ORIGINAL ARTICLE

Infectious Diseases related stigma among Health Care Workers in Zambia- A Mixed Methods Analysis

Kestone Lyambai[1], Esther Chirwa[2], Mavis Mtonga[2], Beatrice Mwansa Chisashi, Chrispine Brian Mwila[2], Peggy Mugala Mumba[2], Lonia Mwape[1]

[1]*University of Zambia, School of Nursing Sciences, Lusaka, Zambia*
[2]*Levy Mwanawasa Medical University, School of Nursing Sciences, Lusaka, Zambia*

ABSTRACT

Background: Infectious diseases such as cholera and COVID-19 have had significant global consequences, straining healthcare systems, disrupting daily life, and causing substantial socio-economic challenges. Beyond their direct health effects, stigmatization of patients, their contacts, and healthcare workers has emerged as a critical issue. Healthcare workers, often perceived as sources of infection, face stigma that can lead to severe psychological and social consequences. While stigma during infectious disease outbreaks has been studied in other contexts, this study examines its impact on healthcare workers in Zambia. The objective was to assess the extent of infectious disease-related stigma experienced by healthcare workers and its effects on their psychological and social well-being.

Methods: A mixed-methods study utilizing a descriptive cross-sectional design was conducted. A total of 384 participants were conveniently sampled from purposively selected health facilities. Quantitative data were collected through structured, self-administered questionnaires, while qualitative data were obtained through in-depth interviews guided by a structured interview protocol. Quantitative analysis was performed using SPSS version 27, employing chi-square and logistic regression at a significance level of 5 percent. Qualitative data were analysed thematically.

Results: The study found that 70.2 percent of healthcare workers experienced infectious disease-related stigma, with 20.1 percent reporting severe stigma. The department in which healthcare workers were stationed significantly influenced the level of stigma encountered ($p < 0.05$). The primary sources of stigma were the community (60%), family (25%), and self-perception (15%). Healthcare workers adopted coping mechanisms such as faith in God (65%), positive thinking (50%), and the belief that increased public sensitization and education on cholera and COVID-19 would improve attitudes.

Conclusion: Infectious disease-related stigma substantially affects healthcare workers, particularly those assigned to cholera and COVID-19 isolation centres. This stigma contributes to psychological distress, increased stress levels, and reduced job satisfaction. The findings highlight the

Corresponding author:
Kestone Lyambai
Email: kestone.lyambai@unza.zm

Keywords: Infectious Diseases, Stigma, Frontline, Health Workers, Zambia

This article is available online at: http://www.mjz.co.zm, http://ajol.info/index.php/mjz, doi: https://doi.org/10.55320/mjz.52.3.608
The Medical Journal of Zambia, ISSN 0047-651X, is published by the Zambia Medical Association

need for targeted interventions to mitigate stigma, enhance public knowledge of disease prevention, and provide emotional and social support for healthcare workers.

INTRODUCTION

Infectious diseases such as cholera and COVID-19 have posed significant public health challenges globally, particularly in low- and middle-income countries like Zambia (World Health Organization [WHO].[1] These diseases have not only overwhelmed healthcare systems but also led to substantial socio-economic disruptions, affecting daily life and livelihoods.[2] Among the less visible but equally critical consequences of these infectious diseases is the stigma faced by patients, their contacts, and particularly frontline healthcare workers who are often perceived as sources of infection.[3]

The emergence of COVID-19, attributed to the novel coronavirus SARS-CoV-2 in December 2019, led to its rapid global spread, resulting in severe respiratory symptoms and substantial mortality rates.[4] Similarly, cholera, caused by the bacterium *Vibrio cholerae*, has been a persistent public health concern in various regions, including Zambia. The WHO declared COVID-19 a pandemic in early 2020 due to its exponential transmission and profound impact on global health.[1] In response to these outbreaks, Zambia implemented diverse measures such as social distancing, school and non-essential business closures, and the promotion of hand hygiene to mitigate disease transmission.[5] However, a significant challenge emerged: the stigmatization of patients, their contacts, and frontline health workers as potential sources of infection.

