

**Prevalence and correlates of alcohol use, mental disorders, and awareness
and utilization of support services among healthcare professionals in West
Rand District, Gauteng, South Africa**

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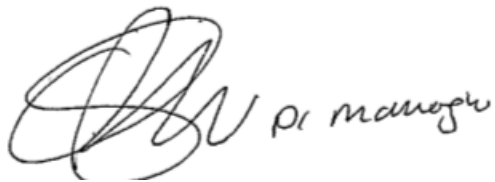
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Declaration

Declaration

I, Charlotte Mc MAGH hereby declare that this research is my own unaided work, except where due acknowledgement for assistance received has been made. It is being submitted for the degree of Master of Family Medicine at the University of the Witwatersrand, Johannesburg. It has not been submitted previously for any other degree or examination at this or any other University.

A handwritten signature in black ink, appearing to read 'Dr C. Mc MAGH', with a stylized, cursive script.

Signed

(Signature of candidate)

Dr C. Mc MAGH

Date: 13 June 2023

Dedication

I would like to dedicate this work to:

Almighty God.

My wonderful husband,

Tyron Jonathan Greve.

and.

My beautiful family,

Renee Mc Magh, Patrick Mc Magh, Gregory Mc Magh, Pia Greve and Robin Greve

for their unwavering support and encouragement

throughout the time I was preparing

this research reports.

Abstract

Background: Healthcare professionals (workers) are at an increased risk for developing mental and alcohol use disorders due to increased psychological distress, long working hours, medical litigation, role conflict and verbal/physical abuse from colleagues and patients. Psychological well-being in Healthcare workers is crucial to provide the best quality of care to patients. There is limited data on mental and alcohol use disorders among healthcare professionals in South Africa.

Objectives: To determine the prevalence and correlates of alcohol use disorder, depression, anxiety, suicidality and covid anxiety during the covid pandemic among healthcare professionals in West Rand district, Johannesburg, South Africa.

Methods: We conducted a cross-sectional study conducted on a sample of healthcare professionals including doctors, nurses, clinical associates and dentists working in the West Rand District of Gauteng, South Africa, during Covid-19 pandemic. Participants were invited to complete a paper-based questionnaire addressing socio-demographic questions, a set of measures for alcohol use disorder (AUDIT-C), depression (PHQ-2), anxiety (GAD-7), suicidality (PSS-3), covid anxiety (CAS) and awareness and utilization of support services.

Results: A total of 330 Healthcare professionals (60.9% nurses, 33% doctors, 5.5% other) participated. Majority of the participants were females 78.8%, and 48.2% of the participants were in the age band 35-64 years. Overall, 20.9% of the healthcare professionals reported risky alcohol use. Females were 73% less likely to report risky alcohol use (AOR=0.27;95% CI 0.13-0.54). Prevalence of probable depression was 13.6% and female professionals were 5 times more likely to be classified as having probable depression (AOR=4.86;95% CI=1.08-21.90). The grouped prevalence of anxiety ranging from mild to severe was reported at 47.3%, female professionals were 3 times more likely to be classified as having anxiety symptoms (AOR=2.78;95%CI 1.39-5.57). Furthermore, races other than black were found to have higher rates of anxiety (AOR=2.54; 95%CI 1.00-6.42). The prevalence of suicide symptoms was 7.9% and that

of covid dysfunctional anxiety 4.8%. Only 5% of participants were involved in an employee wellness program, with 60% expressing interest in joining one.

Conclusion: Alcohol use and mental disorders were common among healthcare professionals in West Rand district, Johannesburg, South Africa. There is overall poor awareness and use of support structures highlighting the need to design and pilot targeted interventions to increase awareness and utilization of the existing services and delivery of alcohol use and mental disorder screening and referral to treatment. .

Key words: Healthcare Professionals, Alcohol use disorders, mental disorders, suicide, South Africa.

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Abbreviations

AA	Alcoholics Anonymous
ALATEEN	Alcoholics Anonymous for Teens
AUDIT	Alcohol Use Disorders Identification Test
AUDIT-C	Alcohol Use Disorders Identification Test
CAS	Coronavirus Anxiety Scale
CDC	Centres for Disease Control and Prevention
CHC	Community Healthcare Centre
Covid-19	Coronavirus Disease 2019
DMH	Depression and Mental Helpline
EG	Example
EWP	Employee Wellness Programs
GAD-2	Generalized Anxiety Disorder-2
GAD-7	Generalized Anxiety Disorder-7
HCP	Healthcare Professional
HIV	Human immunodeficiency virus
HPCSA	Health Professions Council of South Africa
HREC	Human Resources Ethics Committee
NHRD	National Health Research Database
PHQ-9	Patient Health Questionnaire-9
PPS	Personal Protective Equipment
PSS-3	Patient Safety Scale-3
REDCap	Research Electronic Data Capture

SA	South Africa
SADAG	South African Depression and Anxiety Group
SANC	South African Nursing Council
SAQ	Self-Administered Questionnaire
SCH	Suicidal Crisis Helpline
TB	Tuberculosis
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

Background

Alcohol is a psychotropic substance able to affect mental processes such as cognition and has dependence producing properties. Alcohol use is part of multiple social, religious and cultural practices due to its perceived ability to provide pleasure. Heavy alcohol use, however, is associated with greater risk for developing multiple medical conditions as well as mental disorders. (1)

During 2018, a global status report on alcohol and health estimated that three million alcohol related deaths occurred globally every year. (2) Moreover during 2019, Statistica reported that South Africans consumed just under 10 litres of alcohol per capita, making it the third most leading country in terms of alcohol consumption in Africa.(3)

In 2019, one in every eight people, or 970 million people globally was found to have a mental disorder, depression and anxiety as commonest.(4) These numbers are thought to have increased by 25% during the first year of the coronavirus disease 2019 (Covid-19) pandemic according to the World Health Organisation (WHO). (5)

There is a complex interplay of internal and external factors which eventually contribute to the use of alcohol and/or development of mental disorders. External factors include - environment, family, religion, job status, and in many societies considered a cultural norm.(6) Internal factors include genetics and psychological conditions such as other substance related disorders, antisocial personality disorder, mood disorders and anxiety disorders.(6)

Healthcare professionals are highly vulnerable to developing risky alcohol use and mental disorders. They are exposed to long working hours, high workloads, concerns over medical errors and/or litigation, role conflict, emotional labour, and verbal and/or physical abuse.(7)Additional stressors include lack of resources, personnel and critical facilities. Lastly exposure to dangerous pathogens such as Covid-19 can further exacerbate and strain healthcare professionals' psychological state. Healthcare professionals are at the frontline when diagnosing, treating and caring for patients with Covid-19. The ever-increasing numbers of cases depleted personal protective equipment (PPE),

overwhelming workload, lack of clear guidelines and medication as well as fear of contracting or spreading the virus, have all contributed to the mental burden.(8)

Literature Review

During the Coronavirus Pandemic multiple studies conducted on healthcare professionals found alarmingly high rates of risky drinking. Problem drinking amongst healthcare professionals were reported in an American study (as high as 42.6%), (9) a British study (7%)(10) an Ethiopian study (40.2%)(11), and a Kenyan study (43.9%).(12) A rapid scoping review conducted in 2020 researched the mental health of healthcare professionals during the Covid-19 outbreak in South Africa (SA) and found prevalence of rates of depression (8.9% to 50.4%) and anxiety (10.4% to 44.6%).(13)

Both harmful alcohol use and above mentioned mental disorders can affect a healthcare professionals standard of care and overall safety to the patient.(14) Risky drinking has been associated with reduced productivity and performance in the workplace due to cognitive impairment and ill health.(15) Workplaces that encourage and support mental health are more likely to improve healthcare professionals' quality of life, decrease absenteeism, increase productivity and benefit from associated economic gains.(16) Mental health promotion programs are ways in which hospitals can decrease risk factors that can lead to mental strain as well as encourage healthy lifestyle behaviours if already diagnosed with mental condition.

There is a lack of research on mental health in healthcare professionals (HCPs) working in South Africa particularly in primary care settings. Therefore, the aim of this study was to determine the prevalence and correlates of alcohol use and mental disorders amongst healthcare professionals in West Rand District, Gauteng, South Africa. And in addition, assess the healthcare professionals' awareness and utilization of support services.

Problem Statement

A global status report on alcohol and health conducted in 2018 estimated that three million alcohol deaths occur globally every year.(2) During 2019, Statistica reported that South Africans consumed just under 10 litres of alcohol per capita, making it the third most leading country in terms of alcohol consumption in Africa.(2) Depression is ranked the largest contributor to global disability with anxiety ranking sixth.(17) Healthcare workers

are at an increased risk for developing mental and alcohol use disorders due to increased psychological distress, long working hours, medical litigation, role conflict and verbal/physical from colleagues and patients.(18) Psychological well-being in healthcare professionals is crucial in order to provide the best quality of care to patients. Globally and more specifically in South Africa there is a lack research in HCPs and alcohol use and mental health disorders.

