European Journal of Medical and Health Sciences
www.ejmed.org

The Psychological Impact and Associated Factors of the COVID-19 Pandemic on Health Care Providers at Chainama Psychiatry Hospital, Lusaka, Zambia

Evans Musonda, Petro Petlovanyi, Anatolii Tsarkov, Crecious Phiri, Gabriel Mpundu, Erick Musala Kunda, Rhoda Kunda, Fabian Lungu, and Nathan Kamanga

ABSTRACT

***Introduction*: The COVID-19 pandemic has had serious psychological consequences for healthcare providers at a higher risk of exposure to heavy workloads and a high-risk environment. Healthcare providers on the front lines, involved in diagnosing, treating, and caring for patients with COVID-19, were particularly vulnerable to developing psychological distress and other mental health symptoms, including emotional disturbance.**

***Objective*: In response to this critical situation, this study aims to assess the psychological impact of COVID-19 and associated factors on healthcare providers at Chainama Hills College Hospital (CHCH) in Lusaka, Zambia. The findings of this study may inform interventions and support programs to mitigate the psychological impact of COVID-19 on healthcare providers and improve their overall well-being.**

***Method*: A descriptive cross-sectional study design was conducted in a hospital setting using a self-administered questionnaire survey between August 1st and 10th, 2021. A total of 194 healthcare providers were selected using a simple random sampling technique. The survey used the Depression, Anxiety, and Stress Scale (DASS-21) to assess the psychological well-being of the participants.**

***Results*: Our study findings indicate that healthcare providers are experiencing a high level of stress due to the COVID-19 pandemic, with a Stress score of 92.0, which is considered significant under the circumstances. Additionally, the healthcare providers exhibited mild levels of depression and anxiety, with DASS-21 scores of 13.0 and 12, respectively. These findings were at a 0.05 level of significance.**

***Conclusion*: The COVID-19 pandemic has highlighted the critical importance of prioritizing the well-being of healthcare providers. With the heightened demands and stressors associated with caring for patients during a pandemic, we must prioritize the mental and physical health needs of healthcare providers. Providing adequate support, resources, and attention to the well-being of healthcare providers can help to prevent burnout, reduce turnover, and improve patient outcomes. By recognizing the importance of caring for our healthcare providers, we can help to ensure the delivery of high-quality healthcare services during such challenging times.**

Keywords: Anxiety, COVID-19, depression, health screening, mental health, physician burnout, workplace stress.

Submitted : April 16, 2023

Published : July 4, 2023

ISSN: 2593-8339

DOI: 10.24018/ejmed.2023.5.4.1771

E. Musonda
School of Medicine and Clinical Sciences, Levy Mwanawasa Medical University (LMMU), Lusaka, Zambia; Chainama Hills College Hospital, Lusaka, Zambia.
P. Petlovanyi
Department of Psychiatry, School of Medicine, University of Zambia (UNZA), Lusaka, Zambia.
A. Tsarkov*
Department of Psychiatry, School of Medicine, University of Zambia (UNZA), Lusaka, Zambia.
(e-mail: anatoliydoc@gmail.com)
C. Phiri
School of Public Health and Environmental Sciences, Levy Mwanawasa Medical University (LMMU), Lusaka, Zambia.
G. Mpundu
Levy Mwanawasa University Teaching Hospital, Lusaka, Zambia.
E. M. Kunda
School of Nursing, Levy Mwanawasa Medical University (LMMU), Lusaka, Zambia.
R. Kunda
School of Nursing, Levy Mwanawasa Medical University (LMMU), Lusaka, Zambia.
F. Lungu
School of Public Health and Environmental Sciences, Levy Mwanawasa Medical University (LMMU), Lusaka, Zambia.
N. Kamanga
Department of Public Health, School of Postgraduate Studies, University of Lusaka (UNILUS), Lusaka, Zambia.

Corresponding Author

I. Introduction and The Rationale of The Study

The COVID-19 pandemic, which started in 2019, is an unprecedented global public health crisis [1]. One crucial aspect of the public health response is to provide support for the mental well-being of healthcare providers. Since the first confirmed case of COVID-19 in Wuhan, China, in December 2019, and the United Nations' declaration of a coronavirus pandemic in March 2020, more than 2,081,917 people worldwide have been infected with the virus. As a result of the pandemic, healthcare staff has faced various psychological stressors, putting them at risk of developing traumatic and other anxiety disorders.

The COVID-19 pandemic is spreading rapidly, and its global impact is comparable to that of wars and international conflicts [2]. To curb the spread of the virus, several organizations, including global health bodies such as the World Health Organization (WHO), have been making efforts. The role of healthcare workers has been crucial in controlling the pandemic. While the emphasis has been on monitoring, finding a cure, and preventing transmission, healthcare providers are facing a range of psychological challenges as they adjust to their new lifestyles and cope with the fear of the disease [3].

It is believed that the psychological impact of the COVID-19 pandemic, such as stress and anxiety, is a significant concern. A Chinese study found that over half of the participants experienced substantial psychological effects due to the pandemic [4]. Recently, there has been a surge in COVID-19 cases, exposing healthcare workers to various psychological stressors, including long working hours and a lack of personal protective equipment, making them more vulnerable than ever before [5]. The current situation of healthcare providers places them at risk of developing anxiety and depression-related disorders, which can affect their performance and decision-making abilities [6].

Anxiety and depression are common mental health disorders that can significantly impact a person's quality of life [7], [8]. There are many factors that can contribute to the development of these conditions, including genetics, environmental factors, life experiences, and even poor management of existing health-related problems [9]-[14]. One of the most significant risk factors for anxiety and depression is stress [15], [16]. When a person experiences chronic stress, their body and mind can become overwhelmed, leading to feelings of anxiety and depression [7], [17]. Other risk factors include social isolation, chronic medical illnesses, trauma, substance use disorders, and major life changes [16], [18]-[21].