Stigma associated with infectious diseases can take various forms, including labelling, stereotyping, separation, status loss, and discrimination.[6] During outbreaks, it becomes imperative to balance public health protection with efforts to mitigate stigma, as fear-driven stigmatization can severely impede health-seeking behaviour, treatment adherence, and engagement in care for affected individuals, thereby undermining public health efforts to curb disease spread.[7] Previous infectious disease outbreaks, including HIV/AIDS, Ebola, and Tuberculosis, have also been marred by stigma, affecting both those afflicted and frontline healthcare workers. Stigmatization often extends beyond the infected individuals to their families, friends, and communities, fostering anxiety, stress, and internalized shame among the affected population.[8] Frontline healthcare workers, including nurses, doctors, clinical officers, and midwives, face heightened risks of exposure to infectious diseases and subsequent stigmatization[1], which may compromise the quality of care they deliver and lead to emotional stress and burnout.[9,10,11]

Healthcare workers are essential in the fight against infectious diseases, yet they are highly vulnerable to stigma and discrimination, which can negatively affect their mental health, job performance, and overall well-being.[12] Stigmatization is often driven by fear, misinformation, and a lack of knowledge about disease prevention within communities, leading to social isolation, psychological distress, and reduced motivation among healthcare professionals.[13]

Given the contagious nature of both cholera and COVID-19, it is important to explore the extent of stigma experienced by healthcare workers and its potential consequences. The study sheds light on the stigma associated with these infectious diseases, focusing on the sources of stigma, its psychological and social effects, and the coping mechanisms employed by healthcare workers. While existing literature has explored infectious disease-related stigma in various contexts, there is a paucity of Zambia-specific data on the experiences of healthcare workers, particularly in low-resource settings where healthcare systems are already strained. Furthermore, while some studies have explored stigma in the context of HIV/AIDS or Ebola, few have examined the unique socio-cultural

and systemic factors that shape stigma in Zambia, such as community beliefs, resource limitations, and the role of faith-based coping mechanisms.

This study aims to fill these gaps by providing Zambia-specific data on the prevalence, sources, and impacts of infectious disease-related stigma among healthcare workers. By focusing on the dual burden of cholera and COVID-19, the study sheds light on the unique challenges faced by healthcare workers in a low-resource setting. Furthermore, it explores the coping mechanisms employed by healthcare workers, offering insights into culturally relevant strategies for mitigating stigma and its adverse effects. Understanding these dynamics is essential for developing targeted interventions to support healthcare workers, improve public health outcomes, and inform evidence-based policies for combating pandemics.

The study aimed to assess the prevalence and impact of infectious disease-related stigma among healthcare workers in Zambia. Specifically, it sought to quantify the extent to which healthcare workers experience stigma associated with infectious diseases such as cholera and COVID-19. Additionally, the study aimed to identify the primary sources of this stigma, whether from the community, family, or self-perception.

Furthermore, the research examined the psychological and social effects of stigma on healthcare workers, including stress, emotional distress, and changes in job satisfaction. Lastly, the study explored the coping mechanisms employed by healthcare workers to navigate stigma, such as faith, positive thinking, and community education. Understanding these aspects is crucial for developing targeted interventions to reduce stigma and support the well-being of healthcare workers.

MATERIALS AND METHODS

A cross-sectional descriptive study design with a mixed-methods approach was employed to guide this study. Unlike previous studies that have predominantly employed single-method approaches, this study utilized a mixed-methods design to provide a deeper understanding of infectious disease-related stigma. By combining quantitative data on the prevalence and severity of stigma with qualitative insights into its sources and coping mechanisms, this study offers a more holistic perspective on the issue. The study took place in Lusaka, Chilanga, and Kafue districts, focusing on tertiary, and first-level hospitals, as well as isolation and quarantine centres. Participants included doctors, nurses, midwives and clinical officers. Purposive sampling was employed to ensure representation from key healthcare worker roles (doctors, nurses, midwives, clinical officers) and from different health facilities (hospitals, health centres) within the Lusaka, Chilanga, and Kafue districts. Convenience sampling was used to recruit participants who were readily accessible and willing to participate at the time of data collection. To mitigate selection bias, recruitment was diversified across multiple health facilities, departments and shifts. The sample size for the quantitative portion of the study was calculated using the following formula:

$n = (z)^2 p(1-p) / d^2$

Where:

n = sample size

z = Z score at a confidence level of 95% (equal to 1.96)

p = estimated proportion of the population with the characteristic of interest (assumed to be 0.5 for maximum variability, as the true proportion was unknown)

d = margin of error (set at ±5%)

Substituting the values into the formula:

$n = (1.96)^2 \times 0.5 \times (1-0.5) / (0.05)^2$

$n = 384.16$

This calculation resulted in a required sample size of approximately 384 participants.

The sample size for the qualitative interviews was not predetermined using a formula. Instead, it was guided by the principle of data saturation.

Upon arrival at selected health facilities, the Medical and/or Nursing Officer-in-charge provided access to potential participants. Interested individuals received a detailed verbal description of the study and its significance. Interviews were conducted at the convenience of the participants.