Justification

The problem that this study addresses is the lack of mental health research in healthcare professionals working in primary healthcare settings in South Africa. Healthcare professionals are highly vulnerable to developing risky alcohol use and mental disorders, that not only affects their own quality of life but the quality of care and safety to patients. To gain a better understanding of this problem a Cross-sectional study was conducted with an aim to assess the current prevalence rates of alcohol as well as mental correlates amongst healthcare professions. To the best of knowledge this is the first study in the West Rand District of South Africa that is investigating the alcohol use and mental disorders as well the utilization of support structures. This research will help provide data to inform potential interventions and future studies.

Research Question

What is the prevalence and correlates of alcohol use, mental disorders, and awareness and utilization of support services among healthcare professionals in West Rand District, Gauteng, South Africa, Gauteng?

Aim and Objectives

Aim

To determine the prevalence and correlates of alcohol use, mental disorders, and awareness and utilization of support services among HCWs in West Rand District, Gauteng, South Africa

Objectives

1. To determine the prevalence of reported alcohol use and risky alcohol use.

2. To determine the prevalence of selected mental disorders by screening for anxiety symptoms, depressive symptoms and suicide symptoms.
3. To establish factors associated with alcohol use and hazardous alcohol use.
4. To establish factors associated with probable depression, anxiety symptoms and suicide symptoms.
5. To explore utilization and awareness in HCPs on the services for alcohol use and mental disorders.

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CHAPTER 2: SUBMISSABLE DRAFT MANUSCRIPT

Prevalence and correlates of alcohol use, mental disorders, and awareness and utilization of support services among healthcare professionals in West Rand District, Gauteng, South Africa: A cross-sectional study

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Abstract

Introduction:

Healthcare professionals are at an increased risk for developing mental and alcohol use disorders due to increased psychological distress, long working hours, medical litigation, role conflict and verbal/physical abuse from colleagues and patients.

Objectives: To describe the prevalence and correlates of alcohol use disorder, depression, anxiety, suicidality and covid anxiety in Johannesburg, South Africa.

Methods: A cross-sectional study on a sample of healthcare professionals was carried out. Participants were invited to complete a paper-based questionnaire addressing socio-demographic questions, a set of measures for alcohol use disorder (AUDIT-C), depression (PHQ-2), anxiety (GAD-7), suicidality (PSS-3), covid anxiety (CAS) and awareness and utilization of support services.

Results: A total of 330 Healthcare professionals participated. Overall, 20.9% of the healthcare professionals reported risky alcohol use. Females were 73% less likely to report risky alcohol use (AOR=0.27;95% CI: 0.13-0.54). Prevalence of probable depression was 13.6% and female were 5 times more likely to be classified as having probable depression (AOR=4.86;95% CI:1.08-21.90). The grouped prevalence of anxiety ranging from mild to severe was reported at 47.3%, female professionals were 3 times more likely to be classified as having anxiety symptoms (AOR=2.78;95%CI: 1.39-5.57). The prevalence of suicide symptoms was 7.9% and that of covid dysfunctional anxiety 4.8%. Only 5% of participants were involved in an employee wellness program, with 60% expressing interest in joining one.

Conclusion:

Alcohol use and mental disorders were common among healthcare professionals in West Rand district, Johannesburg, South Africa. There is a need to pilot targeted interventions for alcohol and mental disorders.

Key words: Healthcare professionals, risky alcohol use, mental disorders, suicide, South Africa.

INTRODUCTION

Background/rationale

Alcohol is a psychotropic substance able to affect mental processes such as effect and/or cognition and has dependence producing properties. Alcohol use is part of multiple social, religious and cultural practices due to its perceived ability to provide pleasure. Heavy alcohol use, however, is associated with greater risk for developing multiple medical conditions as well as mental disorders. (1)

During 2018, a global status report on alcohol and health estimated that three million alcohol related deaths occurred globally every year. (2) Moreover during 2019, Statistica reported that South Africans consumed just under 10 litres of alcohol per capita, making it the third most leading country in terms of alcohol consumption in Africa.(3)

In 2019, one in every eight people, or 970 million people globally was found to have a mental disorder, depression and anxiety as commonest.(4) These numbers are thought to have increased by 25% during the first year of the coronavirus disease 2019 (Covid-19) pandemic according to the World Health Organisation (WHO). (5)

There is a complex interplay of internal and external factors which eventually contribute to the use of alcohol and/or development of mental disorders. External factors include - environment, family, religion, job status, and in many societies considered a cultural norm.(6) Internal factors include genetics and psychological conditions such as other substance related disorders, antisocial personality disorder, mood disorders and anxiety disorders.(6)

Healthcare professionals are highly vulnerable to developing risky alcohol use and mental disorders. They are exposed to long working hours, high workloads, concerns over medical errors and/or litigation, role conflict, emotional labour, and verbal and/or physical abuse.(7)Additional stressors include lack of resources, personnel and critical facilities. Lastly exposure to dangerous pathogens such as Covid-19 can further exacerbate and strain healthcare professionals' psychological state. Healthcare professionals are at the frontline when diagnosing, treating and caring for patients with Covid-19. The ever-increasing numbers of cases depleted personal protective equipment (PPE), overwhelming workload, lack of clear guidelines and medication as well as fear of contracting or spreading the virus, have all contributed to the mental burden.(8)

During the Coronavirus Pandemic multiple studies conducted on healthcare professionals found alarmingly high rates of risky drinking. Problem drinking amongst healthcare professionals were reported in an American study (as high as 42.6%), (9) a British study (7%)(10) an Ethiopian study (40.2%)(11), and a Kenyan study (43.9%).(12) A rapid scoping review conducted in 2020 researched the mental health of healthcare professionals during the Covid-19 outbreak in South Africa (SA) and found prevalence of rates of depression (8.9% to 50.4%) and anxiety (10.4% to 44.6%).(13)

Both harmful alcohol use and above mentioned mental disorders can affect a healthcare professionals standard of care and overall safety to the patient.(14) Risky drinking has been associated with reduced productivity and performance in the workplace due to cognitive impairment and ill health.(15) Workplaces that encourage and support mental health are more likely to improve healthcare professionals' quality of life, decrease

absenteeism, increase productivity and benefit from associated economic gains.(16)
Preventative mental health interventions or health promotion programs are ways in which to reduce the risk of mental health problems within the workplace. .

There is a lack of research on mental health in healthcare professionals (HCPs) working in South Africa particularly in primary care settings. Therefore, the aim of this study was to determine the prevalence and correlates of alcohol use and mental disorders amongst healthcare professionals in West Rand District, Gauteng, South Africa. And in addition, assess the healthcare professionals' awareness and utilization of support services.

METHODS

Study design and setting

This study was a quantitative cross-sectional study. The study was conducted in West Rand District, which has two District level hospitals, one regional hospital and one specialist hospital and three community healthcare centres. The data was collected from June 2021 to March 2022.

Study Population

The inclusion criteria for participants included doctors (interns, community service, medical officers, registrars and specialists), nurses (nursing professionals, nursing assistants and professional nurses), clinical associates and dentists. Since it was a survey on healthcare professionals, a positive response to participation was taken as an implied consent. Participants also had to be currently employed on the West Rand and aged 18 or older. Those who did not fulfil above criteria were excluded from the study.

Sample size and sampling

According to the West Rand Health Council Area healthcare professionals totalled 2747.(17) Ideally, this study would have wanted to include as many healthcare professionals as possible working in the West Rand District. However, having assumed that it would not be possible to access all healthcare professionals a sample size was calculated by using OpenEpi.(18) Moreover, it was assumed that 6% of healthcare professionals would have had an alcohol use disorder (19), using a population size of 2747 healthcare workers with a precision of 3% and design effect of 2%. The minimal sample size was 443 healthcare professionals with a confidence interval of 95%. The West Rand District has two District level hospitals, one regional hospital and one specialist hospital and three community healthcare centres. The study targeted all hospitals and health centres. Three out of the four hospitals and all three community healthcare centres participated in the study. The investigator could not secure permission to conduct the study in one hospital.

Data collection procedures

Recruitment of participants: Permission was obtained from the various heads of units to grant access to their facilities and to meet potential study participants. Recruitment was done by the investigator at each site. Study information was provided to all eligible participants who were then invited to partake in a paper based self-administered questionnaire. Participants were provided with paper based self-administered questionnaire that comprised of seven sections with a total of 33 questions (see APPENDIX D). The survey looked at sociodemographic data such as gender, age, marital status, religion, race, profession, work setting and employment duration. Each collection site was provided a secure area to drop off surveys once completed. The investigator would then collect the surveys after a few days.