In the ongoing battle against COVID-19, healthcare workers are at the forefront, and it is crucial that their mental and physical well-being be given top priority [22]. While various studies have examined the psychological distress experienced by healthcare workers in tertiary hospitals, not enough research has been conducted on psychiatric hospitals, which are expected to provide essential psychological aid. Despite the alarming rate of mental health issues among frontline healthcare workers, their psychological well-being is often overlooked. These workers, who are at high risk of developing mental illnesses such as burnout, suicide attempts, and stigmatization, cannot perform their critical role in curbing the spread of the outbreak without adequate support [23].

The outbreaks of infectious diseases such as SARS in 2003 and H1N1 influenza in 2009 demonstrated that the general population experienced significant fear and other forms of mental distress [24]. Studies have called for further research to better understand the psychological effects of infectious diseases and identify both risk and protective factors [25]. The outbreak of infectious diseases is often associated with adverse psychological outcomes, particularly regarding mental disorders such as depression, anxiety, thought disorders, and post-traumatic stress disorder (PTSD), which can be triggered or exacerbated by quarantine and social distancing measures [26].

Many psychiatric hospitals, including Chainama Hills College Hospital (CHCH) in Lusaka, Zambia, have been converted into COVID-19 wards, leading to the transfer of severely ill patients and increased stress for healthcare workers. Studies conducted during the SARS outbreak and the COVID-19 pandemic have shown that healthcare workers in high-risk situations experience psychological effects such as depression, anxiety, insomnia, and distress [25]-[28]. A recent survey in Canada reported that 47% of health workers dealing with the COVID-19 crisis required psychological support. There have also been reports of stigmatization toward healthcare workers treating COVID-19 patients, which can compromise their self-care and social support [28], [29]. These findings highlight the need for increased attention to the mental health needs of healthcare workers during pandemics.

Common risk factors for the development of psychological problems during the COVID-19 pandemic include a lack of social support and communication, maladaptive coping strategies, and insufficient training for healthcare providers [28]. Those directly involved in caring for COVID-19 patients are at a higher risk of depression, anxiety, and stress compared to those with more indirect roles. Factors such as inadequate facilities for hand washing, infected family members, and improper use of personal protective equipment (PPE) have been cited as affecting healthcare workers' mental health adversely.

On the other hand, providing sufficient information on COVID-19 transmission, accessibility to and trained use of PPEs, practicing response roles, implementing infection prevention and control (IPC) measures, and positive attitudes of work colleagues can help reduce COVID-19-related stress among health workers and enable better coping [30]. Despite being accustomed to witnessing trauma and dealing with loss, the high morbidity and mortality rates of the pandemic, along with the fear of becoming infected themselves or their family members, have caused significant anxiety for healthcare providers.

To mitigate the psychological impact, hospitals can provide the necessary PPEs to healthcare providers, while governments can promise basic salaries as additional allowances and life insurance cover if healthcare providers get infected. Studies have shown that these measures contribute to reducing the psychological effects of infection on healthcare providers [31].

Aside from exposure to COVID-19-related incidents, socio-demographic factors may also contribute to other risk factors. For instance, during the SARS outbreak, a study reported that females and low-income individuals experienced SARS-related trauma, including post-traumatic stress disorders [32]. According to the same source, the healthcare providers who were exposed to the SARS outbreak also exhibited symptoms of depression, post-traumatic stress disorder, and substance abuse, particularly those with high-risk exposure or those who required quarantine [32]. However, healthcare workers who received greater social support experienced fewer symptoms.

According to an Indian survey, healthcare professionals' morale may be boosted by positive motivating factors, such as supportive families and friends, positive role models,

recognition from peers and patients, and a sense of validation of life and existence [33].

The impact of COVID-19 on mental health and psychosocial well-being is also significant, particularly among those directly or indirectly in contact with the virus, those vulnerable to biological or psychosocial stressors, individuals with mental health disorders, and healthcare professionals [2]. Similarly, it was noted that infected individuals, doctors, and nurses working in emergency and resuscitation departments are at a higher risk of mental exhaustion and burnout, which contribute to the shortage of healthcare professionals [34].

The increase in COVID-19 cases has exposed healthcare workers to various psychological stressors. A study found that healthcare workers' mental health is more precarious than ever due to extended working hours and a lack of personal protective equipment (PPE). Consequently, healthcare workers may experience fear, anxiety, depression, and insomnia, which could negatively impact their work performance and long-term well-being [5], [35].

Currently, no published article in Zambia has reported on the adverse psychological impact of COVID-19. Therefore, this study aims to determine the psychological impact and associated factors of COVID-19 on healthcare providers at Chainama Hills College Hospital (CHCH) in Lusaka, Zambia. By conducting this research, we hoped to shed light on the psychological effects of the pandemic on healthcare workers and inform efforts to provide necessary support and care for these critical frontline workers.

II. Methodology

The research conducted a quantitative cross-sectional descriptive study at the CHCH, which is the largest psychiatric hospital in Zambia and provider of healthcare care for COVID-19 patients. The study surveyed 194 eligible health workers at the hospital, including medical doctors, mental health nurses, physician assistants, ward assistants, allied health professionals, pharmacists, technicians, administrators, clerical staff, and maintenance workers.

To ensure equal participation among the healthcare professionals, the study used a probability sampling technique to randomly select participants from the population of healthcare workers who care for patients at CHCH.