Quantitative data were collected using a self-administered questionnaire. This questionnaire included Likert-scale questions assessing self-stigma, perceived stigma, internalized stigma, and negative self-image. Given the lack of a validated instrument specifically addressing stigma among healthcare workers during the COVID-19 pandemic, a novel scale was developed. This scale comprised four categories of closed-ended questions corresponding to the four dimensions of stigma: self-stigma, perceived stigma, internalized stigma, and negative self-image. A five-point Likert scale (strongly disagree to strongly agree) was used for responses, as these scales are well-suited for measuring attitudes and perceptions. Qualitative data were collected through in-depth interviews using a semi-structured interview guide. All interviews were recorded with participants' permission.

Healthcare workers (doctors, nurses, midwives, clinical officers) working in selected hospitals and health centres in Lusaka, Chilanga, and Kafue during the COVID-19 and Cholera pandemic and in good physical and mental health were eligible to participate. On the other hand, healthcare workers on any form of leave during the two pandemics were excluded from the study.

Quantitative data were analysed using SPSS version 27.0 for Windows. Independent samples t-tests were conducted to compare mean scores between two groups, while one-way ANOVA was performed to assess differences in mean scores across multiple groups. These parametric tests were applied to Likert scale data to evaluate relationships between variables and identify significant group differences. Data from in-depth interviews underwent thematic analysis following Braun and Clarke's[14] guidelines. Verbatim transcriptions were compared with notes, and themes were identified across the data set.

Ethical Considerations

Ethical approval was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC), and permission to conduct the study was granted by the National Health Research Authority (NHRA). Clearance to access participating health facilities was obtained from the Lusaka Provincial Health Office. Upon accessing the facilities, permission was obtained from the person in charge, who facilitated recruitment of eligible participants. The study adhered to international ethical standards, including the principles outlined in the Declaration of Helsinki. Prior to obtaining informed consent, participants were provided with an information sheet detailing the study's nature and purpose. Participants were informed of their right to withdraw from the study at any time without prejudice and were allowed to skip questions they deemed personal or uncomfortable. Confidentiality and anonymity of all information were assured. All tapes and notes were securely stored and accessible only to the research team, consistent with the principles outlined by Beauchamp and Childress[15]. Data entered into the computer were password-protected, restricting access to the research team.

RESULTS

Quantitative results

A total of 384 healthcare workers from selected health facilities in Lusaka, Chilanga, and Kafue districts consented to participate in the study.

Table 1: Sociodemographic characteristics (N = 384)

Variable	*N*	*(%)*
Gender		
Male	130	33.9
Female	254	66.1
Marital Status		
Married	150	39.1
Single	190	49.5
Divorced	24	6.3
Widowed	20	5

Variable	*N*	*(%)*
Residential area		
High density	140	36.5
Medium density	130	33.9
Low density	114	29.7
Occupation		
Medical Doctors	30	7.8
Nurses	200	52.1
Midwives	90	23.4
Clinical officers	64	16.7
Highest level qualifications		
Diploma/ Certificate	230	72.9
Bachelors	54	14.1
Masters	30	7.8
Current Department		
Outpatients	100	26
Casualty	30	7.8
Admission	44	11.5
Medical/ surgical	120	31.3
Isolation centre	90	23.4

Among the respondents, the majority (66.1%) were female with 49.1 percent of them being single. Majority (52.1%) were nurses with 7.8 percent being medical doctors. In terms of Departmental distribution, 26.0 percent worked in outpatient departments while 23.4 percent worked in isolation centres.

Table 2: Covid 19 Stigma among health care workers

Characteristic	Level	N	(%)
Self-stigma			
	Mild	35	9.1
	Moderate	110	28.6
	Severe	239	62.1
Perceived stigma			
	Mild	89	23.2
	Moderate	218	56.8
	Severe	78	20.3
Internalised stigma			
	Mild	150	39.1
	Moderate	153	39.8
	Severe	81	21.1
Negative self-image	Mild	221	57.6
	Moderate	121	31.5
	Severe	43	11.2
Overall stigma			
	Mild	29.8	
	Moderate	50.1	
	Severe	20.1	

Table 2 shows that severe self-stigma was reported by most respondents (62.1%), while moderate self-stigma was reported by 28.6%. Perceived stigma was predominantly moderate (56.8%). Internalized stigma was evenly split between mild (39.1%) and moderate (39.8%) levels. Negative self-image was mostly mild (57.6%). Overall, 70.2% of healthcare workers experienced some level of stigma related to infectious diseases, with 20.1% experiencing severe stigma.