Study variables

Outcomes (Dependent variables): Harmful alcohol use was measured by applying the three-item question screening tool namely alcohol use disorder identification test (AUDIT-C). It is a shorter and modified version of the 10 question AUDIT instrument. Studies have validated the use of the AUDIT-C for screening risky drinking and active abuse.(20) The AUDIT-C measures alcohol misuse based on three questions about drinking habits. The scores are interpreted differently in males than in females. A score of four or more in males suggest alcohol misuse, while a score of three or more in females suggest the same.

Depressive symptoms were measured using the patient health questionnaire-2 (PHQ-2). The full nine item PHQ-9 questionnaire is a validated tool created by Kroenke *et al*,(21)

to assist in screening, diagnosing and monitoring depression. The shorter version PHQ-2 is a two-item questionnaire comprising of the first two questions from the PHQ-9 (22), its main purpose is to screen for depression. A PHQ2 score can range from 0–6, if the score is equal to three or greater, major depression disorder is likely.(22)

To screen for generalised anxiety symptoms the GAD-7 tool was used to screen for generalized anxiety disorder. It is a validated diagnostic tool for generalized anxiety.(23) Each question is rated from zero to three with a maximum score of 21. A score of ten and above indicates moderate symptom severity with possible clinically significant condition requiring further workup.(23,24)A score of 15 and more is considered a severe symptom severity and warrants active treatment.(23,24)

The three item Patient Safety Scale-3 (PSS-3) is a validated, short and efficient tool used to screen for suicidality and ideation.(25)The first two questions were based on thoughts experienced over the past two weeks and the last questions based on past experiences over a lifetime. Each question has three options to choose from: No, Yes and refused to answer. A positive screening is found if “Yes” was selected in question 2 or 3.(25)

The five item CAS questionnaire (CAS) was used to screen for anxiety related to Covid-19. It is a recently developed brief mental health screener for Covid-19 related anxiety, with 90% sensitivity and 85% specificity.(26) Each question has five options to choose from, participants with a score of nine and above are classified as having dysfunctional anxiety associated with the Covid-19 pandemic. (26)

The final part of the survey assessed the awareness of and utilization by healthcare professionals of organisations available for counselling on alcohol use and mental

disorders. Multiple support services were provided, and healthcare professionals were asked to select the ones they had personally used in the past. Participants were asked if they were involved in any employee wellness program (EWP), interested in joining, and what types of services they would prefer.

Exposures (Independent variables): The study exposures included sociodemographic information such as job title, work environment, gender, race, religion, and marital status.

Data management and analysis

The survey data was entered into a secure software platform called Research Electronic Data Capture (REDCap). Only the investigator and the supervisors had access to the data. Prior to analysis the scores were used to assess the main outcomes (alcohol use and mental disorders).

The descriptive statistics were computed to summarize the sociodemographic information from the participants. Bivariate analysis (using chi square or Fishers exact test) was used to determine the association between alcohol use, alcohol use disorders, mental disorders with the correlates. Furthermore, multivariable logistic regression was performed to determine the factors associated with alcohol use, alcohol use disorders and mental disorders. From previous studies, age and sex were included in the multivariable models as a priori confounders of alcohol use, alcohol use disorder and mental disorders(12,27–30). Other factors were entered in the multivariable models if they had a p value <0.20 in bivariate analysis (*Supplementary Tables 1-4*). This study

reports the findings of multivariable analysis as adjusted odds ratios and corresponding 95% CI. In the final models a p value of < 0.05 was considered statistically significant.

RESULTS

Participants

A total of 500 surveys were disseminated with 330 surveys having been completed, this translates to 66% response rate.

Sociodemographic characteristics of the study participants.

Most of the participants were predominantly female (78.8%) with 48.2% of healthcare professionals aged between 35–64 years. The predominant religion was Christianity (87.3%) with mostly black healthcare professionals partaking (87.0%) in the study. Regarding healthcare profession 60.9% were nurses followed by doctors (33.0%), and 40.6 % of the participants had been employed for a duration of more than 10 years. Additionally work setting varied amongst healthcare professionals with 36.1% working in wards and 35.8% working in the outpatient department (OPD) and Casualty (Table 1).

Prevalence and factors associated with risky alcohol use.

The overall prevalence of hazardous alcohol use amongst participants was (20.9%). These results were most prevalent amongst male healthcare professionals (42.0%) when compared with females (15.4%) (Table 2). In multivariable analysis (Table 3), only sex was associated with risky alcohol use and that females were less likely to report risky drinking (AOR= 0.27, 95% CI: 0.13-0.54).

Prevalence and factors associated with probable depression.

The overall prevalence for probable depression was 13.6%, with females having markedly higher rates of probable depression (16.5%) compared to males (2.9%) (Table 2). In the multivariable analysis (Table 4) being female was significantly associated with increased odds of being classified as having probable depression (AOR=4.86, 95% CI: 1.08-21.90).

Prevalence and factors associated with anxiety symptoms.

The general prevalence of mild to severe anxiety symptoms was 47.3% (n=156): mild anxiety symptoms 30.6 % (n=101); moderate anxiety symptoms 10% (n= 33); and severe anxiety symptoms 6.7% (n= 22). As presented in Table 2, females were found to have higher prevalence of anxiety symptoms than males (50.8% versus 34.8%). In the multivariable analysis (Table 5) females were significantly associated with increased odds of anxiety symptoms (AOR=2.78, 95%CI: 1.39-5.57). Furthermore, races other than black had higher percentages of anxiety (AOR=2.54, 95%CI: 1.00-6.42) however this was not statistically significant.

Prevalence and factors associated with suicide symptoms.

As presented in Table 2, the participants' overall suicidal symptoms prevalence was 7.9 % with females having higher prevalence than males (9.2% versus 2.9%). In multivariable analysis (Table 6), being widowed/divorced was significantly associated with reporting suicidal symptoms (AOR=6.88, 95% CI: 1.37-34.55).

Prevalence of Covid-19 dysfunctional anxiety symptoms and correlates.

The overall prevalence of Covid-19 dysfunctional anxiety symptoms was generally low amongst healthcare professionals (4.8%) with no males having reported Covid-19 dysfunctional anxiety symptoms (Table 2). On bivariate analysis (Table 7), anxiety

disorder ($p < 0.001$), probable depression ($p = 0.031$) and sex, being female ($p = 0.034$) were associated with Covid-19 dysfunctional anxiety symptoms. In multivariable analysis, none of the factors were associated with COVID-19 dysfunctional anxiety symptoms.

Utilization and awareness of wellness services.

Table 8 shows that there was low utilization of all the different helplines listed: Alcoholics Anonymous (AA) only 1.5% ($n = 5$); Alcoholics Anonymous for Teens (Alteen) 1.5% ($n = 5$); South African Depression and Anxiety Group (SADAG) 2.4% ($n = 8$); Depression and Mental Helpline (DMH) ($n = 9$); and lastly the Suicidal Crisis Helpline (SCH) only 0.6% ($n = 2$). The counselling service most used by healthcare professionals was psychology with 21.2% ($n = 70$). Most of the healthcare professionals 91.8% ($n = 303$) were not involved in employee wellness program (EWP) however 59.7% ($n = 197$) reported interest in joining one. Additionally, when asked what specific services were required, healthcare professionals reported as follows- 47% ($n = 155$) wellness events, 43.6% ($n = 144$) services and 44.8% ($n = 148$) resources.

DISCUSSION

Key results

The study findings show that healthcare professionals working in the West Rand have high levels of reported risky alcohol use, anxiety symptoms, probable depression and suicidal symptoms. Females were found to have much higher rates of anxiety symptoms, probable depression, suicidal symptoms and Covid-19 anxiety symptoms. Males however had higher reported rates of risky alcohol use. Overall, there was poor utilization of

support services in general with few healthcare professionals involved in employee wellness program.

Interpretation

This cross-sectional study found that during the Covid-19 pandemic 20.9% of West rand healthcare professionals reported hazardous alcohol use. These findings vary from similar studies conducted in other countries during Covid-19 timeline. In this study the rate is much lower than healthcare professionals working in Kenya (43.9%) and United States of America (42.6%)(9,12) and much higher than those in Italy (9.1%) and United Kingdom (7%). (10,27) A possible reason for the above discrepancy in the alcohol prevalence rates could be due to the varied alcohol control policies across different countries and access to mental health services.

