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COVID-19: COPING STRATEGIES AND ROLE PERFORMAMNCE OF FRONTLINE HEALTHCARE WORKERS

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Abstract: **Background and Objective: The Coronavirus Disease pandemic has destabilized nearly all countries in the world, including Kenya. Healthcare care providers have carried initial burden of the pandemic owing to the fact they require considerable coping strategies to surmount the pandemic. However, critical studies on the interrelatedness and importance of challenges, coping strategies and resilience during the pandemic are lacking. This study explores the strategies of coping with challenges on role performance among frontline healthcare workers cross the demographic variables.**

Method: Cross-sectional research design was employed and multi stage sampling adopted to get the sample size of 298 respondents from a population of 873 frontline healthcare workers in Busia County, Kenya. The collected data were analyzed with multivariate regression analysis while qualitative findings were transcribed under themes.

Result: The results from Multivariate Analysis indicated The model predicted role performance of the frontline healthcare workers ($F = 3.7$, $p < 0.0001$) ($\beta = 0.194$, 95% CI: 0.100 - 0.289, $p < 0.0001$) a with the association being highly statistically significant association between coping strategies and role performance of frontline healthcare workers. Healthcare workers in urban health facilities experienced lower role performance unlike their counterparts in rural settings ($\beta = -0.087$, 95% CI: -0.171 - -0.004, $p = 0.040$). Male workers had increase in role performance for males ($\beta = 0.042$, 95% CI: 0.017 - 0.181, $p = 0.018$) as compared to female counterparts.

Conclusion: Coping strategies is important for frontline healthcare workers due to a delicate balance between job distress and personal health protection. Therefore education in a variety of coping strategies in health facilities is necessary to help leverage on role performance of healthcare workers in the wake of coronavirus disease pandemic.

Keywords: **Coping strategies, COVID-19, demographic variables, Frontline Healthcare Workers, Outbreak & Role Performance.**

1. INTRODUCTION

The Corona Virus disease popularly known as COVID-19 was first diagnosed in humans in Wuhan, China in December 2019. To date, the Covid-19 pandemic has disorganized human life to unprecedented levels (Tiago,2021). In Kenya, the first confirmed case of COVID-19 was reported on 13th March, 2020 (MoH, 21, June 2020). The number has ever increased leading to occasional lockdown of the country.

The COVID 19 has left injurious impact on various sectors of people's life. The pandemic has affected how people live, interact and more seriously how they work. In particular, the work place has been tremendously affected. Today there is growing prevalence of mental ill-health among the frontline healthcare workers affecting their job performance (Tomline *et al*,2020).

Eminence healthcare, especially during a pandemic, requires a vigorous health workforce with sufficient numbers, ideal mental well-being and a supportive environment. Many Countries in Africa are seriously affected by the rising cases of COVID-19 as a result of limited medical resources and infrastructure such as insufficient intensive care unit (ICU) beds and ill-trained healthcare workforce. The Organization for Economic Co-operation and Development in 2020 reported 2.6 and 3 physicians and 11.9 and 7.8 nurses per 1000 people in the USA and UK, respectively. Austria reported the most physicians (5.2) while Norway reported the most nurses (18) per 1000 people (OECD, 2021). Conversely, corresponding figures from the WHO in Kenya were 0.2 physicians and 1.2 nurses per 1000 people (World Health Organization, 2020).

Many African countries have delicate healthcare systems with fewer than 30 critical care beds for their entire population. In addition, there is only a handful of fully trained critical care physicians, underlining the lack of acute resources to adequately mitigate the COVID-19 pandemic in the Continent (Chersich *et al*.2020). Prior report indicate the availability of in approximately 14 hospital beds per 10 000 people with 537 ICU beds and 256 ventilators in Kenya against a population of close to 50 million people (World Health Organization, 2020). The situation in Kenya is far below WHO requirements. For instant, WHO in 2019 reported 25 hospital beds per 10 000 people in the UK with a population of approximately 67 million people (World Health Organization, 2020). Mental health providers are also lacking in Kenya. For instant by 2016, Kenya reported 0.18 psychiatrists and 0.002 psychologists per 10 000 people. The situation has not had significant changes. Similar to other sub-Saharan African (SSA) countries, Kenya has no formal mental health response plan within the larger COVID-19 strategic response (Jaguga & Kwobah ,2020).