The final questionnaire used in the study consisted of two parts. Part 1 included survey questions about the participants' demographic characteristics such as age, gender, education, marital status, and occupation, as well as their general health status, COVID-19-related variables (e.g., quarantine history, level of concern about the outbreak), perceived threat of COVID-19, perceived stress, anxiety, depression, post-traumatic stress, perceived social support, and coping strategies. Part 2 used the 'Depression, Anxiety, and Stress Scale 21' (DASS-21) to measure the psychological distress of the participants. The brief version of DASS-21 was used, which is composed of three subscales (each with seven items) measuring depression, anxiety, and stress. Participants rated their experience over the past month using a 4-point Likert rating scale. The Cronbach's alpha for the three subscales was 0.83, 0.80, 0.82, and 0.92 for the total DASS score in this study. The questionnaire was developed by Lovibond in 1995 to measure stress, anxiety, and depression through a total of 21 items [36].

The study participants were randomly selected and provided with self-administered questionnaires with closed-ended questions. Participants were informed about the questionnaire's duration, the identity of the researchers, and the study's aim before answering. The study clarified that only doctors, nurses, nursing assistants, hospital porters, healthcare support staff, and health science students were eligible to participate. No incentives were offered for participation, and all participants voluntarily signed an informed consent document before responding. The collected data were coded with numbers, and individual names were not used. The data collection sheets were stored in a cabinet at the study site.

The collected data was saved on a Microsoft Excel spreadsheet and analyzed using the Statistical Package for the Social Sciences (SPSS) 2020. Descriptive statistics were used to calculate socio-demographic characteristics and COVID-19-related variables. Linear regressions were employed to calculate the univariate associations between sociodemographic characteristics, COVID-19-related variables, and psychological outcomes (the DASS-21 subscales). Pearson correlation was used to assess the associations between adverse psychological outcomes and potential psychosocial factors of perceived threat. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to test for normality.

The use of the same questionnaire for all selected participants helps to ensure that the data collected is comparable and reliable. This practice avoids potential variations in the measurement tool that could affect the validity of the data. Additionally, using the same questionnaire for all participants simplifies the data analysis process, making it easier to compare and contrast the responses. Therefore, utilizing a standardized questionnaire is a crucial step in ensuring the reliability and accuracy of the collected data.

III. Results

The gender distribution of the healthcare respondents sampled from CHCH is shown in Fig. 1 below. The figure demonstrates that the majority of the respondents, which constituted 55%, were male, while the remaining 45% were female.

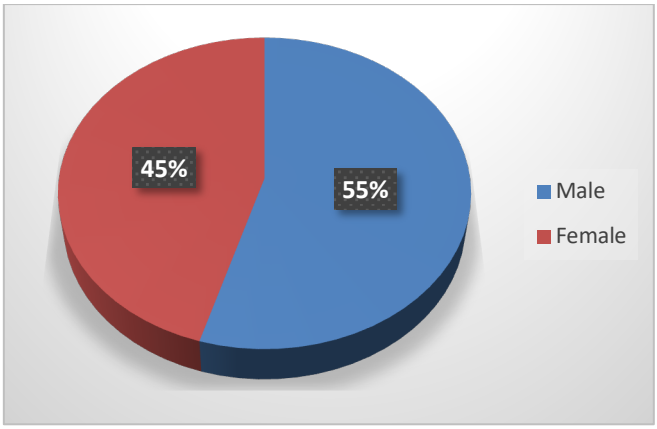

Fig. 1. Gender distribution.

Fig. 2 illustrates the age distribution of the sampled healthcare providers. The findings revealed that the largest group, 87 of the respondents, fell within the 26-35 age range. This was followed by 81 respondents who belonged to the 36-50 age range. Only 15 healthcare providers belonged to the 18-25 age range, while 11 were between the 51-65 age group.

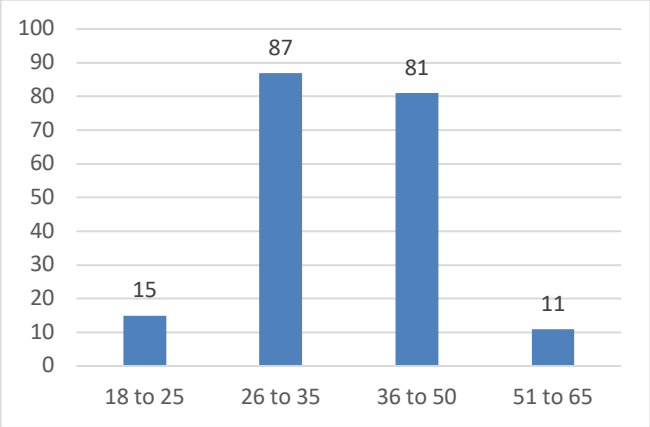

Fig. 2. Age distribution.

The marital status of individuals can impact how they manage stress and anxiety. Fig. 3 below presents the results on the marital status of the sampled healthcare providers. The findings showed that the majority (78%) of the respondents were married, 20% were single, and 2% were widowed.

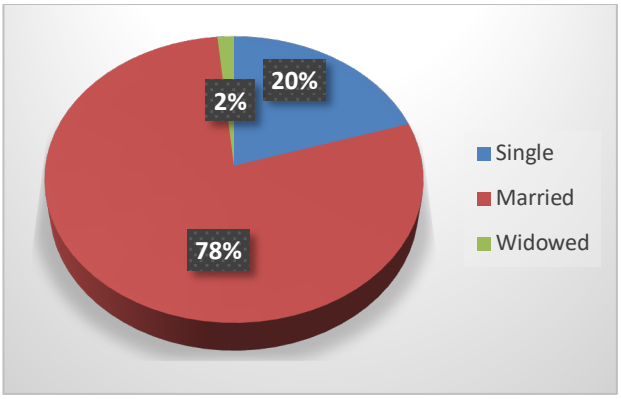

Fig. 3. Respondents' marital status.