The high rate of harmful alcohol use found on the West Rand is a cause for concern especially in the male population. In this study being female was associated with decreased odds of harmful alcohol use, these findings are consistent with studies conducted in Kenya and Italy during the Covid-19 pandemic.(12,27)These gender differences may be explained by strict cultural beliefs, values and traditional gender roles that may prevent females from developing harmful substance abuse.(31)

Regarding depression 45 (13.6%) participants screened positive for probable depression. In contrast Lai *et al* (32)conducted research at 34 hospitals in China and found much higher rates of depression (50%). A systematic review titled “Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic” found higher rates of depression as compared to our

population (24.3%).(33) Possible reasons for lower rates of probable depression in this study and especially in the male population (2.9%) may be due to the PHQ-2 screening tool. While the PHQ-2 is a well validated tool for use in resource constrained settings it has not been validated in the sub-Saharan population. In this study females had higher chances of probable depression [AOR=4.86; 95% CI 1.08-21.90]. Naidoo *et al* researched depression in healthcare professionals working in Kwa-Zulu Natal prior to the Covid-19 pandemic and similarly found an association between being female and having depression [OR 3.85, 95% CI 1.21-12.22].(34) A recent systematic review which researched the prevalence of major depressive disorder in the general population also reported females as more affected with depression than males.(35) These differences may be attributed to prescribed gender roles, added stressors of balancing domestic and professional roles, empathetic tendencies, marginalization by male colleagues and the likelihood of social and economic consequences of the Covid-19 pandemic.(34,35)

Many respondents 47.3% (n=101) in this study reported some level of anxiety symptoms. Robertson LJ *et al* conducted a systematic review of global literature surrounding mental health of healthcare professionals and found anxiety rates ranged anywhere from 10.4%–44.6%. (13) Differences in study population, screening tools and study sites may be causes of the wide range of prevalence rates.(13) In this study being female was associated with increased odds of having anxiety symptoms [AOR=2.78, 95%CI: 1.39-5.57]. A systematic review assessing mental health problems in healthcare professionals since Covid-19 found similar results to our study.(36) They found that female workers, nurses, frontline healthcare workers, younger medical staff members and workers in higher infection areas experienced the highest level of psychological distress.(36)

Pre-Covid-19 studies showed consistently that both nurses and physicians were at a higher risk for suicide as compared to other employed people.(37,38) Our study found higher rates of suicidal symptoms (7.9%) as compared to the findings of 4.2% by Mortier *et al* which was conducted at a large multicentre, in a prospective cohort study of Spanish healthcare workers (HCWs) active during the Covid-19 pandemic.(39) The higher rate in this study could be due to South Africa being a developing country with limited resources, insufficient workforce, poor supervision/guidelines and high job expectations. Rahman *et al* found that females are at a higher risk of suicidal behaviour than males during the Covid-19 pandemic, this was true for this study whereby female healthcare professionals had higher suicidal prevalence than male health professionals (9.2% versus 2.9% p value <0.001).(40)

Alarmingly there was overall poor utilization of helpline services besides psychology (21.2% n=70) amongst healthcare professionals considering the high rates of harmful alcohol use, depression, anxiety and suicidality. A majority of healthcare professionals were not involved in any EWP 91.8% (n=303) whereas oddly more than half 59.7% (n=197) reported interest in joining one. When asked which services they would be interested in receiving from an EWP healthcare professionals reported health services, creating wellness events, and providing resources. Nikunlaakso *et al*/conducted a scoping review looking at interventions to reduce the risk of mental health problems in health workplaces. (41)Their study revealed that there is a scarcity in the evidence that interventions reduce the risk of work-related mental health problems.(41)However psychological communication training and coaching, mental relaxation, muscle stressing,

emotional orientated care interventions were reported to have a positive effect and showed promising results.(41)

Generalizability

Our sample was comprised mostly of nurses followed by doctors, a good representation as the latter makes up the largest group of healthcare providers in South Africa.

Strengths/Limitations

This is the first study conducted on healthcare professionals in the West Rand to assess risky alcohol use and to screen for depression symptoms, anxiety symptoms, covid anxiety symptoms and suicide symptoms. Our study was neither without limitations nor could the causation be inferred due to the nature of a cross-sectional study. Unfortunately, only 330 completed surveys were collected. Reasons for non-participation at recruitment included lack of time and being uninterested in research. Self-administered questionnaires were used for this study which relied on self-report measures, this may have caused recall and participant bias. There can also be a tendency for healthcare professionals to under report harmful alcohol use/mental illness/suicidal ideation to be seen as safe and responsible due to the nature of their position thus social desirability bias may have occurred. While the PHQ-2 is a well validated tool for use in resource constrained settings, it unfortunately is not validated against a gold standard in sub-Saharan Africa. To reduce the risk of response bias, surveys were anonymous, questions were short and clear and shorter screening tools for alcohol use disorder and depression.

Conclusion

It is evident that risky alcohol use, probable depression, anxiety symptoms, and suicidal symptoms are significant problems amongst healthcare professionals on the West Rand. Overall, there is poor utilization of support services but large interest in joining an employee wellness program. There is a need to create and pilot, targeted interventions amongst healthcare professionals to improve awareness and utilization of the existing alcohol use and mental health services. Our recommendations include increasing awareness of the availability of alcohol use and mental health wellness programs/psychological services and to strengthen/create employee wellness programs. Lastly there is also a need for integration of screening, brief interventions and referral for treatment of alcohol use and mental disorders in employee wellness programs. Future studies could also explore strategies to deliver alcohol and mental disorder screening, brief intervention, and referral to treatment.

OTHER INFORMATION

Conflict of interest

None declared.

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Supplementary material

Additional material is available at *Family Practice* online website.

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Ethical consideration

The study was approved by the Ethics Committee (HREC) of the University of the Witwatersrand, Johannesburg (Ref no- M2102101), the West Rand District clinical manager and head of units at each of the various facilities. The Ethics committee waived the requirement of written informed consent for participation. As part of a distress measure, participants were provided details on different support services/helplines in order to assist with any alcohol or mental health related issues. No financial remuneration was offered to the participants. Our study procedures were in keeping with the 1964 Helsinki Declaration. No consent form was needed as completing the self-administered questionnaire voluntarily implied consent. Participating healthcare professionals completed the survey/questionnaire completely anonymously.

Data availability

The datasets used in this study are available from the corresponding author upon reasonable request.

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Tables of Results

Table 1: General Characteristics of Healthcare Professionals in West Rand District, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	N	%
Sex	Male	69	20.9
	Female	260	78.8
	Missing	1	0.3
	Total	330	100.0
Age (Years)	23-34 yrs	119	36.1
	35-64 yrs	159	48.2
	Missing	52	15.8
	Total	330	100.0
Marital status	Single	125	37.9
	Married/with partner	180	54.5
	Widowed/Divorced	24	7.3
	Missing	1	0.3
	Total	330	100.0
Religion	Christian	288	87.3
	Other	32	9.7
	Missing	10	3.0
	Total	330	100.0
Race			0.0
	Black/African	287	87.0
	Coloured	6	1.8
	Indian/Asian	12	3.6
	White	17	5.2
	Prefer not to disclose	4	1.2
	Missing	4	1.2
	Total	330	100.0
Race - binary	Black	287	87.0
	Others	39	11.8
	Missing	4	1.2
	Total	330	100.0
Profession	Medicine	109	33.0

	Nursing	201	60.9
	Other	18	5.5
	Missing	2	0.6
	Total	330	100.0
Work setting	Wards	119	36.1
	OPD and Causality	118	35.8
	Other	73	22.1
	Missing	20	6.1
	Total	330	100.0
Employment duration	< 4 years	92	27.9
	4-10 years	94	28.5
	>10 years	134	40.6
	Missing	10	3.0
	Total	330	100.0

Table 2: Prevalence of risky alcohol use, Probable Depression, Anxiety symptoms, Suicide symptoms, COVID dysfunctional anxiety symptoms among Healthcare Professionals in West Rand District, Johannesburg, South Africa 2021-2022