Almost two years into the COVID-19 pandemic, little is known on the effect of the pandemic on the job performance of HCWs in Kenya or in any resource-limited setting. We therefore focused to investigate the prevalence of coping strategies among frontline HCWs in five major hospitals in Busia County, Kenya, and to evaluate the state of preparedness to mitigate risk of COVID-19 among HCWs in these hospitals.

2. LITERATURE REVIEW

Coping has been defined as a process of managing both extrinsic and intrinsic demands challenging an individual's own resource (Lazarus & Folkman,1988). The coping style can either be active or passive coping. Active coping strategies are reactions designed to change the nature of the challenges or thoughts about them. Passive coping strategies are those that lead people into withdrawal or avoidance and deter them from directly addressing the problem. Active coping can be a positive factor in reducing incidence of burnout because it decreases the negative impact of stressors by strengthening ones' efficiency in a specific situation (Xiaofeili *et al.*, 2014). The current study focus on coping strategies among HCWs in a pandemic situation, thus outcome of the study brings in new knowledge.

Studies carried out among HCWs in different parts of the world showed that they are struggling with incurable Covid-19 with a lot of challenges (Rangachari & Woods, 2020), including the treatment of Covid-19 patients, minimizing the infection spread, developing acceptable short-term and long term plans, as well as treating the non-Covid-19 patients (Shreffler *et al*., 2020). Other sources of distress are work overload, and abrupt evolvement of inventive practice situations (Sani *et al*., 2020). Nevertheless, this study brings in a different dimension since COVID-19 is still a challenge to the medics. Additional studies have also revealed that lack of Personal Protective Equipment (PPE) HCWs express the anxiety of being infected and spreading the virus to their families and other patients (Rangachari & Woods, 2020). According to Maiorano *et al.* (2020), recurrent challenges encountered in Covid-19 by HCWs can cause exhaustion, anxiety and stress, leading to trauma related infection. This may have negative affect on role performance of HCWs (Buselli *et al*., 2020).

Research conducted by Lukong & Yahaya (2021) on COVID-19 pandemic challenges, coping strategies and resilience among healthcare workers in Nigeria revealed that HCWs were prone to high challenges of inadequate resources for practice, experienced low to moderate coping strategies and resilience in the period of Covid-19 pandemic. The study was conducted among 143 health care workers in the various secondary and tertiary health facilities. The case is different in Kenya due existence of very humble medical facilities and personnel as compared to Nigeria.

A qualitative inquiry in exploring stress coping strategies of frontline emergency health workers dealing Covid-19 in Pakistan found that limited media exposure resulted to insufficient knowledge with regard to coping strategies necessary for COVID-19 awareness. For instance, participants believed that sharing COVID-19 related information may increase vulnerability of their significant others and exacerbate their anxiety and fear (Khadeeja & Fahad, 2020). The case for HCWs in Kenya is different due to diverse socio-cultural background that could be significance to inform on coping strageties. A cross-sectional multi-countries study on coping with COVID-19 pandemic challenges revealed that family support, positive thinking, and religious/prayers to be the most preferred strategies for coping with psychological impact among the healthcare workers in the amidst of COVID-19 pandemic (Mila *et al*,2021). In some study, strong evidence of the resilience of healthcare staff and external support interventions were found to help cope with life crises (Witter, 2017).