Fig. 4 displays the percentage distribution of professional activities of healthcare providers who participated in the study. The majority of the sampled healthcare providers, 40.2%, worked as mental health nurses at CHCH. Clinical officers (physician assistants) made up 20.6% of the sample, while 18.6% worked as nursing assistants, 8.2% as hospital porters, and 3.1% as medical doctors. However, 9.3% of the respondents did not disclose their professional activities or chose not to respond.

Fig. 5 provides a summary of the department or unit in which the participants worked, which can help shed light on how their work experiences may impact their ability to manage depression and anxiety. The majority (52.6%) of healthcare respondents worked in general wards, while 22.7% worked in the filter (admission) clinic department, 12.9% were employed in social-sanitary work, and 4.6% worked in the COVID-19 center. 7.2% of participants did not disclose information about their department.

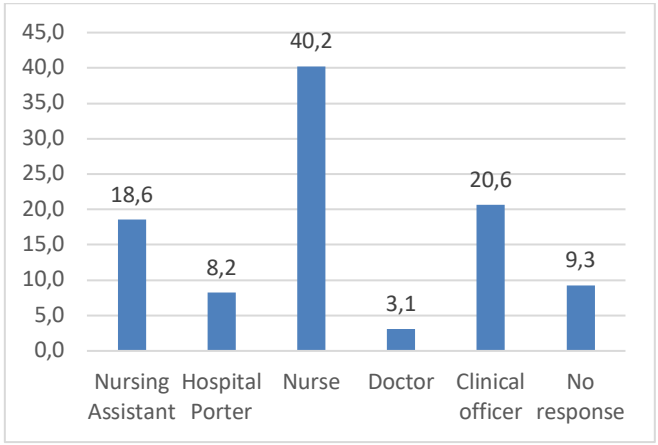

Fig. 4. Distribution of respondents' professional activities.

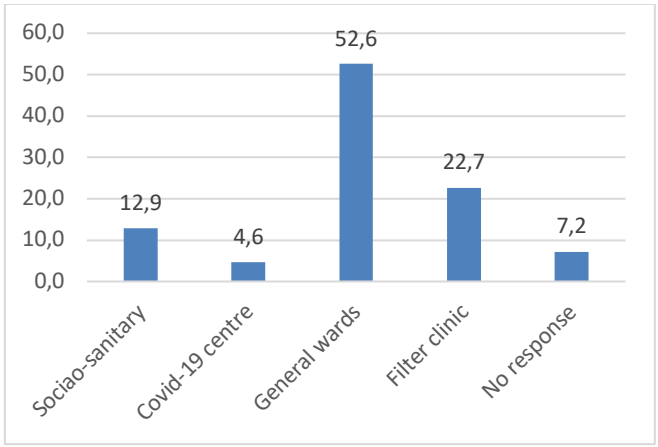

Fig. 5. Distribution of work unit.

The amount of experience someone has can play a significant role in how well they are able to manage their emotions in certain situations. These findings are illustrated in Fig. 6. The majority (53.6%) of respondents reported having between 4 to 9 years of work experience, followed by those with 1 to 3 years of experience. Additionally, 17.0% of healthcare participants reported having more than 10 years of experience, while 3.1% reported having less than one year of experience.

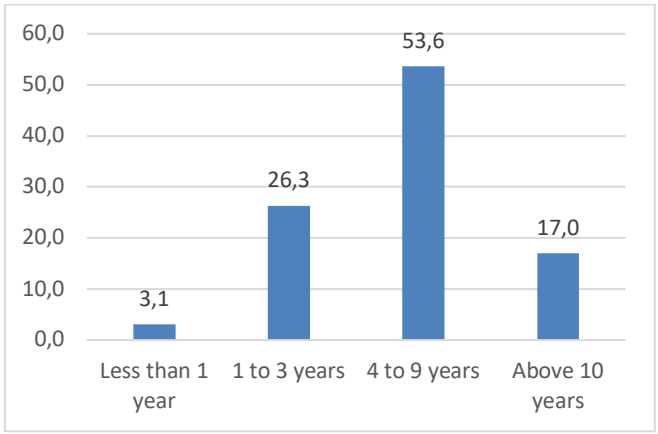

Fig. 6. Distribution of work unit.

Fig. 7 presents the findings from the question about the participants' professional status. The results indicate that the majority (93%) of respondents reported working in a permanent capacity, while 3% reported working on a temporary or voluntary basis.

The distribution of healthcare workers' shift durations is displayed in Fig. 8. The results indicate that the majority (52%) of hospital staff worked between 7 to 8 hours per shift, while 48% reported working between 8 to 10 hours per shift.

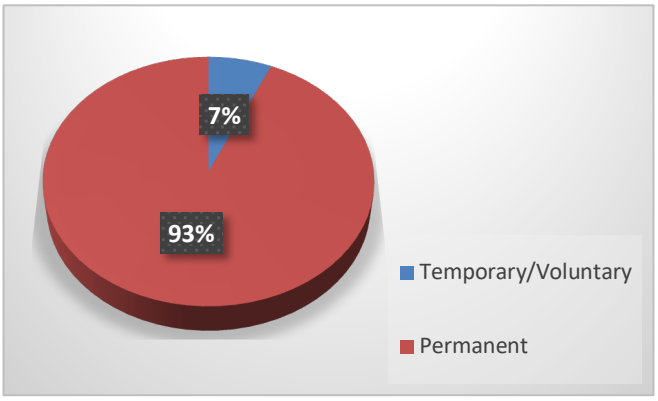

Fig. 7. Respondent's basis of employment.