Characteristic	Categories	Sex						P value
		Male		Female		Total		
		n	%	n	%	n	%	
Risky alcohol use (AUDIT-C)	No risky drinking	38	55.1	218	83.8	256	77.6	<0.001
	Risky drinking	29	42.0	40	15.4	69	20.9	
	Missing	2	2.9	2	0.8	5	1.5	
	Total	69	100.0	260	100.0	330	100.0	
Depression symptoms	No depression	64	92.8	210	80.8	274	83.0	<0.001
	Probable depression	2	2.9	43	16.5	45	13.6	
	Missing	3	4.3	7	2.7	11	3.3	
	Total	69	100.0	260	100.0	330	100.0	
Anxiety symptoms	No anxiety symptoms	44	63.8	120	46.2	164	49.7	<0.001
	Mild anxiety symptoms	19	27.5	82	31.5	101	30.6	
	Moderate anxiety symptoms	4	5.8	29	11.2	33	10.0	
	Severe anxiety symptoms	1	1.4	21	8.1	22	6.7	
	Missing	1	1.4	8	3.1	10	3.0	
	Total	69	100.0	260	100.0	330	100.0	
Anxiety (binary)	No anxiety symptoms	44	63.8	120	46.2	164	49.7	<0.001
	Anxiety symptoms	24	34.8	132	50.8	156	47.3	
	Missing	1	1.4	8	3.1	10	3.0	
	Total	69	100.0	260	100.0	330	100.0	
Suicide symptoms	No suicide symptoms	63	91.3	224	86.2	287	87.0	<0.001
	Suicide symptoms	2	2.9	24	9.2	26	7.9	
	Missing	4	5.8	12	4.6	17	5.2	
	Total	69	100.0	260	100.0	330	100.0	
COVID dysfunctional anxiety symptoms	No dysfunctional anxiety symptoms	68	98.6	240	92.3	308	93.3	<0.001
	Dysfunctional anxiety symptoms	0	0.0	16	6.2	16	4.8	

	Missing	1	1.4	4	1.5	6	1.8	
	Total	69	100	260	100.0	330	100.0	

Table 3: Factors associated with risky alcohol use among Healthcare Professionals in West Rand District, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	Adjusted OR	95% CI
Sex	Male	1	
	Female	0.27***	0.13 - 0.54
Age (Years)	23-34	1	
	35-64	0.52	0.26 - 1.02
Marital status	Single	1	
	Married/with partner	0.76	0.38 - 1.49
	Widowed/divorced	0.38	0.08 - 1.92
Religion	Christian	1	
	Other	0.87	0.23 - 3.22
Race	Black	1	
	Others	0.42	0.12 - 1.49
Depression symptoms	No	1	
	Yes	1.45	0.58 - 3.60
COVID dysfunctional anxiety symptoms	No	1	
	Yes	0.80	0.16 - 4.00
*** p<0.001, ** p<0.01, * p<0.05			

Table 4: Factors associated with probable depression among Healthcare Professionals in West Rand District, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	Adjusted OR	95% CI
Sex	Male	1	
	Female	4.86*	1.08 - 21.90
Age (Years)	23-34	1	
	35-64	1.34	0.60 - 3.03
Marital status	Single	1	
	Married/with partner	0.97	0.44 - 2.14
	Widowed/divorced	0.66	0.16 - 2.80
Religion	Christian	1	
	Other	0.65	0.17 - 2.41
Race	Black	1	
	Others	2.36	0.79 - 7.05
Hazardous alcohol use	No	1	
	Yes	1.44	0.58 - 3.58
COVID dysfunctional anxiety symptoms	No	1	
	Yes	2.59	0.72 - 9.29
*** p<0.001, ** p<0.01, * p<0.05			

Table 5: Factors associated with anxiety symptoms among Healthcare Professionals in West Rand District, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	Adjusted OR	95%CI
Sex	Male	1	
	Female	2.78**	1.39 - 5.57
Age (Years)	23-34	1	
	35-64	0.90	0.51 - 1.60
Marital status	Single	1	
	Married/with partner	0.77	0.44 - 1.36
	Widowed/divorced	1.23	0.47 - 3.26
Religion	Christian	1	
	Other	1.20	0.43 - 3.35
Race	Black	1	
	Others	2.54*	1.00 - 6.42
Hazardous alcohol use	No	1	
	Yes	1.60	0.83 - 3.08
*** p<0.001, ** p<0.01, * p<0.05			

Table 6: Factors associated with suicide symptoms among Healthcare Professionals in West Rand District, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	Adjusted OR	95% CI
Sex	Male	1	
	Female	7.88	0.98 - 63.19
Age (Years)	23-34	1	
	35-64	0.36	0.13 - 1.03
Marital status	Single	1	
	Married/with partner	2.55	0.83 - 7.88
	Widowed/divorced	6.88*	1.37 - 34.55
Religion	Christian	1	
	Other	2.69	0.52 - 13.91
Race	Black	1	
	Others	0.16	0.02 - 1.14
Hazardous alcohol use	No risky drinking	1	
	Risky drinking	1.32	0.42 - 4.13
*** p<0.001, ** p<0.01, * p<0.05			

Table 7: Findings of the factors associated with COVID dysfunctional anxiety symptoms at bivariate analysis among Healthcare Professionals in West Rand District Johannesburg, South Africa, 2021-2022

Characteristic	Categories	COVID Dysfunctional Anxiety					P value
		No		Yes		Total	
		n	%	n	%	n	
Sex	Male	68	100.0	0	0.0	68	0.034
	Female	240	93.8	16	6.3	256	
	Total	308	95.1	16	4.9	324	
Age (Years)	23-34	112	94.1	7	5.9	119	0.795
	35-64	147	94.8	8	5.2	155	
	Total	259	94.5	15	5.5	274	
Marital status	Single	116	95.1	6	4.9	122	0.191
	Married/with partner	171	96.1	7	3.9	178	
	Widowed/divorced	21	87.5	3	12.5	24	
	Total	308	95.1	16	4.9	324	
Religion	Christian	269	94.7	15	5.3	284	0.183
	Other	32	100.0	0	0.0	32	
	Total	301	95.3	15	4.7	316	
Race	Black	267	94.7	15	5.3	282	0.459
	Others	38	97.4	1	2.6	39	
	Total	305	95.0	16	5.0	321	
Cadre	Medicine	106	97.2	3	2.8	109	0.422
	Nursing	183	93.8	12	6.2	195	
	Other	17	94.4	1	5.6	18	
	Total	306	95.0	16	5.0	322	
Working station	Wards	110	94.0	7	6.0	117	0.853
	OPD and causality	109	94.8	6	5.2	115	
	Other	70	95.9	3	4.1	73	
	Total	289	94.8	16	5.2	305	
Employment duration	< 4 years	89	96.7	3	3.3	92	0.626
	4-10 years	88	94.6	5	5.4	93	
	>10 years	123	93.9	8	6.1	131	
	Total	300	94.9	16	5.1	316	
Hazardous alcohol use	No	238	94.4	14	5.6	252	0.369
	Yes	67	97.1	2	2.9	69	

	Total	305	95.0	16	5.0	321	
Depression symptoms	No	259	96.3	10	3.7	269	0.031
	Yes	40	88.9	5	11.1	45	
	Total	299	95.2	15	4.8	314	
Suicide symptoms	No	270	95.4	13	4.6	283	0.126
	Yes	23	88.5	3	11.5	26	
	Total	293	94.8	16	5.2	309	
Anxiety symptoms	No	161	99.4	1	0.6	162	<0.001
	Yes	139	90.3	15	9.7	154	
	Total	300	94.9	16	5.1	316	

Table 8: Utilization of wellness services among Healthcare Professionals in West Rand District
Johannesburg, South Africa 2021-2022

Characteristic	Categories	Sex						P value
		Male		Female		Total		
		n	%	n	%	n	%	
Alcoholic Anonymous South Africa National Helpline (AA)	No	68	98.6	249	95.8	317	96.1	<0.001
	Yes	0	0.0	5	1.9	5	1.5	
		1	1.4	6	2.3	8	2.4	
	Total	69	100.0	260	100.0	330	100.0	
Alteen (group for young people with alcohol problems)	No	66	95.7	247	95.0	313	94.8	<0.001
	Yes	1	1.4	4	1.5	5	1.5	
		2	2.9	9	3.5	12	3.6	
	Total	69	100.0	260	100.0	330	100.0	
South African Depression and Anxiety Group (SADAG)	No	66	95.7	244	93.8	310	93.9	<0.001
	Yes	1	1.4	7	2.7	8	2.4	
		2	2.9	9	3.5	12	3.6	
	Total	69	100.0	260	100.0	330	100.0	
Depression and Mental health Help line	No	67	97.1	241	92.7	308	93.3	<0.001
	Yes	2	2.9	7	2.7	9	2.7	
		0	0.0	12	4.6	13	3.9	
	Total	69	100.0	260	100.0	330	100.0	
Suicide Crises line	No	66	95.7	244	93.8	310	93.9	0.001
	Yes	1	1.4	1	0.4	2	0.6	
		2	2.9	15	5.8	18	5.5	
	Total	69	100.0	260	100.0	330	100.0	
Psychologist	No	57	82.6	189	72.7	246	74.5	<0.001
	Yes	11	15.9	59	22.7	70	21.2	
		1	1.4	12	4.6	14	4.2	
	Total	69	100.0	260	100.0	330	100.0	
Are you currently involved in an Employee Wellness Program?	No	63	91.3	240	92.3	303	91.8	<0.001
	Yes	4	5.8	12	4.6	16	4.8	