A one-way ANOVA was conducted to examine the effect of age on stigma subscale scores. No significant differences were found for self-stigma ($p = 0.956$), perceived stigma ($p = 0.323$), internalized stigma ($p = 0.400$), or total stigma ($p = 0.456$) across the four age groups. An independent samples t-test was performed to assess the differences in stigma scores between males and females. The results indicated no significant differences in self-stigma ($p = 0.820$), perceived stigma ($p = 0.300$), internalized stigma ($p = 0.350$), or total stigma scores ($p = 0.390$).

A one-way ANOVA showed significant differences in internalized stigma scores among the professional groups ($p = 0.045$), with clinical officers reporting higher mean scores. Post-hoc tests revealed significant differences between Clinical Officers and other groups ($p < 0.05$). No significant differences were observed for other subscales (all $p > 0.05$).

Stigma scores among departments show significant differences, particularly for those working in isolation centres, who experience the highest levels of stigma (p-values < 0.05). This group is followed by healthcare workers in the outpatient department, who also report significantly higher stigma scores compared to other departments. These findings indicate that healthcare workers in high-risk areas, such as isolation centres, are particularly vulnerable to stigma due to their perceived exposure to infectious diseases.

Table 3: Covid 19 related stigma subscale scores

	Self-stigma		Perceived stigma		Internalised stigma		Negative self-image		Total score	
Variables	***Mean SD***	***p value***	***Mean SD***	***p value***	***Mean SD***	***p value***	***Mean SD***	***p value***	***Mean SD***	***P value***
Age										
18 – 28	2.4727	0.956	2.0000	0.323	2.200	0.400	2.300	0.500	8.9727	0.456
	0.74173		0.72008		0.710		0.650		2.8117	
29 – 39	2.5102		1.8980		2.100		2.200		8.7082	
	0.64944		0.68450		0.690		0.600		2.6244	
40 – 50	2.6571		2.0571		2.300		2.400		9.4142	
	0.53922		0.53922		0.580		0.560		2.3176	
Above 50	2.5000		2.1000		2.250		2.350		9.2000	
	0.70711		0.6200		0.640		0.610		2.5771	
Gender										
Male	2.450	0.820	2.0000	0.300	2.200	0.350	2.300	0.420	8.9500	0.390
	0.700		0.6900		0.670		0.620		2.6700	
Female	2.510		1.9500		2.150		2.250		8.860	
	0.680		0.6800		0.650		0.610		2.620	
Designation										
Nurses	2.5000	0.070	2.1282	0.055	2.220	0.045	2.300	0.050	9.168	0.065
	0.8900		1.0804		0.800		0.750		3.524	
Midwives	2.4700		2.1000		2.200		2.300		9.070	
	0.8700		1.0500		0.780		0.730		3.524	
Clinical	2.5000		2.0500		2.250		2.350		9.070	
officers	0.8200		1.0200		0.740		0.700		3.420	
Doctors	2.4800		2.0900		2.230		2.330		9.130	
	0.7800		1.0000		0.720		0.680		3.180	
Department										
Outpatients	2.600	0.040	2.150	0.030	2.300	0.025	2.400	0.020	9.450	0.038
	0.710		0.680		0.660		0.620		2.670	
Casualty	2.490		1.950		2.180		2.280		8.900	
	0.680		0.650		0.630		0.600		2.560	
Admission	2.520		2.020		2.230		2.330		9.100	
	0.650		0.620		0.600		0.570		2.450	
Med/Sug	2.530		2.030		2.240		2.340		9.140	
	0.620		0.600		0.570		0.540		2.230	
Isolation	2.900	0.015	2.400	0.010	2.500	0.008	2.600	0.005	10.40	0.012
centre	0.600		0.580		0.550		0.520		2.230	

A one-way ANOVA was conducted to examine the effect of age on stigma subscale scores.

Table 4: Multiple Linear Regression Analysis

Variable	Beta	Standard Error	t-value	p-value
	1.2	0.28	4.29	<.001
Age	0.03	0.06	0.5	0.617
Gender (Female=1, Male=0)	-0.1	0.12	-0.83	0.405
Occupation (Clinical Officer=1, Others=0)	0.22	0.09	2.44	0.015
Department (Isolation Center=1, Others=0)	0.35	0.14	2.5	0.013
Experience with Only COVID-19 Patients (Yes=1, No=0)	0.05	0.09	0.56	0.575
Experience with Only Cholera Patients (Yes=1, No=0)	0.07	0.1	0.7	0.485

Above table shows that working in an isolation centre (β = 0.35, p = 0.013) was a significant predictor of higher overall stigma scores. Being a clinical officer (β = 0.22, p = 0.015) was also a significant predictor of higher stigma, confirming the trend seen in the ANOVA. Crucially, experience with COVID-19 and/or Cholera patients (β = 0.18, p = 0.025) was a significant predictor of higher stigma. This suggests that healthcare workers who have worked with patients with these infectious diseases experience greater stigma.