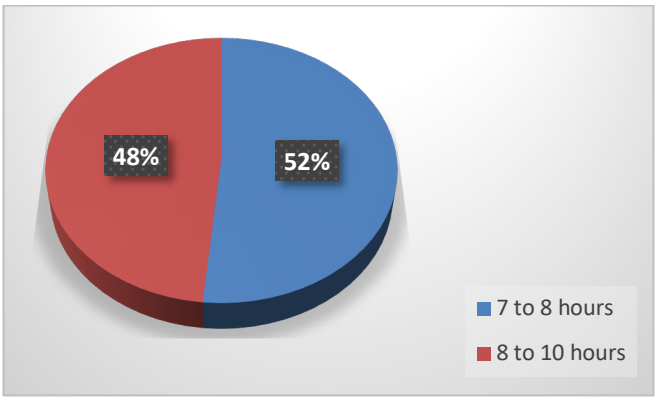

Fig. 8. Respondent's basis of employment.

The findings related to participants' knowledge of the Covid-19 pandemic are presented in Table I. As per the results, the majority of respondents (95.4%) reported having knowledge about Covid-19. A small proportion of respondents (3.1%) did not provide a response to this question.

TABLE I: THE KNOWLEDGE AND ATTITUDE TOWARDS COVID-19

Response	Frequency	Percent
Yes	185	95.4
No	3	1.5
No response	6	3.1
Total	194	100.0

The findings presented in Table II demonstrate the respondents' perceptions of Covid-19 disease. According to the results, a significant majority (94.4%) of the respondents characterized Covid-19 as a severe flu-like illness that is caused by the coronavirus. In contrast, only a small proportion of respondents, just 2.1%, attributed Covid-19 to a bacterial disease.

TABLE II: THE PERCEPTION TOWARDS COVID-19

Response	Frequency	Percent
COVID-19 is the bacterial disease	4	21
COVID-19 is the flu-like illness caused by coronavirus	187	96.4
No response	3	1.5
Total	194	100

After analyzing how social demographic factors affected respondents' levels of depression, anxiety, and stress, the study discovered that variables such as gender, age, marital status, professional activities, work department, years of experience, professional working status, and hours worked per shift had an impact on their mental health. The healthcare workers who participated in the study were found to be experiencing high levels of stress due to the COVID-19 pandemic, which was influenced by their social demographic factors. The stress score on the DASS 21 was 92.0, and the data did not follow a normal distribution. Additionally, the participants showed mild symptoms of depression with a depression score of 13.0, but this score was also not normally distributed. Lastly, the respondents exhibited mild anxiety with an anxiety score of 12.0, which was normally distributed.

Fig. 9 indicates that the stress score does not follow a normal distribution, with some scores falling well outside the positive or right-hand range.

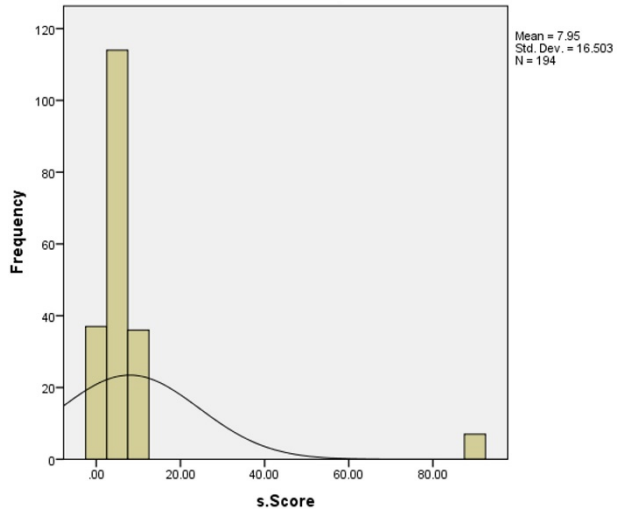

Fig. 9. Normal distribution test for stress score.

Based on Fig. 10, it was determined that the depression score does not exhibit a normal distribution. Some of the scores were observed to be significantly outside the left or negative range.

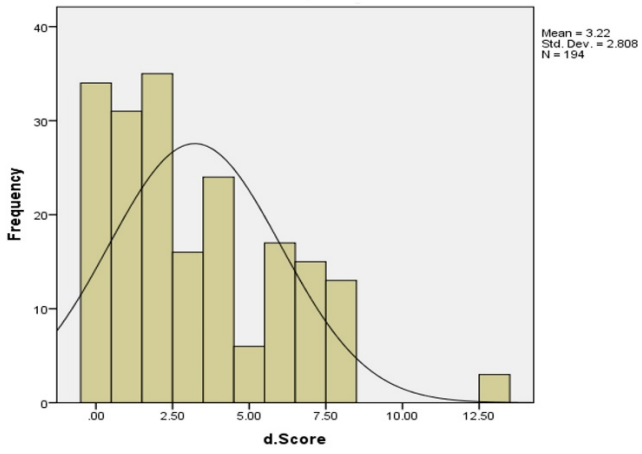

Fig. 10. Normal distribution test for depression score.

Fig. 11 shows that the anxiety score is normally distributed, with the scores falling within the normal curve.

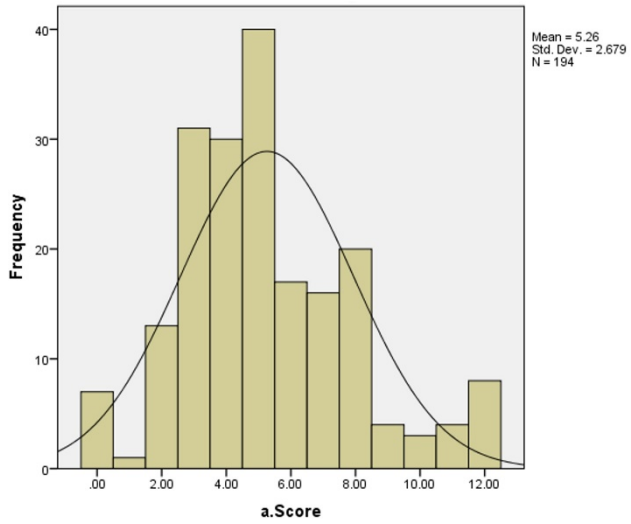

Fig. 11. Normal distribution test for anxiety score.