		2	2.9	8	3.1	11	3.3	
	Total	69	100.0	260	100.0	330	100.0	
Would you be interested in joining an Employee Wellness Program if provided	No	31	44.9	78	30.0	109	33.0	0.001
	Yes	33	47.8	164	63.1	197	59.7	
		5	7.2	18	6.9	24	7.3	
	Total	69	100.0	260	100.0	330	100.0	
Wellness Events (Eg: walking, nutrition, resilience programs)	No	3	4.3	9	3.5	12	3.6	0.270
	Yes	25	36.2	130	50.0	155	47.0	
		41	59.4	121	46.5	163	49.4	
	Total	69	100.0	260	100.0	330	100.0	
Services (Eg: screening, health coaching)	No	3	4.3	18	6.9	21	6.4	0.483
	Yes	26	37.7	118	45.4	144	43.6	
		40	58.0	124	47.7	165	50.0	
	Total	69	100.0	260	100.0	330	100.0	
Resources (Eg: online assessments, learning modules, training programs)	No	5	7.2	19	7.3	24	7.3	0.406
	Yes	25	36.2	123	47.3	148	44.8	
		39	56.5	118	45.4	158	47.9	
	Total	69	100.0	260	100.0	330	100.0	

Supplementary Tables of results

Supplementary Table 1: Findings of the factors associated with risky alcohol use at bivariate analysis among Healthcare Providers in West Rand district, Johannesburg, South Africa, 2021- 2022

Characteristic	Categories	Alcohol Use Disorder					P value
		No		Yes		Total	
		n	%	n	%	n	
Sex	Male	38	56.7	29	43.3	67	<0.001
	Female	218	84.5	40	15.5	258	
	Total	256	78.8	69	21.2	325	
Age	23-34	82	69.5	36	30.5	118	0.004
	35-64	132	84.1	25	15.9	157	
	Total	214	77.8	61	22.2	275	
Marital status	Single	89	71.8	35	28.2	124	0.029
	Married/with partner	145	81.9	32	18.1	177	
	Widowed/divorced	22	91.7	2	8.3	24	
	Total	256	78.8	69	21.2	325	
Religion	Christian	224	78.6	61	21.4	285	0.493
	Other	26	83.9	5	16.1	31	
	Total	250	79.1	66	20.9	316	
Race	Black	220	77.5	64	22.5	284	0.088
	Others	34	89.5	4	10.5	38	
	Total	254	78.9	68	21.1	322	
Cadre	Medicine	80	75.5	26	24.5	106	0.604
	Nursing	160	80.4	39	19.6	199	
	Other	14	77.8	4	22.2	18	
	Total	254	78.6	69	21.4	323	
Workstation	Wards	95	80.5	23	19.5	118	0.341
	OPD and casualty	93	80.2	23	19.8	116	
	Other	52	72.2	20	27.8	72	
	Total	240	78.4	66	21.6	306	
Employment duration	< 4 years	68	75.6	22	24.4	90	0.698
	4-10 years	74	78.7	20	21.3	94	
	>10 years	106	80.3	26	19.7	132	
	Total	248	78.5	68	21.5	316	

Depression symptoms	No	214	79.3	56	20.7	270	0.371
	Yes	33	73.3	12	26.7	45	
	Total	247	78.4	68	21.6	315	
Anxiety symptoms	No	131	81.4	30	18.6	161	0.203
	Yes	117	75.5	38	24.5	155	
	Total	248	78.5	68	21.5	316	
Suicide symptoms	No	225	79.5	58	20.5	283	0.441
	Yes	19	73.1	7	26.9	26	
	Total	244	79.0	65	21.0	309	
COVID dysfunctional anxiety symptoms	No	238	78.0	67	22.0	305	0.369
	Yes	14	87.5	2	12.5	16	
	Total	252	78.5	69	21.5	321	

Supplementary Table 2: Findings of factors associated with probable depression at bivariate analysis among Healthcare Providers in West Rand, Johannesburg, South Africa, 2021- 2022

Characteristic	Categories	Probable Depression					P value
		No		Yes		Total	
		n	%	n	%	n	
Sex	Male	64	97.0	2	3.0	66	0.004
	Female	210	83.0	43	17.0	253	
	Total	274	85.9	45	14.1	319	
Age(years)	23-34	103	86.6	16	13.4	119	0.809
	35-64	130	85.5	22	14.5	152	
	Total	233	86.0	38	14.0	271	
Marital status	Single	101	83.5	20	16.5	121	0.623
	Married/with partner	153	87.4	22	12.6	175	
	Widowed/divorced	20	87.0	3	13.0	23	
	Total	274	85.9	45	14.1	319	
Religion	Christian	239	86.0	39	14.0	278	0.813
	Other	28	87.5	4	12.5	32	
	Total	267	86.1	43	13.9	310	
Race	Black	242	87.1	36	12.9	278	0.090
	Others	30	76.9	9	23.1	39	
	Total	272	85.8	45	14.2	317	
Cadre	Medicine	94	87.9	13	12.1	107	0.745
	Nursing	163	84.9	29	15.1	192	
	Other	15	83.3	3	16.7	18	
	Total	272	85.8	45	14.2	317	
Workstation	Wards	101	86.3	16	13.7	117	0.831
	OPD and casualty	99	86.1	16	13.9	115	
	Other	60	83.3	12	16.7	72	
	Total	260	85.5	44	14.5	304	
Employment duration	< 4 years	79	87.8	11	12.2	90	0.552
	4-10 years	81	87.1	12	12.9	93	
	>10 years	108	83.1	22	16.9	130	
	Total	268	85.6	45	14.4	313	
Hazardous alcohol use	No	214	86.6	33	13.4	247	0.371
	Yes	56	82.4	12	17.6	68	
	Total	270	85.7	45	14.3	315	
COVID Dysfunctional anxiety symptoms	No	259	86.6	40	13.4	299	0.031
	Yes	10	66.7	5	33.3	15	
	Total	269	85.7	45	14.3	314	

Supplementary Table 3: Findings of factors associated with anxiety symptoms at bivariate analysis among Healthcare Providers in West Rand district, Johannesburg, South Africa, 2021-2022

Characteristic	Categories	Anxiety Disorder					P value
		No		Yes		Total	
		n	%	n	%	n	
Sex	Male	44	64.7	24	35.3	68	0.012
	Female	120	47.6	132	52.4	252	
	Total	164	51.2	156	48.8	320	
Age(years)	23-34	56	47.5	62	52.5	118	0.316
	35-64	82	53.6	71	46.4	153	
	Total	138	50.9	133	49.1	271	
Marital status	Single	61	50.4	60	49.6	121	0.803
	Married/with partner	92	52.6	83	47.4	175	
	Widowed/divorced	11	45.8	13	54.2	24	
	Total	164	51.2	156	48.8	320	
Religion	Christian	153	54.3	129	45.7	282	0.029
	Other	10	33.3	20	66.7	30	
	Total	163	52.2	149	47.8	312	
Race	Black	151	54.3	127	45.7	278	0.006
	Others	12	30.8	27	69.2	39	
	Total	163	51.4	154	48.6	317	
Cadre	Medicine	55	51.4	52	48.6	107	0.710
	Nursing	100	51.5	94	48.5	194	
	Other	7	41.2	10	58.8	17	
	Total	162	50.9	156	49.1	318	
Working station	Wards	63	53.8	54	46.2	117	0.399
	OPD and casualty	57	49.6	58	50.4	115	
	Other	31	43.7	40	56.3	71	
	Total	151	49.8	152	50.2	303	
Employment duration	< 4 years	42	46.7	48	53.3	90	0.710
	4-10 years	46	50.5	45	49.5	91	
	>10 years	68	52.3	62	47.7	130	
	Total	156	50.2	155	49.8	311	

Hazardous alcohol use	No	131	52.8	117	47.2	248	0.203
	Yes	30	44.1	38	55.9	68	
	Total	161	50.9	155	49.1	316	
COVID dysfunctional anxiety symptoms	No	161	53.7	139	46.3	300	<0.001
	Yes	1	6.3	15	93.8	16	
	Total	162	51.3	154	48.7	316	

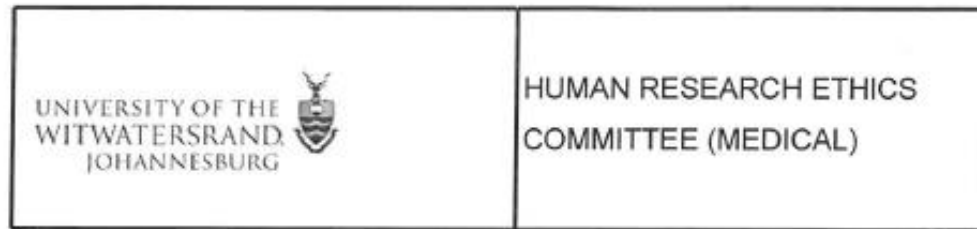
Supplementary Table 4: Findings of factors associated with suicide symptoms at bivariate analysis among Healthcare Providers in West Rand district, Johannesburg, South Africa 2021-2022