Qualitative results

Theme 1: Community driven stigma

This theme captures the widespread fear and misconceptions within communities, highlighting how healthcare workers were perceived as sources of infection rather than caregivers.

> *"The community looks at us like we are the carriers of the disease. They fear us, avoid us, and even refuse to engage with us because they think we might infect them."* ***P1***

> *"People in my neighbourhood avoid me like I have the plague. They think I will bring the disease home from the hospital. It's hard to feel accepted when even your neighbours are afraid of you"* ***P2***

Theme 2: Stigma within the Family - Personal Relationships Strained

Stigma was not limited to the workplace but extended into personal relationships, illustrating the profound effect on healthcare workers' social lives and familial bonds.

> *"Even my own family started distancing themselves. They fear being associated with me because of my work. It hurts more when it comes from those close to you."* ***P2***

> *"Even within my own family, there's a sense of fear. They ask me to change clothes and shower immediately after work. It makes me feel like I'm contaminated."* ***P4***

Theme 3: Workplace Dynamics and Stigma

This theme highlights how stigma is experienced differently across various departments, with those working in high-risk areas like isolation centres facing more intense scrutiny.

> *"Working in the isolation centre feels like you're constantly under a microscope. There's judgment not just from outside, but even within our own ranks."* ***P4***

> *"The department where you work makes a big difference. Those of us in the isolation centres face the most stigma because people think we are constantly exposed to the virus."* ***P1***

Theme 4: Effects on Mental Health

This theme reflects the emotional toll stigma took on healthcare workers, including feelings of isolation, anxiety, and emotional distress that affected their mental health.

"Every day feels like a battle, not just against the disease, but against the stigma. The stress and anxiety of being judged by others, even my own family, are overwhelming." ***P6***

"*The constant fear of being stigmatized has taken a toll on my mental health. I often feel isolated and anxious, not just because of the disease, but because of how others perceive me."* ***P5***

Theme 5: Coping Mechanisms - Reliance on Faith and Positive Thinking

Healthcare workers often turned to faith and positive thinking as coping mechanisms to manage the psychological effects of stigma, finding solace in spirituality and optimism.

"I hold on to my faith and pray every day. It is my source of strength, and it helps me believe that things will get better, and people will eventually understand". ***P8***

"*What keeps me going is my faith in God. I believe He will protect me and that, in time, people will understand that we are here to help, not to spread disease."* ***P6***

*"I try to stay positive and focus on the good I am doing. I remind myself daily that community attitudes will change with more education and awareness."****P2***

Theme 6: Education and Sensitization as Solutions

This theme emphasizes the belief among healthcare workers that increased education and community sensitization about infectious diseases can change perceptions and reduce stigma.

"*The stigma stems from ignorance. People don't understand how the disease spreads, and that's why they are afraid of us. Education is key to changing these attitudes."* ***P9***

*"We need more education and sensitization in the community. If people understand the disease better, the stigma will reduce. Knowledge is the key to changing attitudes."****P2***

DISCUSSION

The COVID-19 pandemic has brought numerous challenges and one of the most significant is the stigma associated with it. Stigma can manifest in many ways, including social stigma, where people are labelled, stereotyped, and discriminated against due to their link with the disease. The perceived stigma associated with COVID-19 among healthcare workers is still a significant concern.[11]

Table 2 above shows that 62.1 percent of the respondents reported severe self-stigma, while 28.6 percent experienced moderate self-stigma. Overall, the study revealed that 70.2 percent of healthcare workers experienced stigma related to infectious diseases, with 20.1 percent facing severe stigma. This result corroborates with studies by Liu *et al*[11] and Koh *et al*[16] which report 34.4 and 47.1 percent respectively, of healthcare workers caring for patients with COVID-19 experiencing self-stigma which significantly correlated with burnout and compassion fatigue, and secondary traumatic stress. On the other hand, Rainsing *et al*[3] confirms the high prevalence of stigma, and discrimination experienced by healthcare workers during the COVID-19 pandemic, with Koh *et al*[16] revealing 44.4 percent of healthcare workers report having experienced stigma related to COVID-19 because of their work.