Based on the results, the stress score (s. Score) had a statistically significant impact (p-value = 0.000) at a significance level of 0.05, with test statistics of 0.423 and 0.310. Similarly, the depression score (d. Score) also had a significant impact (p-value = 0.000) at a significance level of 0.05, with test statistics of 0.184 and 0.895. The anxiety score (a. Score) was also found to be significant (p-value = 0.000) at a significance level of 0.05, with test statistics of 0.167 and 0.947.

IV. Discussion

The research has clearly demonstrated that healthcare workers have been significantly impacted by the adverse psychological effects of COVID-19. The study also highlights the possible underlying factors that may contribute to mental health issues during the pandemic, including susceptibility to infection, lack of control over the situation, and various social demographic factors, such as gender, marital status, years of experience, department of employment, age, profession, and employment status. The spread of the virus, the health status of family members, and isolation have also been identified as significant factors that can affect the psychological response of healthcare workers, particularly in countries like Zambia.

The purpose of this study was to investigate the psychological effects of the COVID-19 pandemic on healthcare providers at CHCH. To achieve this, the researchers utilized the DASS 21 tool to analyze the impact of the pandemic on healthcare providers in relation to their social demographic factors. The study examined symptoms such as anxiety, depression, and stress as indicators of the psychological effects experienced by healthcare staff during the COVID-19 epidemic. The study reported values of 13.0 and 12.0 for anxiety and depression, respectively, on the DASS 21 scores, which is consistent with the findings of a similar study conducted in 2020 by [37].

The significant prevalence of mood and anxiety disorders among healthcare providers in hospitals in Lusaka can have detrimental effects on the quality of service provided to clients. If healthcare workers are suffering from depression, anxiety, or stress due to the COVID-19 pandemic and other related social and demographic factors, their ability to effectively perform their duties may be compromised. These findings are consistent with a study conducted in Ethiopia, which also highlighted the negative impact of COVID-19 on the mental health of healthcare workers [38]. It is crucial to address and prioritize the psychological well-being of healthcare providers to ensure they can provide optimal care to their patients during this challenging time.

The study revealed that the DASS-21 questionnaire effectively measured the emotional well-being of healthcare providers. The results indicated that healthcare providers were mostly affected by stress due to the COVID-19 pandemic, with a stress score of 92.0, which is considered high given the circumstances. This finding was statistically significant at a significance level of 0.05, with a p-value of 0.000.

Additionally, the study found that healthcare providers reported mild levels of depression and anxiety, with respective scores of 13.0 and 12.0 on the DASS 21 scale. These scores were also statistically significant at a level of 0.05. The availability of personal protective equipment (PPE) at the healthcare facility was found to be associated with the less psychological impact on the medical staff, which is consistent with a study conducted in Hunan, China, that also reported psychological benefits from access to PPE [30]. Conversely, a reduction in PPE was identified as a contributor to psychological distress, as reported in a study conducted in China [28].

The COVID-19 pandemic has led to an increase in workload and extended shifts for healthcare providers to meet the growing demand for medical care, resulting in significant pressure on them. Consequently, healthcare providers are experiencing severe stress, as well as mild anxiety and depression. This situation is reminiscent of the Ebola outbreak, where healthcare workers who worked tirelessly in settings without personal protective equipment and driven mainly by compassion suffered from mental health problems that were excessively higher than those of the general public [39].

A study conducted in Hunan, China, focused on the psychological impact and coping mechanisms of frontline medical staff. The study findings revealed that the provision of personal protective equipment had a positive impact on the psychological well-being of healthcare providers [30]. These results are consistent with another study conducted in China, which found that healthcare providers experienced high levels of stress, anxiety, insomnia, and depression [28].

Furthermore, the study highlights the importance of addressing the mental health needs of healthcare providers who are working tirelessly to provide care during the challenging conditions of the Covid-19 pandemic. A similar study conducted by [40] found that healthcare professionals reported feeling vulnerable, weary, and stressed while working in high-risk areas during pandemics. However, the study noted a lack of substantial previous work on safety and psychological counseling for healthcare workers who are exposed to patients during their work.

This study utilized factor analysis with the DASS 21 to evaluate the impact of the COVID-19 pandemic on healthcare providers. The results demonstrate a significant and concerning effect that the pandemic has on their mental

health. Specifically, the findings indicate that healthcare providers are experiencing high levels of stress along with mild anxiety and depression. This presents a serious problem that requires immediate attention to ensure that healthcare providers can work in a safe and supportive environment during the Covid-19 pandemic. Appropriate interventions and support systems are necessary to address the psychological impact of the pandemic on healthcare providers and ensure their well-being.

V. Limitations

Since there were no published studies on the psychological impact of COVID-19 on healthcare workers at the time this study was conducted, it was challenging to identify which factors may have contributed to the psychological effects observed in this study. The reliability of the results may be limited by using self-reported surveys, which can be influenced by respondents' honesty and memory bias. The participants' socioeconomic status was not recorded, which could have been valuable in understanding the links between outcomes and developing targeted interventions. Some respondents refused to consent, some demanded to be paid to participate and some were scared to take part in the studying thinking the information may be used by the government.