Characteristic	Categories	Suicide symptoms					P value
		No		Yes		Total	
		n	%	n	%	n	
Sex	Male	63	96.9	2	3.1	65	0.086
	Female	224	90.3	24	9.7	248	
	Total	287	91.7	26	8.3	313	
Age (Years)	23-34	102	90.3	11	9.7	113	0.610
	35-64	139	92.1	12	7.9	151	
	Total	241	91.3	23	8.7	264	
Marital status	Single	110	94.0	7	6.0	117	0.187
	Married/with partner	158	91.3	15	8.7	173	
	Widowed/divorced	19	82.6	4	17.4	23	
	Total	287	91.7	26	8.3	313	
Religion	Christian	252	92.0	22	8.0	274	0.751
	Other	28	90.3	3	9.7	31	
	Total	280	91.8	25	8.2	305	
Race	Black	250	91.6	23	8.4	273	0.948
	Others	34	91.9	3	8.1	37	
	Total	284	91.6	26	8.4	310	
Cadre	Medicine	96	91.4	9	8.6	105	0.460
	Nursing	173	91.1	17	8.9	190	
	Other	16	100.0	0	0.0	16	
	Total	285	91.6	26	8.4	311	
Working station	Wards	105	92.9	8	7.1	113	0.409
	OPD and casualty	101	91.8	9	8.2	110	
	Other	62	87.3	9	12.7	71	
	Total	268	91.2	26	8.8	294	
Employment duration	< 4 years	78	91.8	7	8.2	85	0.901
	4-10 years	84	92.3	7	7.7	91	
	>10 years	116	90.6	12	9.4	128	
	Total	278	91.4	26	8.6	304	

Hazardous alcohol use	No	225	92.2	19	7.8	244	0.441
	Yes	58	89.2	7	10.8	65	
	Total	283	91.6	26	8.4	309	
COVID dysfunctional anxiety symptoms	No	270	92.2	23	7.8	293	0.126
	Yes	13	81.3	3	18.8	16	
	Total	283	91.6	26	8.4	309	

APPENDICES A

HREC Approval



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

TO: Dr C McMagh
School of Clinical Medicine
Department of Medicine
Division of Family Medicine
Medical School
University

E-mail: charlotte@rapt.co.za

CC: Supervisor: Drs J Francis and O Fadahun
<Joel.Francis@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: 2021/03/17

REF: R14/49

PROTOCOL NO: **M2102101** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Prevalence and correlates of alcohol use, mental disorders and awareness and utilization of support services amongst healthcare professionals in West Rand District, 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.



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R49 Dr C McMagh

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M2102101**

NAME:
(Principal Investigator)

Dr C McMagh

DEPARTMENT:

School of Clinical Medicine
Department of Medicine
Division of Family Medicine
Medical School
University

PROJECT TITLE:

Prevalence and correlates of alcohol use, mental disorders and awareness and utilization of support services amongst healthcare professionals in West Rand District, Gauteng, South Africa

DATE CONSIDERED:

Ad hoc

DECISION:

Approved unconditionally

CONDITIONS:

SUPERVISOR:

Drs J Francis and O Fadahun

APPROVED BY:


Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL:

2021/03/17

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 **February** and therefore reports and re-certification will be due in the month of **February** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).


Signature of Principal Investigator

2021/03/18
Date

APPENDICES B Information Sheet

Good day,

I am Dr Charlotte Mc Magh from the Family Medicine Department at the University of the Witwatersrand medical School who are investigating the prevalence and correlates of mental and alcohol use disorders among healthcare workers in Gauteng Province. We would be most grateful if you would consider participating in this study

Why are we doing this study?

Alcohol is a global problem and according to the World Health Organization (WHO) in 2016 contributed to 3 million deaths worldwide and responsible for 5.1 % of the global burden of disease¹. Ramlagan et al reported alcohol to be the most commonly abused substance within treatment centers in South Africa²¹. There is lacking data on correlates of mental and alcohol use disorders among Healthcare Workers in South Africa.

What do we expect from the participants in the study?

If participants have given consent to partake in the study, they will be required to complete a 23-item self-reported questionnaire. The Questionnaire will involve providing Socio-demographic information and alcohol and health related interventions as well as completing three screening tools. The tools will screen for Harmful Alcohol Use, Depression, Suicidal thoughts and Generalized Anxiety Disorder.

Are there any benefits to the participants?

No direct benefit to participant, however by taking part in this study you will be contributing towards research in the field of harmful alcohol use and mental problems within Healthcare workers. The data

collected from this study can help better understand the above stated problems and how to better prevent, screen and treat eventually.

May I withdraw from the study?

Certainly, you may withdraw from the study at any time without having to give a reason. The study is completely voluntary and not taking part or withdrawing from it carries no penalty.

What about Confidentiality?

Confidentiality will be maintained by the use of numbers/codes instead of names on the results. Only three researchers will have a list of the names and codes. This information will be kept locked in an office.

What if I want to contact a support group for harmful alcohol use or mental

health? Attached below is a list of support services available in Gauteng specifically.

If you have any queries, more information may be obtained from Dr Mc Magh at telephone Number 0836526905.

If you are happy to proceed and take part in the study please read and sign the attached consent form

Thank you

Dr Mc Magh

APPENDICIES C Distress Protocol

Institution	Address	Phone Number	Alternative Number	Services
Al Anon Family Groups	72 Marlborough Road, Springfield, Johannesburg 2190	National toll-free hotline 0861 25 26 66	011 683 8002	They only hold meetings
Alcoholics Anonymous-South Africa	4 Mowbray Avenue, Benoni	011 421 1748		Children, Adults, Training/Education, Information provision, self-help, Youth, Committee/Forums, Women, Girls, Prevention

Christian Action for Dependence- Kempton	17 Pascoe lane, Kempton Park	082 724 7028	082 770 5318	Children, Adults, After Care, Training/Education, Information Provision, Self-help, Outreach, Diversion Programs, Youth, Committee/Forums, Women, Girls, Prevention
South African Depression and Anxiety Groups (SADAG)		SADAG Helpline: 0800 212 223, 0800 7080 90, 0800 456 789	WhatsApp Chat Line: 0768822775 SMS: 31393 or 32312 Facebook: The South African Depression and Anxiety Group	Online tool kit, videos, reliable resources, coping skills. Online chat with counsellor, free telephonic counselling, information and referrals 7 days a week , 24 hours a day.

Suicide Crises Helpline		24 hour hotline: 0800 567 567	SMS: 31393	Provides support to people in distress or at risk of suicide
LifeLine SA	Johannesburg: 2 The Avenue, CNR Henrietta street Norwood, Johannesburg Alexandra: St Michaels Church, 8 th Avenue, Alexandra, 2014	24 hour hotline:0861 322 322 Johannesburg: 011 728 1347 Alexandra: 011 443 3555 Soweto: 067 019 0845	Facebook: LifeLine Johannesburg	Address psychological and social stresses provide: Free counseling online, face to face counselling, trauma and couples counseling. Monthly evening
	Soweto: 8642 Immink Street, Zone 6, Diepkloof			presentations.
Akeso Psychiatric Response unit	CNR Hawken and President Fouche Dr,	0861 435 787	Facebook: Akeso Randburg-Crescent Clinic Campaign	24-hour service to anyone requiring emergency psychiatric intervention in South Africa

	Boskruin, Randburg			
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APPENDIX D Questionnaire

Section One: Socio-Demographic Questions

Please answer the following questions about yourself.

QN	Code	Question and Filters	Coding Categories	Notes
1	Job	Please select your current job title?	1. Specialist 2. Healthcare Worker currently specializing. 3. Doctor 4. Dentist 5. Nurse 6. Clinical Associate	
2	Field	What field of medicine do you practice in?		
3	Length	How many years have you been working as a Healthcare Worker?		
4	Environment	Which environment do you mainly work in?	1. Wards 2. OPD 3. Casualty 4. Other	
5	Gender	What is your Gender?	1. Male 2. Female	

			3. Other	
6	Age	What is your age in years?		
7	Race	How do you identify yourself?	1. Black/African 2. Coloured 3. Indian/Asian 4. White 5. Prefer not to disclose	
8	Religion	What is your Religion?	1. Christian 2. Hindu 3. Muslim 4. Jewish. 5. Buddhist or Bahai 6. Ancestral, animist, tribal or other traditional African Religions 7. Atheist or Agnostic 8. Other	
9	Marriage Status	Currently what is your marital status?	1. Single 2. Unmarried with a partner 3. Married 4. Separated/Divorced. 5. Divorced and Remarried 6. Widowed	

Section two: Alcohol Use Disorder Intervention Test-C.