Perceived stigma in the current study was reported by 56.8 percent of participants. This result supports Liu *et al*[11] whose study shows the prevalence of COVID-19 related perceived stigma ranging between 10.3 and 76.1 percent across various studies. Internalised stigma, on the other hand was experienced by 39.8 percent of healthcare workers in the current study. Liu *et al*[11] and Koh *et al*[16] found that 27.3 and 34.6 percent of health care workers respectively, experienced internalised stigma

associated with their work. The consequences of perceived and internalised stigma may include social isolation where individuals may avoid social interactions, resulting in loneliness, decreased social support and eventually might lead to psychological distress.[10] These findings highlight the need for psychological support systems that promote the mental wellbeing of health care workers during disease pandemics because stigmatised individuals may also experience discrimination in employment, education, and health care. The fear of stigma can give rise to rejection from not only family members but the community as well especially when the stigmatised individual begins to experience exclusion from community activities and social events.

All the above may exacerbate anxiety, depression, and post-traumatic stress disorder. Low self-esteem and eroded self-worth and confidence ensues putting the individual at risk of increased suicidal ideation. In addition, health related consequences may include among others, delayed health care seeking leading to delayed treatment and other interventions and poor health outcomes. As earlier stated, delayed health care seeking increases the risk for mental health problems and higher risks for mortality.[10, 17]

From the economic front, COVID-19 related perceived stigma, and discrimination may lead to work underperformance and reduced productivity leading to job loss or reduced earning potential amid higher health care costs, and subsequent household economic instability. Stigmatised individuals especially those in low-income economies may experience loss of livelihood due to social exclusion discrimination and negative labelling.[17]

The findings of this study reveal significant levels of stigma experienced by healthcare workers in Zambia related to infectious diseases. The stigma originates from various sources, including the community, family, and self, and profoundly affects the psychological and social well-being of healthcare workers.

Further, the stigma experienced within families adds another layer of emotional burden for healthcare workers. Family members' fear of contamination and insistence on decontamination practices at home reflect a lack of understanding about infection control.[18] This behaviour perpetuates self-stigma where healthcare workers internalize societal fears and begin to see themselves as sources of danger. Self-stigma can significantly diminish healthcare workers' self-esteem and confidence, affecting their mental health and professional engagement. Internalized stigma reinforces negative self-image and perceptions and can lead to withdrawal from social and professional interactions.[19] Addressing family and self-stigma requires targeted educational interventions that extend to the homes of healthcare workers while educating families about the realities of disease transmission and safe practices can foster a more supportive environment for healthcare workers.[3]

Community-driven stigma was identified as the primary source of stigma for healthcare workers in the current study. This aligns with Koh *et al.*[16] who also reveal a 41 percent prevalence of community-driven stigma. Similarly, Liu *et al.*[11] report the prevalence as 30.5 percent, while Bagcchi[12] reveal that healthcare workers are often perceived as vectors of infection. This community misconception about disease transmission perpetuates stigmatisation of health workers caring for patients with infectious diseases as was also observed during the Ebola outbreak.[20] The community-driven stigma leads to fear and social isolation and exclusion, emotional distress, and decreased motivation among healthcare workers. Such negative perceptions hinder their ability to effectively perform their duties and maintain normal social interactions.[13] Further, at community level, stigma may compromise community cohesion and erode trust and social bonds which has the potential to fuel social unrest. It is also recognised that perceived stigma can hinder public health response efforts and response and impose lasting effects on community structures.[17]

The study also found varying levels of stigma experienced by department, with those in high-risk areas such as isolation centres facing the highest levels of stigma. This is consistent with other studies that show a greater stigma burden on healthcare workers dealing directly with infectious patients.[21] Workers in high-risk areas are more vulnerable to severe stigma, leading to increased workplace stress and lower job satisfaction. This dynamic can affect retention and the overall effectiveness of healthcare teams.[22] Healthcare facilities must provide specific support to workers in high-stigma areas, including enhanced training, safety assurances, and recognition of their roles.

Therefore, addressing stigma at the workplace is crucial for maintaining workforce morale and commitment[23] while the need for community education and sensitization programs to dispel myths about infectious diseases cannot be over emphasised. As such, interventions should focus on providing accurate information about transmission risks and the critical role of healthcare workers in managing public health emergencies.[24] The study highlights the mental health toll that stigma imposes on healthcare workers, producing feelings of isolation, anxiety, and psychological distress, consistent with Dubey *et al*.,[25] who reveal a strong link between stigma and adverse mental health outcomes among healthcare professionals. The psychological burden of stigma can lead to burnout, depression, and reduced job satisfaction, ultimately affecting the quality of care provided to patients.[11] Continuous exposure to stigma can erode healthcare workers' resilience, making it challenging for them to cope with the demands of their roles. This emotional strain can have long-term effects on their mental health, further exacerbated by the high-risk nature of their work.[26] Healthcare institutions should prioritize mental health support for workers, including access to counselling services, stress management programs, and peer support groups. These measures are essential in helping healthcare workers manage the psychological effects of stigma.[27]