Prior research on coping strategies among nurses working in difficult environment, found use of collective strategies to leverage on work and stress arising from the working environment (McKnighta *et al*,2019). In another study, strategies for reduction of stress on healthcare workers included the organization of patients into particular triage categories as key agents in prioritizing care and rationalizing resources (Allen, 2004). According to Mazzotta (2016) use of logic strategies such as routinization in healthcare, helps nurses to cope with the unpredictable events at work. The flexibility, improvisation and a spirit of professional pragmatism nurses demonstrated in their dealings with each other and the clear autonomy they had in the day-to-day management of work also offer another form of collective coping (Aagard, 2009; Strong, 2017)

According to Myendeki (2008) coping strategies provide shielding effect that interacts with a challenging situation and therefore contributes to the mental stability and positive behavioral out comes. In another study, social support from friends have shown to have lower levels of depersonalization while support from co-workers or supervisors at work leads lower levels of emotional exhaustion (Lin *et al*., 2009).

The use of religion as a source of, social support brings about emotional support and hope. In a qualitative study in Iran, by Mohammad *et al* (2014) nurses were found to use spirituality as way of coping. This was on the basis of their understanding of teaching in Muslim's holy book Quran. Although the above study emphasis in the use of religious and spiritual beliefs as way to cope with challenges at work and to make nursing responsibilities more endurable, a study carried out in Kenyatta National Hospital in Kenya (KNH) revealed contradicting results. Christians who constituted 95.6% and Muslim 2.0%, of the medical workers both had a burnout level of 100.0%. This showed that burnout occurred irrespective of religious faith of healthcare worker (Kokonya *et al*, 2014). The religious set in Kenya reflects heterogeneity with a small fraction of Muslim faith, thus response behaviour is different.

The use of specific coping strategy may be different across various regional groups. For instance, the avoidance-oriented coping strategy is associated with psychological competence, self-image of the nurse, professionally significant behavior and personality traits (Liana *et al*., 2014). Individual differences in coping also exists and is influenced by the state of health, levels of personality concept associated with sense of control of the individual, others include effective problem solving skills, confidence, adequate resources and social support (Lazarus & Folk man 1986). However, health care workers who interact with many people most of the time utilize coping oriented strategies as opposed to resource controls in the work place. For instan,t keeping social distance and refraining to handshake is an unconceivable culture for majority of the people to adhere to.

Additional research studies found no relation between burnout and the gender of nursing professionals Oliveira (2012), whereas prior study by Hochwalder (2009) revealed precisely the opposite (Hochwalder, 2009). Similarly, there are also contradictory findings for the correlation between burnout and marital status. Various studies claim that being single or married is unrelated to the three burnout dimensions (Bekker, 2005). In contrast, according to other studies, workers who are single present higher levels of burnout (Gama,2014) whereas other studies claim that being married is correlated with the syndrome (Cilingir *et al*,2012). There is also controversy in regard to having or not having children. Nevertheless, certain researchers have found this variable to have no relation on burnout among healthcare workers (Cañadas-De la Fuente *et al*, 2012). Others have found a significant relation between the two. For instant, some studies claim that healthcare workers without children have higher levels of burnout Lasebikan (2012) that those with children have higher levels of burnout (Ayala, 2013).

From the prior studies, it is not clear the relation that these socio-demographic variables (gender, marital status, and having children) may have on coping strategies of HCWs, because some studies inform about a positive correlation while others inform of a negative correlation or other authors said that there is no relation. Similar contradictions regarding the relation between coping strategies and other variables in healthcare professionals have been addressed and clarified with meta-analytic studies as, for example, occupational variables (job seniority, professional experience, job satisfaction, specialization or work shift) or socio-demographic variables (age) (Aguayo,2017; Gómez-Urquiza,2017).

3. MATERIALS AND METHOD

Design and Participants

A cross-sectional research design with survey method was employed to gather information on the influence of coping strategies on role performance among covid-19 frontline healthcare workers. Data collection was conducted with the help of trained research assistants. A random sample of 5 county hospitals was selected from a target comprising of 86 public health facilities in Busia County. Within each hospital a proportional sample size of frontline healthcare workers were selected to participate in the study.

