article
Klappa et al	2015	36 countries (HICs and LMICs)	Mixed methods	Not stated	116	Physiotherapists	To investigate CF among physiotherapists (PTs) around the world and discuss coping strategies utilized.	• Moderate CS and burnout • STS was 21.48 which the author reports as high but the ProQOL manual says score less than 22 is low	Incorrect reporting of STS level
Zeman, E.A	2016	Not stated (but published in American journal of occupational therapy)	Cross-sectional, descriptive, correlational study design	Not stated	Not stated	Occupational therapists	(1) To assess the levels of compassion fatigue, burnout, and compassion satisfaction in occupational therapy practitioners in a dual professional role; (2) To examine the association of professional characteristics with compassion fatigue, burnout, and compassion satisfaction; and (3) To reveal the extent to which professional characteristics predict levels of compassion	• Low to average levels of burnout and compassion fatigue and average to high compassion satisfaction levels • A higher number of roles and higher number of years working predicted higher compassion satisfaction	Full article could not be located

							fatigue, burnout, and compassion satisfaction.		
Monroe	2017	Only cited the background- not results						•	
Turato et al	2022	Australia	Qualitative case study	2018-2019	30	Allied front-line health managers: Cardiac scientist Dietitian Exercise physiologist Pharmacist Medical physicist Occupational therapist Psychologist Radiographer Social worker Speech pathologist	Paper explores the impact workplace morale can have on burnout risk among AHPs in Australia	• Low morale and staff tired and burnt out due to constant changes and pressure over many years- caused by existing processes, roles and relationships among people which had negative impact on morale and culture • Expansion from regional to tertiary level services had happened a few years before study • Poor culture, minimal accountability • Lack of leadership and management skills Top-down approach in communication, collaboration and decision-making, rather than collaborative system with staff	Study did not use ProQOL scale
Xie et al	2021	Systematic review- (Asia, The Americas, Europe)	Systematic review and meta-analysis	January to Feb 2020	28509 nurses	Nurses	To systematically assess the prevalence of compassion satisfaction and compassion fatigue among nurses, and to evaluate the effect of different geographical regions, years and departments on the prevalence of compassion fatigue.	• Moderate CS and CF • Asian region had the lowest levels of compassion satisfaction but the highest levels of compassion fatigue • The Americas and Europe had the lowest levels of compassion fatigue but highest compassion satisfaction • CF in nurses increased gradually from 2010 to 2019, reaching the highest level in 2019 • Highest CS in emergency dept and lowest in psychiatry • Lowest mean burnout in paediatrics • Highest mean STS in ICU and lowest in psychiatry • Nurses from ICU had the highest levels of CF	The review used several different measures of CF (e.g., the ProQOL assessment tool and Maslach Burnout Inventory), which may have some impact on the overall results. No studies from Africa were included
Giddens et al	2022	New Zealand, South Africa, USA, Hong Kong, Israel, UK	Not stated- author mentions four-part online questionnaire	Not stated	59	Audiologists	To provide insight into CS, resilience, burnout syndrome and overall occupational stress levels of experienced audiologists	• No audiologists reported high burnout syndrome or low compassion satisfaction. • Positive correlation between burnout and occupational stress • Negative correlation between CS and occupational stress • Top 5 occupational stressors were staff shortages, administration duties, paperwork and patient reports, patient or family expectations to fix client's hearing, amount of time available with each patient	Full article could not be retrieved- only abstract was available
Boyle, D.A	2015	Commentary							
WHO global strategy on human resources for health	2016	Cited in Background							
International centre for human resources in nursing	2007	Cited in Background							
Van Boegart et al	2013	Cited in Background							
Stamm ProQOL concise manual	2010	Cited in Background and							

		definitions							
Maslach	2001	Definitions							
Figley	1995	Cited in Background							
South African Lancet National Commission	2019	Background							
Rispel et al	2018	Background							
Gkiouleka et al	2022	Background							
Davis et al	2021	Background							
WHO.Coronavirus 2020	2020	Background							
Gray	2021	Background							
Haider et al	2020	Background							
Kelly, L	2020	Commentary							
Adriaenssens et al	2015	Intro to literature review							
Brankin et al	2010	Intro to literature review							
Stamm ProQOL manual	2005	Definitions							
Arena	2011	Background							
WHO Transforming and scaling up health professionals' education and training	2013	Definitions							
Thamby	2014	Definitions							
South African Pharmacy Council		Definitions							
Kloda and Bartlett	2009	Definitions							
Abiiro and De Allegri	2015	Definitions							
Kutzin	2016	Definitions							
Van Winchen et al	2022	Problem statement							
Kim et al	2020	South Korea	Not stated	Not stated	204	Rehabilitation therapists	To investigate the relationships between emotional dissonance, compassion satisfaction, compassion fatigue, and burnout in therapists in various fields in rehabilitation hospitals.	Not relevant to my study	Worth citing in discussion when referring to studies done in therapists

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6	Peelman, Armando. "The Prevalence of Compassion Fatigue, Compassion Satisfaction, and Direct Client Exposure in Direct Support Providers in Arizona", Grand Canyon University, 2022 Publication	<1%