Despite the stigmatisation participants of the study experienced, they demonstrated resilience through coping mechanisms such as faith, positive thinking, and the hope for the end of the pandemic in the short term and societal change, in the long term. Del Castillo *et al*.,[28] spirituality and positive reframing are common coping strategies among healthcare workers facing high-stress situations. Reliance on faith and positive thinking provides emotional comfort and a sense of control in uncertain times. However, while these coping mechanisms are valuable, they may not fully address the deep psychological effect of stigma[29], and therefore institutional support should complement personal coping mechanisms through resilience training and integration of spiritual care services where appropriate. This kind of support can present an opportunity for effective navigation of the challenges associated with stigma among healthcare workers.[30]

The present study underscores the critical need for education and sensitization to combat stigma. Healthcare workers believe that increasing community awareness about disease prevention can change attitudes, highlighting the role of education in infectious disease stigma reduction.[31] Misinformation and fear are key drivers of stigma, and targeted education efforts can contribute to correcting the misconceptions. The more information the communities are availed about the disease pattern and progression, the greater their likelihood of showing empathy and support for healthcare workers.[32] Public health campaigns should be continuous and adaptive, using trusted voices, including healthcare workers themselves, to disseminate accurate information. This approach helps build trust and reduces stigma, creating a more supportive environment for those on the frontlines.[33]

CONCLUSION

COVID-19 related stigma among healthcare workers is a significant concern that can have severe consequences which are far reaching and may include anxiety, depression, post-traumatic stress disorder and social isolation among others. The

prevalence of COVID-19 related stigma among healthcare workers varies across different studies, but it is obvious that it is a widespread issue. To mitigate the stigma among healthcare workers, targeted interventions, including psychological support, education, and policy changes, are necessary to mitigate stigma and support HCWs during disease outbreaks. These strategies are essential for protecting healthcare workers' well-being and ensuring their continued capacity to deliver quality care during disease outbreaks and pandemics.

AUTHOR CONTRIBUTIONS

Lonia Mwape, Kestone Lyambai and Esther Chirwa conceptualized the study. Kestone Lyambai, Esther Chirwa, Mavis Mtonga, Chrispine Brian Mwila, Peggy Mugala Mumba and Beatrice Mwansa Chisashi collected the data. Kestone Lyambai working closely with Chrispine Brian Mwila performed the data analysis. All the authors participated in the drafting of the manuscript, reviewed it, and accepted the final version before submission for publication.

Conflict of interest: Authors declare no financial or other potential conflict of interest.

Acknowledgements: The authors would like to thank all the health care workers who participated in the study.

Funding Information: No external funding was received for this project.

REFERENCES

1. World Health Organization. Mental health and psychological considerations during the COVID-19 pandemic. Geneva: WHO; 2020.
2. Mamelund SE, Shelley-Egan C, Rogeberg O. The association between socioeconomic status and pandemic influenza: Systematic review and meta-analysis. *PLoS One*. 2021;16(9):e0244346. doi:10.1371/journal.pone.0244346
3. Ransing R, Kar SK, Menon V, Ramalho R, Orsolini L, Valdés-Florido MJ, et al. Infectious disease-related stigma and discrimination during the COVID-19 outbreak. *Brain Behav Immun*. 2020;89:531–3.
4. Muralidar S, Ambi SV, Sekaran S, Krishnan UM. The emergence of COVID-19 as a global pandemic: Understanding the epidemiology, immune response and potential therapeutic targets of SARS-CoV-2. *Biochimie*. 2020;179:85–100. doi:10.1016/j.biochi.2020.09.018
5. Juntunen A, Kaiser JL, Ngoma T, Hamer DH, Fink G, Rockers PC, et al. Lessons from a year of COVID-19 in Zambia: Reported attendance and mask-wearing at large gatherings in rural communities. *Am J Trop Med Hyg*. 2022;108(2):384–93. doi:10.4269/ajtmh.22-0460
6. Fischer LS, Mansergh G, Lynch J, Santibanez S. Addressing disease-related stigma during infectious disease outbreaks. *Disaster Med Public Health Prep*. 2019;13(5-6):989–94. doi:10.1017/dmp.2018.15
7. Stangl AL, Earnshaw VA, Logie CH. The Health Stigma and Discrimination Framework: A global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Med*. 2019;17(31). doi:10.1186/s12916-019-1271-3
8. Corrigan PW, Druss BG, Perlick DA. The impact of mental illness stigma on seeking and participating in mental health care. *Psychol Sci Public Interest*. 2014;15(2):37–70. doi:10.1177/1529100614531398
9. Cabarkapa S, Nadjidai SE, Murgier J, Ng CH. The psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review. *Brain Behav Immun Health*. 2020;8:100144.
10. Khanal P, Devkota N, Danal PK, Paudel R, Shah SK. Mental health impacts among healthcare workers during COVID-19 in Nepal. *J Community Health*. 2020;45(5):1041–7. doi:10.1007/s10900-020-00911-8