Please answer three questions about your alcohol consumption in the past year.

10	Often	How often did you have a drink containing alcohol in the past year?	Never (0 points), Monthly or less (1 points) 2-4 times a month (2 points) 2-3 times a week (3 points) 4 or more times a week (4 points)	
11	Number	How many drinks containing alcohol did you have on a typical day when you were drinking in the past year?	1-2 (0 points), 3-4 (1 point), 5-6 (2 points) 7-9 points (3 points) 10 or more (4 points)	
12	Occasions	How often did you have six or more drinks on one occasion in the past year?	Never (0 points) Less than monthly (1 point) Monthly (2 points) Weekly (3 points) Daily almost daily (4 points)	

Section three: Patient Health Questionnaire.

Please answer over the past 2 weeks how often have you been bothered by the following problems?

13	Anhedonia	Little interest or pleasure in doing things	Not at all (0 points) Several days (1 point) More than half the days (2 point), Nearly every day (3 points)	
14	Depression	Feeling down, depressed, or hopeless	Not at all (0 points) Several days (1 point) More than half the days (2 point), Nearly every day (3 points)	

Section four: Generalized Anxiety Disorder

Please answer over the past 2 weeks how often have you been bothered by the following problems?

15	Anxious	Feeling nervous, anxious or on edge?	Not at all (0 points) Several days (1 point) More than half the days(2 points) Nearly every day(3 points)	
16	Worry	Not being able to stop or control worrying?	Not at all (0 points) Several days (1 point) More than half the days (2 points) Nearly every day(3 points)	
17	Different Things	Worrying too much about different thing?	Not at all (0 points) Several days (1 point) More than half the days(2 points) Nearly every day(3 points)	
18	Relaxing	Trouble relaxing?	Not at all (0 points) Several days (1 point) More than half the days (2 points), Nearly every day(3 points)	
19	Restless	Being so restless that its hard to sit still?	Not at all (0 points) Several days (1 point) More than half the days (2 points), Nearly every day(3 points)	
20	Annoyed	Becoming easily annoyed or irritable?	Not at all (0 points) Several days (1 point) More than half the days (2 points),	

			Nearly every day(3 points)	
21	Afraid	Feeling afraid as if something awful might happen?	Not at all (0 points) Several days (1 point) More than half the days (2 points), Nearly every day(3 points)	

Section five: Patient Safety Scale

Please answer the following questions

22	Hopelessness	Over the past two weeks have you felt down, depressed or hopeless?	No (0) Yes (1) Refuse to answer	
23	Suicidal thoughts	Over the past two weeks have you had thoughts of killing yourself	No (0) Yes (1) Refuse to answer	
24	Attempted	In your lifetime have you ever attempted to kill yourself	No (0) Yes (1) Refuse to answer	

Section Six: Coronavirus Anxiety Scale

Please select an answer that best describes how you have felt and conducted yourself over the past 2 weeks?

25	Dizzy	I felt dizzy, lightheaded, or faint when I read or listened to news about coronavirus	Not at all (0 point) Rare, less than a day or two (1 point) Several days (2 point) More than 7 days (3 points) Nearly every day over the last 2 weeks (4 points)	
26	Sleeping	I had trouble falling or staying asleep because I was thinking about coronavirus	Not at all (0 point) Rare, less than a day or two (1 point) Several days (2 point) More than 7 days (3 points) Nearly every day over the last 2 weeks (4 points)	
27	Paralyzed	I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus	Not at all (0 point) Rare, less than a day or two (1 point) Several days (2 point) More than 7 days (3 points) Nearly every day over the last 2 weeks (4 points)	
28	anorexia	I lost interest in eating when I thought about or was exposed to information about the corona	Not at all (0 point) Rare, less than a day or two (1 point) Several days (2 point)	

			More than 7 days (3 points) Nearly every day over the last 2 weeks (4 points)	
29	Nausea	I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus	Not at all (0 point) Rare, less than a day or two (1 point) Several days (2 point) More than 7 days (3 points) Nearly every day over the last 2 weeks (4 points)	

Section Seven: To explore awareness in HCW on the services for alcohol use and mental disorders

Please answer the following questions related to support services and employee wellness programs.

30a)	Services	Have you used the following service for own personal issues? Alcoholic Anonymous South Africa National Helpline (AA)	Yes No Refuse to answer	
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30b)	Have you used the following service for own personal issues? Alteen(group for young people with alcohol problems)	Yes(1) No Refuse to answer	
30c)	Have you used the following service for own personal issues? South African Depression and Anxiety Group(SADAG)	Yes No Refuse to answer	
30d)	Have you used the following service for own personal issues? Depression and Mental health Help line	Yes No Refuse to answer	
30e)	Have you used the following service for own personal issues? Life Line Johannesburg	Yes No Refuse to answer	

30f)		Have you used the following service for your own personal issues? Suicide Crises line	Yes No Refuse to answer	
30g)		Have you used the following service for your own personal issues? Psychologist	Yes No Refuse to answer	
Employee wellness programs are programs set up by employers to provide integrated workplace and wellness programs, that focus on improving employees mental and physical health.				
31	Employee Wellness Program Involvement	Are you currently involved in an Employee Wellness Program?	1)Yes 2)No	
32	Employee Wellness Program Interest	Would you be interested in joining an Employee Wellness Program if provided by your employer?	1)Yes 2)No (If no then finished) 3)refuse to answer	

33 a	Employee Wellness Program Services	If you answered YES to question 32, which of the following features would appeal to you the most?		
		Wellness Events (Eg: walking, nutrition, resilience programs)	Yes No Refuse to answer	
33b		Services (Eg: screening, health coaching)	Yes No Refuse to answer	
33c		Resources (Eg: online assessments, learning modules, training programs)	Yes No Refuse to answer	

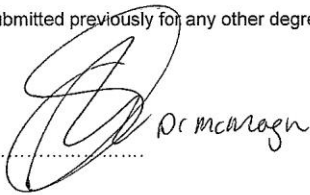
Thank you for completing the above survey

APPENDICES E Plagiarism Declaration

Plagiarism Report

I, Dr Charlotte Mc Magh, hereby declare that this research is my own unaided work, except where due acknowledgement for assistance received has been made. It is being submitted for the degree of Master of Family Medicine at the University of the Witwatersrand, Johannesburg. It has not been submitted previously for any other degree or examination at this or any other University.

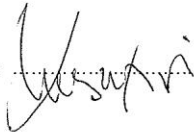
Signed:.....

A handwritten signature in black ink, appearing to read 'Dr McMagh', written over a dotted line.

(Signature of the candidate)

Date: 24 March 2023

Signed:.....

A handwritten signature in black ink, appearing to read 'J. S. ...', written over a dotted line.

(Signature of supervisors)

Date: 24 March 2023

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Background

Alcohol is a psychotropic substance able to affect mental processes such as affect and/or cognition and has dependence producing properties. Alcohol use is part of multiple social, religious and cultural practices due to its perceived ability to provide pleasure. Heavy alcohol use, however, is associated with greater risk for developing multiple medical conditions as well as mental disorders.¹

During 2018, a global status report on alcohol and health estimated that three million alcohol-related deaths occurred globally every year.² Moreover during 2018, Botswana reported that South Africans consumed just under 10 litres of alcohol per capita, making it the third most leading country in terms of alcohol consumption in Africa.³ In 2018, one in every eight people, or 176 million people globally was found to have a mental disorder, depression and anxiety as commonest.⁴ These numbers are thought to have increased by 25% during the first year of the coronavirus disease 2019 (Covid-19) pandemic according to the World Health Organisation (WHO).⁵

There is a complex interplay of internal and external factors which eventually contribute to the use of alcohol and/or development of mental disorders. External factors include - environment, family, religion, job status, and in many societies considered a cultural norm.⁶ Internal factors include genetics and psychological conditions such as other substance related disorders, antisocial personality disorder, mood disorders and anxiety disorders.⁷

Healthcare professionals are highly vulnerable to developing risky alcohol use and mental disorders. They are exposed to long working hours, high workloads, concerns over medical errors and/or litigation, role conflict, emotional labour, and verbal and/or physical abuse.⁸ Additional stressors include lack of resources, personnel and physical facilities. Lastly exposure to dangerous pathogens such as Covid-19 can further exacerbate and strain healthcare professionals' psychological state. Healthcare professionals are at the frontline when diagnosing, treating and caring for patients with Covid-19. The ever-increasing numbers of cases depleted personal protective equipment (PPE), overwhelming workload, lack of clear guidelines and medication as well as fear of contracting or spreading the virus, have all contributed to the mental burden.⁹

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