VI. Conclusion

Depression, anxiety, and stress are emotional disorders that can affect people without them realizing it. With the onset of the COVID-19 pandemic, it is essential to give more attention and care to healthcare providers, who are at the forefront of the pandemic and general healthcare provision. The fact that healthcare providers recorded a high stress score of 92.0 is alarming and requires immediate intervention.

Notably, male healthcare providers are more prone to depression, anxiety, and stress than their female counterparts. Therefore, it is critical to pay close attention to the social demographic factors that contribute to their emotions and well-being, in addition to addressing the difficult working conditions created by the pandemic. This approach could help reduce the number and severity of cases of depression, anxiety, and stress among healthcare providers.

Furthermore, the study suggests that the government should create a safe and conducive working environment for healthcare providers by providing them with adequate personal protective equipment and motivation. It is hoped that by taking these measures, cases of emotional disorders among healthcare providers will reduce, and they can continue to provide essential services during the pandemic.

VII. Recommendations

Based on the research findings, it is recommended that the government take action in two main areas. Firstly, providing sufficient personal protective equipment (PPE) to healthcare providers in hospitals and clinics should be a priority. This will help protect healthcare providers and limit the spread of COVID-19. Secondly, the government should create a motivational package to support the mental health and well-being of healthcare providers who are experiencing stress and depression due to the pandemic.

The study also suggests the need for further research to be conducted on this topic. This could include expanding the study to cover more hospitals in the country and including additional variables that may contribute to the emotional well-being of healthcare providers. This would provide a more comprehensive understanding of the impact of COVID-19 on healthcare providers at the national level and could lead to better solutions. Furthermore, these research findings could inform government policies and decision-making.

Ethical Clearance and Considerations

This study was initiated after receiving ethical approval from the University of Lusaka (UNILUS) and the UNILUS School of Medicine & Health Sciences Research Ethics Committees of Zambia, and after obtaining permission from the head of clinical care of CHCH through the office of the senior medical superintendent of CHCH. Throughout the study period, ethical principles were strictly adhered to, including voluntary participation, non-coercion, or threat to participate, and the requirement for participants to sign a consent form. Participants who were unable to sign the consent form were allowed to provide their thumbprints instead. All consent forms were provided in English and interpreted in the participant's local language. All participants signed after reading, understanding, and agreeing to participate in the study. Confidentiality was upheld during the whole period of the study, and each participant was given an inclusion number and assured that their names would not be used in the report or published.

Acknowledgment

We thank all our participants, the healthcare workers of Chainama Hills College Hospital who participated in the study, and the administration of the hospital for their help, support, and collaboration.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

References

[1] World Health Organization. *Novel coronavirus (2019-nCoV) situation reports: Press briefing on COVID-19 and additional preventive and control measures*. Geneva: World Health Organization; March 17, 2020.

[2] Fiorillo A, Gorwood P. The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. *European Psychiatry*. 2020; 63(1): e32.

[3] Pedrosa AL, Bitencourt L, Fróes AC, Cazumbá ML, Campos RG, de Brito SB, et al. Emotional, behavioral, and psychological impact of the COVID-19 pandemic. *Frontiers in psychology*. 2020; 11: 566212.

[4] Wang C, Pan R, Wan X, Tan Y, Xu L, McIntyre RS, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior, and Immunity*. 2020; 87: 40-48.

[5] Ayanian JZ. Mental Health Needs of Health Care Workers Providing Frontline COVID-19 Care. *JAMA Health Forum*. 2020; 1(4): e200397.