Frontline Healthcare workers were purposively selected because of their direct contact and high exposure to would be coronavirus patients seeking treatment in hospitals. Multi stage sampling was employed to get the sample size of 298 respondents from a population of 873 frontline healthcare workers. Male were 137(46%) while female were 161(54%). In terms of age group 15-24 were 32(10.7%), 25-34, 135(45.3%), 35-44,77(25.8%) and those above 44 were54(18.1%) in Busia County, Kenya.

Measures

The survey contained a battery of measures, totaling 13 questions on a Likert scale ranging from 5= Very often; as the highest to 1=Not at all; as the highest. Questions varied from 'Reminding self that the work I do will be appreciated' to 'Went along with fate; sometimes I just have bad luck'. Role performance was assessed using role conflict and role ambiguity scale developed by Rizzo, House and Lirtzman (1970). Each of twenty-nine items was rated on a scale ranging from 1to 7. A score of 1 indicated the healthcare worker perceived that the statement was not reflective of one's job. A score of 7 indicated strong agreement that the item reflected the healthcare worker's occupation. The role ambiguity items were reverse scored because these items were worded positively for clarity. Thus, higher scores on the role questionnaire were indicative of higher levels of role conflict and role ambiguity.

Demographic Information.

Demographic information collected included age, gender, marital status, religious affiliation, highest level of education, type of work unit, work specialization and employment status. A summary of demographic information is given in Table 1.

Procedure

The data used for the current study was obtained from healthcare workers in public hospitals. Having obtained the authorization from the hospital management, the researchers were introduced to healthcare workers from each section. Study participants were approached individually, adequately briefed about the purpose of the study. Informed consent was sought and obtained from each respondent before the administration of questionnaires. Ethical approval for the study was obtained from the Institutional Ethical Review Committee (IEREC) of Masinde Muliro University of Science and Technology. The permit to conduct the study in Busia County was granted by National Commission for Science Technology and Innovation (NACOSTI) in Kenya. The questionnaire was administered by research assistants through Open Data Kit (ODK) using mobile phone platform to reduce physical contact during the COVID-19 period. Interview schedule was administered to selected section heads within the hospitals. All questionnaires were administered in English. Some health workers declined their participation in the study. However, only Frontline Healthcare workers present at the time of data collection were included in the study. The researchers and research assistants were available during the process to attend to any questions that may be posed by the participants. The adequately completed questionnaires were collected, scored and analyzed.

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Inclusion and Exclusion Criteria

These included medical doctors, nurses, laboratory scientists, pharmacists and community health workers working in various hospitals in the State during the COVID-19 pandemic. Health care workers on study leave, sick leave, annual leave, maternity leave and other forms of leave, or those on secondment to non-clinical sector during this period of Covid-19 pandemic were not included among the subjects of study.

Data analysis

Data analysis involved treating Likert-type scale data as interval measures. Cronbach's α scale was employed to test internal reliability consistency for each the variables. Multiple regression analysis with the help of statistical analysis system (SAS) was conducted to investigate the association between socio-demographic characteristics and psychosocial factors on role performance. Descriptive statistics, including means (M) and standard deviations (SD), were also used to summarize the data. Each categorical variable was dummy-coded and tested against a reference group with 95% confidence level and P-value set at less than 0.05 considered statistically significant.

Contribution to the literature

This study provides a systematic review on the predictive nature of psychosocial factors on role performance of frontline healthcare workers during COVID-19 pandemic. In addition it reveals a considerable coverage of the psychosocial factors in addressing role performance. Thus, the need to reflect towards addressing the link between psychosocial factors and role performance among healthcare workers during COVID-19 pandemic

4. RESULT

Socio-demographic characteristics as predictor of Role performance

To find the extent to which socio-demographic characteristics predicted role performance, a multivariate logistic regression model was run. The results are presented in Table 1.