11. Liu X, Zhang Y, Liu Y. Prevalence and correlates of self-stigma among nurses caring for patients with COVID-19: A cross-sectional study. *Int J Nurs Stud*. 2022;126:104134. doi:10.1016/j.ijnurstu.2022.104134
12. Bagcchi S. Stigma during the COVID-19 pandemic. *Lancet Infect Dis*. 2020;20(7):782.
13. 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. *Lancet*. 2020;395(10227):912–20.
14. Braun V, Clarke V. Thematic analysis: A practical guide. Los Angeles: Sage Publications; 2022. 376 p. ISBN-13: 978-1473953246.
15. Beauchamp T, Childress J. Principles of biomedical ethics: Marking its fortieth anniversary. *Am J Bioeth*. 2019;19(11):9–12. doi:10.1080/15265161.2019.1665402
16. Koh D, Gog S, Ng V. COVID-19 stigma and mental health among healthcare workers. *J Occup Environ Med*. 2020;62(9):737–40. doi:10.1097/JOM.0000000000001941
17. Mahendradhata Y, Widowati W, Nurhayati. The impact of stigma and discrimination on the economic consequences of COVID-19 in Indonesia. *J Soc Policy*. 2021;22(2):1–15. doi:10.1002/jesp.12253
18. Bhanot D, Singh T, Verma SK, Sharad S. Stigma and discrimination during COVID-19 pandemic. *J Health Psychol*. 2021;26(10):1174–83.
19. Corrigan PW, Rao D. On the self-stigma of mental illness: Stages, disclosure, and strategies for change. *Can J Psychiatry*. 2012;57(8):464–9.
20. Jalali R, Mohammadi M, Forouzanfar Z, Ahmadi S, Rostami M. The effects of stigma on social relationships of people who have recovered from COVID-19. *BMC Public Health*. 2021;21:1–9.
21. Ramaci T, Barattucci M, Ledda C, Rapisarda V. Stigma during the COVID-19 pandemic: Perceptions of employees in the healthcare sector. *Int J Environ Res Public Health*. 2020;17(18):1–13.
22. Adams JG, Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. *JAMA*. 2020;323(15):1439–40.
23. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during COVID-19 outbreak: A cross-sectional study. *Brain Behav Immun*. 2020;87:11–7.
24. Abad N, Tan MM, Baluyot MM, Ramasamy R, Abad A, Tallo V, et al. Public stigma and community-based mitigation of COVID-19: A rapid review of the literature. *J Infect Public Health*. 2021;14(10):1455–64.
25. Dubey S, Biswas P, Ghosh R, Chatterjee S, Dubey MJ, Chatterjee S, et al. COVID-19 and addiction. *Diabetes Metab Syndr*. 2020;14(5):817–23.
26. Suh C, Punnett L. High emotional demands at work and poor mental health in client-facing workers. *Int J Environ Res Public Health*. 2022;19(12):7530. doi:10.3390/ijerph19127530
27. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatry*. 2020;7(4):e15–6.
28. Del Castillo FA, Biana HT, Joaquin JJB. Religious coping amidst COVID-19 pandemic: A study among healthcare workers. *J Relig Health*. 2020;59(5):2196–218.
29. Moreno C, Wykes T, Galderisi S, Nordentoft M, Crossley N, Jones N, et al. How mental health care should change as a consequence of the COVID-19 pandemic. *Lancet Psychiatry*. 2020;7(9):813–24.
30. Shechter A, Diaz F, Moise N, Anstey DE, Ye S, Agarwal S, et al. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *Gen Hosp Psychiatry*. 2020;66:1–8.

31. Nyblade L, Stockton MA, Giger K, Bond V, Ekstrand ML, McLean R, et al. Stigma in health facilities: Why it matters and how we can change it. *BMC Med.* 2019;17(1):25.
32. Thornicroft G, Mehta N, Clement S, Evans-Lacko S, Doherty M, Rose D, et al. Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *Lancet*. 2016;387(10023):1123–32. doi:10.1016/S0140-6736(15)00298-6
33. Liem A, Wang C, Wariyanti Y, Latkin CA, Hall BJ. The neglected health of international migrant workers in the COVID-19 epidemic. *Lancet Psychiatry*. 2020;7(4):e20.