[6] Kang L, Li Y, Hu S, Chen M, Yang C, Yang BX, et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *The Lancet. Psychiatry*. 2020; 7(3): e14.
[7] Tsarkov A, Petlovanyi P. Depressive Disorder in Child Psychiatric Practice: A Case Report. *Health Press Zambia Bull*. 2017; 1(5): 9-16.
[8] Tsarkov A, Petlovanyi P. Use of pramipexole in neuropsychiatry. *World Journal of Advanced Research and Reviews (WJARR)*. 2020; 7(2): 82-88.
[9] Petlovanyi P, Tsarkov A. Practical guide and some recommendations for the diagnosis and management of Attention deficit hyperactivity disorder (ADHD). *World Journal of Advanced Research and Reviews (WJARR)*. 2020; 6(3): 257-261.
[10] Tsarkov A, Msoni P, Petlovanyi P. Induced Delusional Disorder: A Case Report. *British Journal of Medical and Health Research*. 2018: 12-22.
[11] Tsarkov A, Patrick M, Petlovanyi P. Uncommon presentation: Folie à deux (Case study). *World Journal of Advanced Research and Reviews (WJARR)*. 2020; 6: 43-49.
[12] Tsarkov A, Petlovanyi P. The role of lamotrigine in the treatment of bipolar depression. *Imperial Journal of Interdisciplinary Research (IJIR)*. 2017; 3(8): 131-134.
[13] Petlovanyi P, Tsarkov A. Child Schizophrenia: Theory and Practice. *European Journal of Medical and Health Sciences (EJMED)*. 2020; 2(1): 1-5.
[14] Tsarkov A, Petlovanyi P. Neuropsychiatric aspects of a common problem: stroke. *European Journal of Medical and Health Sciences (EJMED)*. 2019; 1(3): 1-6.
[15] Mofatteh M. Risk factors associated with stress, anxiety, and depression among university undergraduate students. *AIMS Public Health*. 2021 ;8(1): 36.
[16] Bacaro V, Chiabudini M, Buonanno C, De Bartolo P, Riemann D, Mancini F, et al. Insomnia in the Italian population during Covid-19 outbreak: A snapshot on one major risk factor for depression and anxiety. *Frontiers in Psychiatry*. 2020; 11: 579107.
[17] Tsarkov A, Petlovanyi P. Pathological Gambling: The Old Problem of the Modern World. *Imperial Journal of Interdisciplinary Research (IJIR)*. 2017; 3(8): 216-221.
[18] Danese A, Moffitt TE, Harrington H, Milne BJ, Polanczyk G, Pariante CM, et al. Adverse childhood experiences and adult risk factors for age-related disease: depression, inflammation, and clustering of metabolic risk markers. *Archives of Pediatrics & Adolescent Medicine*. 2009; 163(12): 1135-1143.
[19] Pandu MH, Tsarkov A, Petlovanyi P, Paul R. Optimization of Early Diagnosis of Glucose Metabolism Impairment for Patients Receiving Antipsychotic Medications at the Outpatient Psychiatric Clinic of the University Teaching Hospital, Lusaka, Zambia. *European Journal of Medical and Health Sciences*. 2022; 4(4): 75-83.
[20] Kumar JS, Paul R, Tsarkov A, Zyambo C. The Prevalence of Alcohol Use among Pregnant Women Attending Antenatal Clinic at Mother and New Born Hospital-University Teaching Hospital, Lusaka. Zambia. *EC Psychology and Psychiatry*. 2020; 9(9): 87-111.
[21] Lungu G, Tsarkov A, Petlovanyi P, Phiri C, Musonda NC, Hamakala D, et al. Health-seeking behaviors and associated factors in individuals with substance use disorders at Chainama Hills College Hospital, Lusaka, Zambia. *World Journal of Advanced Research and Reviews.* 2023; 17(3): 480-499.
[22] Tsamakis K, Rizos E, Manolis AJ, Chaidou S, Kympouropoulos S, Spartalis E, et al. COVID-19 pandemic and its impact on mental health of healthcare professionals. *Experimental and Therapeutic Medicine*. 2020; 19(6): 3451-3453.
[23] Awan S, Diwan MN, Aamir A, Allahuddin Z, Irfan M, Carano A, et al. Suicide in healthcare workers: determinants, challenges, and the impact of COVID-19. *Frontiers in Psychiatry*. 2022; 12: 792925.
[24] Preti E, Di Mattei V, Perego G, Ferrari F, Mazzetti M, Taranto P, et al. The psychological impact of epidemic and pandemic outbreaks on healthcare workers: rapid review of the evidence. *Current Psychiatry Reports*. 2020; 22: 1-22.
[25] Sun S, Goldberg SB, Lin D, Qiao S, Operario D. Psychiatric symptoms, risk, and protective factors among university students in quarantine during the COVID-19 pandemic in China. *Globalization and Health*. 2021; 17(1): 1-4.
[26] Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*. 2020; 395(10227): 912-920.
[27] Chua SE, Cheung V, Cheung C, McAlonan GM, Wong JW, Cheung EP, et al. Psychological effects of the SARS outbreak in Hong Kong on high-risk health care workers. *The Canadian Journal of Psychiatry*. 2004; 49(6): 391-393.
[28] Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*. 2020; 3(3): e203976.
[29] Canadian Public Health Association. *Potloc Study: Canadian Health Workers Share Their Insights from the Front Lines of the COVID-19 Pandemic*. Ottawa; 2021.
[30] Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y, et al. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of coronavirus disease 2019 (COVID-19) in Hubei, China. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*. 2020; 26: e924171.
[31] Ofori AA, Osarfo J, Agbeno EK, Manu DO, Amoah E. Psychological impact of COVID-19 on health workers in Ghana: A multicentre, cross-sectional study. *SAGE Open Medicine*. 2021; 9: 20503121211000919.
[32] Chong MY, Wang WC, Hsieh WC, Lee CY, Chiu NM, Yeh WC, et al. Psychological impact of severe acute respiratory syndrome on health workers in a tertiary hospital. *The British journal of psychiatry*. 2004 Aug;185(2):127-133.
[33] Spoorthy MS, Pratapa SK, Mahant S. Mental health problems faced by healthcare workers due to the COVID-19 pandemic–A review. *Asian Journal of Psychiatry*. 2020; 51: 102119.
[34] Sim K, Chua HC, Vieta E, Fernandez G. The anatomy of panic buying related to the current COVID-19 pandemic. *Psychiatry research*. 2020; 288: 113015.
[35] McAlonan GM, Lee AM, Cheung V, Cheung C, Tsang KW, Sham PC, *et al*. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. *The Canadian Journal of Psychiatry*. 2007; 52(4): 241-247.
[36] Lovibond SH, Lovibond PF. *Manual for the Depression Anxiety and Stress Scale*. Psychology Foundation, Sydney; 1995.
[37] Salari N, Hosseinian-Far A, Jalali R, Vaisi-Raygani A, Rasoulpoor S, Mohammadi M, et al. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: a systematic review and meta-analysis. *Globalization and Health*. 2020; 16(1): 1-11.
[38] Dagne H, Atnafu A, Alemu K, Azale T, Yitayih S, Dagnew B, *et al*. Anxiety and associated factors among Ethiopian health professionals at early stage of COVID-19 pandemic in Ethiopia. *PloS One*. 2021; 16(6): e0252664.
[39] Senga M, Pringle K, Ramsay A, Brett-Major DM, Fowler RA, French I, et al. Factors underlying Ebola virus infection among health workers, Kenema, Sierra Leone, 2014-2015. *Reviews of Infectious Diseases*. 2016; 63(4): 454-459.
[40] Almater AI, Tobaigy MF, Younis AS, Alaqeel MK, Abouammoh MA. Effect of 2019 coronavirus pandemic on ophthalmologists practicing in Saudi Arabia: a psychological health assessment. *Middle East African Journal of Ophthalmology*. 2020; 27(2): 79-85.