Table 1: Linear regression analysis on socio-demographic characteristics as predictor of role performance

Model	Parameter Estimate		*T*	95% CI	P value
	B	Std error			
Male	0.058	0.041	1.41	- 0.023 – 0.140	0.159
Age	- 0.007	0.002	- 3.48	- 0.011 - - 0.003	**0.0006**
Married	- 0.119	0.044	- 2.72	- 0.206 - - 0.033	**0.007**
Catholic	- 0.028	0.041	- 0.66	- 0.100 - - 0.055	**0.055**
College / University	- 0.100	0.081	- 1.21	- 0.258 – 0.061	0.225
Urban	- 0.080	0.041	- 1.93	- 0.162 – 0.001	**0.054**
Medical / Surgical; Pediatric; Maternity; Out-Patient	- 0.036	0.042	- 0.87	- 0.120 – 0.046	0.385
Years of service	- 0.006	0.002	- 2.73	- 0.011 - - 0.002	**0.007**
Doctors / Clinical Officer / Nurse / Midwife	- 0. 074	0.042	- 1.79	- 0.156 – 0.007	0.074
Permanent	- 0.087	0.042	- 2.09	- 0.169 - - 0.005	**0.038**
Undergraduate / Graduate	0.020	0.050	0.40	- 0.078 – 0.118	0.692

Dependent variable: Role performance

Prior to conducting regression analysis as indicated in Table 2, certain statistical assumptions were met. The assumptions were related to the normality of the data, linearity of the relationship and equality of the variances.

Results from Table 1 show a strong causal relationship between age, marital status, years of service, and being a permanent employee and role performance. A negative coefficient suggests that as the independent variable increases, the dependent variable tends to decrease. Age negatively affected role performance. One unit increase in age resulted in 0.007 decrease in role performance (p = 0.0006). Equally, being married led to a decrease in role performance by 0.119 (p = 0.007). Available evidence also show that one unit increase in years of service was statistically significantly associated with a 0.006 unit decrease in role performance (p = 0.007). There was also evidence of lower role performance among

permanently employed frontline healthcare workers and those working in urban health facilities than those on contract or part-time employees (p = 0.038) or in rural settings (p = 0.054). Being a catholic faithful (p = 0.055) or doctor/clinical officer/nurse (p = 0.074) was marginally significantly associated with a decrease role performance.

The Influence of coping strategies on role performance

The study examined the influence of coping strategies on role performance on frontline healthcare workers. Multivariate analysis was employed. Table 2 shows the regression of demographic characteristics and Coping strategies over role performance. A multiple regression was carried out to investigate the extent to which coping strategies and demographic characteristics had an on role performance of the frontline HCW. The results are presented in Table 2.

Table 2: Multivariate Regression analysis of the relationship between coping strategies and role performance

Model	Parameter Estimate		*T*	95% CI	P value
	B	Std error			
Urban	-0.087	0.042	-2.06	-0.171 - -0.004	**0.040**
Male	0.099	0.042	2.39	0.017 - 0.181	**0.018**
< 35 years	0.082	0.059	1.40	-0.033 - 0.20	0.163
Married	-0.078	0.050	-1.56	-0.176 - 0.020	0.120
Catholic	-0.039	0.041	-0.96	-0.119 - 0.041	0.338
College / University	-0.086	0.083	-1.04	-0.249 - 0.077	0.299
Medical / Surgical; Paediatric; Maternity; Out-Patient	0.013	0.062	0.22	-0.108 - 0.135	0.827
Duration of work: < 8 years	-0.050	0.061	-0.83	-0.170 - 0.069	0.405
Doctors / Clinical Officer / Nurse / Midwife	-0.078	0.061	-1.27	-0.200 - 0.043	0.204
Permanent	-0.030	0.051	-0.57	-0.131 - 0.072	0.566
Undergraduate / Graduate	0.066	0.050	1.33	-0.032 - 0.164	0.183
Coping strategies	0.194	0.048	4.01	0.100 - 0.289	**<0.0001**

Dependent variable: Role performance

The relationship between coping strategies and role performance was examined using multivariate regression analysis and controlling for socio-demographic factors. The model had an R^2 value of 0.098 signifying that 9.8% of the variance in role performance could be explained by coping strategies after controlling for the socio-demographic factors in the model (R^2 = 0.098). The model predicted role performance of the frontline healthcare workers (F = 3.7, p < 0.0001) with the association being highly statistically significant (β = 0.194, 95% CI: 0.100 - 0.289, p < 0.0001).

On its own, coping strategies domain had a lower coefficient of 0.216 which is higher than 0.194 after inclusion of the confounding factors in the model implying that the effect of coping strategies is higher as an independent influencing factor but decreases after controlling for the socio-demographic confounding variables. Again, respondents who were working in urban health facilities experienced lower role performance unlike their counterparts in rural settings (β = -0.087, 95% CI: -0.171 - -0.004, p = 0.040) in contrast to gender that revealed increase in role performance for males compared to females (β = 0.042, 95% CI: 0.017 - 0.181, p = 0.018).

5. DISCUSSION

The findings presented above show that the coping strategies, controlling for socio-demographic characteristics of frontline healthcare workers, had significant association with role performance. Likewise, being in urban facility or male had an influence on their role performance as indicated by the p value of 0.040 and 0.018, respectively. This could be explained by the fact that urban public facilities are likely to have better facilities such as accessibility to PPEs and counseling services compared to rural facilities.

We occasionally hold continuous medical education. At the same we have reorganization of work procedures which includes triaging at the gate, working in shifts, staggered appointments and reduced home visits for chronic illness like HIV&AIDS. We also adhere to COVID-19 health protocols and hold virtual meetings. Most of our staff have been trained. Unfortunately, the more training they received, the more fearful they became (Health Facility 1).

These findings are supported by those by Witter (2017) who noted that resilience of healthcare staff and external support interventions help cope with crises such as COVID-19. The results also concur with Khadeeja & Fahad (2020) who found out in their study that sharing life threatening information such as COVID-19 pandemic exacerbated anxiety in turn led to a decline in role performance among HCWs. The findings contrast with Lukong & Yahaya (2021) who found HCWs to experienced low to moderate coping strategies and resilience in the period of Covid-19 pandemic.

6. CONCLUSIONS

The frontline HCWs were facing high challenges including inadequate resources for prevention, training, support and counseling in this period of Covid-19 pandemic. There were low coping strategies among HCWs. It was found that there is a correlation between the role performance and Covid-19 coping strategies of HCWs.

7. RECOMMENDATIONS

This study suggests inclusion of feasible work-place coping strategies to help leverage on role performance of frontline HCWs. For instance those with high resilience, ability to cope with distress are likely to show uninterrupted role performance in the wake of COVID-19 situation.

Apart from ensuring inclusion of safety norms at the individual, familial, societal and organizational levels, meticulous scientific approach to stress and anxiety management needs to be worked upon. For example, cognitive behavioural therapy, life style changes and creation of social support systems are recommended to enhance coping mechanisms and behavioral skills to HCWs. A psychological therapy needs to be provided for to the health workforce and the other essential service providers group to neutralize their stress and anxiety at work places.

This study further suggests that the policy makers and hospital management should provide adequate protection equipment, psychological and social support as well as counseling against Covid-19 and other infectious diseases to HCWs. This will help in prevention of distress, anxiety and depression among HCWs.

8. LIMITATIONS

This study includes small sample size and inadequate diversity of the sample characteristics, which may have reduced the generalizability of the findings. Additionally, respondents were from health facilities from one County, which may not be representative of frontline HCWs at Country level. The psychometric qualities of the constructs under study adopted test items development from a specific cultural orientation. That might have compromised reliability and validity. COVID-19 questions also need to be better established with reliability and validity analyses. It may be that this assessment of frontline HCWs' views much latter after the emergence of COVID-19 are unique and respondents' perspectives would differ if measured at other times. Future research should evaluate whether frontlines HCWs' response change across time as the pandemic unfolds. However, the findings were generally consistent with similar prior studies conducted.

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