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Promoting the Mental Health of Healthcare Workers during COVID19 Pandemic: the influence of psychosomatic problems (work-related stress), social support, fear of COVID-19 and demographics

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Abstract

This paper examines the influence of work-related stress, social support, fear of COVID-19, and demographics in promoting mental health (MH) amongst healthcare workers (HCWs) in Nigeria. Hence, it adopted a survey research design. The results showed that work-related stress, social support, fear of COVID-19, and demographics strongly and jointly influence healthcare workers' mental health in Nigeria. Also, they indicated a significant independent influence of these independent factors on healthcare workers' mental health. The results show that out of the demographics considered in this study (such as gender, age, marital status, level of education, profession, department, work experience, and state of residence), only marital status did not significantly influence the healthcare workers' mental health in Nigeria. So, the government, health faculties, clinical psychologists, human resources managers, and medical practitioners should encourage reducing work-related stress. This should be done by increasing social support, reducing fear of COVID-19, and considering demographics while trying to promote healthcare workers' mental health in Nigeria, especially during the current COVID -19 pandemic era. Thus, this paper has recognized work-related stress, social support, fear of COVID-19, and demographics as significant influencers in promoting mental health amongst healthcare workers in Nigeria.

Key words
Sustenance; healthcare; influence; mental health; COVID-19.

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1. Introduction

The coronavirus disease 2019 (COVID-19), previously identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the 2019 novel coronavirus (2019-nCoV), was initially recognized in November 2019 in Wuhan, the capital city of Hubei Province of China (Wu & McGoogan, 2020; WHO, 2020). The infection swiftly spread all over Hubei Province and other areas in China before spreading to different places across the globe, resulting in an international health crisis (Wu & McGoogan, 2020; WHO, 2020). Notably, healthcare workers' mental health has significantly been affected as the virus spreads (Wu *et al*., 2009). Hence, in fighting the abrupt advent of the virus, mental distress amongst healthcare workers surfaced slowly, while anxiety and fear appeared instantaneously and reduced in the initial phases of the epidemic with sadness and posttraumatic trauma signs emerging later and persisting for an extended time, resulting in profound impacts (Wu *et al*., 2009). In a country like Nigeria, the COVID-19 pandemic presents unique challenges to its already delicate mental health services (Ogunwale *et al*., 2020). On February 27, 2020, the initial instance of COVID-19 in Nigeria was confirmed. Since then, the amounts of established cases have increased to 1,182 by April 25, 2020, which called for a rapid response by the Nigerian government (Oyeniran & Chia, 2020). Nevertheless, there are scarce studies on the psychological and physical effects of eruptions of communicable infections on the healthcare workers, mostly when related to high workload, stress, and burnout are connected to the risk of infection (Xiao *et al*., 2020).

Therefore, understanding the impact of the COVID-19 epidemic on healthcare workers' mental health is vital towards establishing policies and mediations to promote the psychological well-being of healthcare workers. Studies on the effect of Covid-19 on health professionals' mental health in Nigeria are pretty few. Hence, the current study adds to the body of knowledge by investigating the potential factors that affect the promotion of healthcare workers' mental health in Nigeria, particularly during the current Covid-19 pandemic.

The current paper aims to look into the mental health of healthcare workers in Nigeria during the Covid-19 pandemic, as affected by psychosomatic problems (work-related stress) (WRS), social support (SS), fear of Covid-19 (FoCovid-19), and demographics. This paper, hence, intends to propose strategies for achieving and promoting the sound mental health of healthcare workers in Nigeria. Therefore, the objectives of the current investigation are:

- To look into the relationships that exist between the independent variables of study (psychosomatic problems (work-related stress), social support (SS), fear of Covid-19 (FoCovid-19), demographics, and the MH of HCWs in Nigeria during the current Covid-19 pandemic;
- To investigate the effect of psychosomatic problems (work-related stress), SS, FoCovid-19, and demographics on the MH of HCWs in Nigeria during the current Covid-19 pandemic;
- To achieve an empirical model to ensure healthcare workers' mental health in Nigeria during the current Covid-19 pandemic.

2. Theoretical framework

Prior investigations have indicated that surviving severe communicable viruses, such as SARS, can result in depression, burnout, posttraumatic stress disorder (PTSD), anxiety, and stress (Wu, Chan & Ma, 2005). Medical workers directly treating COVID-19 patients are at higher risk than others. This position could be due to inadequate personal protective equipment, excessive workload/work hours, and inadequate support (Cai *et al*., 2020). Social support (SS) is the awareness that an individual receives some assistance and care from people and participates in an active social system. These practical means can be in the form of companionship (for instance, sense of belonging), information (for example, pieces of advice), financial assistance, or emotion (nurturing) (Thomas, Liu & Umberson, 2017). This care can come from several sources, including colleagues, friends, government, family, and organizations. Nevertheless, studies on social support have gone across disciplines, including public health, medicine, psychology, nursing, social work, and human resources management.

2.1 Theoretical framework

The crucial role of healthcare workers during a pandemic is massive and vital, making them more susceptible to stress due to the overwhelmed healthcare systems and the fear of acquiring the infection (Tam *et al*., 2004; Wilson *et al*., 2005). Moreover, healthcare workers' stress during a pandemic impairs their cognitive functioning, attention, and clinical decision-making (Panagioti *et al*., 2018). Also, work-related stress increases among healthcare workers during a pandemic because COVID-19 is a newly emerging virus that tends to spread rapidly, inexact contagiousness, and paucity of information connected to it (Barry, Al Amri, & Memish, 2020). Notably, pandemic infectious diseases such as COVID-19 impose a significant level of stress on healthcare workers taking care of infected patients, with their foremost worry being the risk of acquiring it or transmitting the infection to their families (Temsah *et al*., 2020). To test more evidently the link between work-related stress and the mental health of healthcare workers in Nigeria during the present Covid-19, the current researcher states the first hypothesis:

H1: There is a significant correlation between work-related stress and healthcare workers' mental health in Nigeria.

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According to prior studies, adequate social support positively affects mental health (Prati & Pietrantoni, 2010; Kent de Grey RG *et al*., 2018). Studies have also shown that the medical staff's social support reduces their anxiety, stress, and mental health challenges. Social support (SS) helps lessen physical and psychological stress (Adamczyk & Segrin, 2015). Social support provision positively adds to healthcare workers' mental health in all settings (Kent de Grey *et al*., 2018). The literature review showed a range of findings on the relationship between social support and health workers' mental health. For example, Ogunwale *et al*., 2020 found a significant correlation between the amount of support healthcare workers receive and their mental health; and Yang *et al*. (2018a) suggested a substantial social support impact on mental health support reduces anxiety and improves self-efficacy. Yang *et al*. (2018b) further posited that social interactions reduce negative emotions such as anxiety and improve mood. This literature has therefore inspired the following hypothesis:

H2: There is a significant correlation between social support and healthcare workers' mental health in Nigeria.

The fear of contracting this virus poses an adverse mental influence on well-being specialists (Lee *et al*., 2018). Kontoangelos *et al*. (2020) posited that COVID-19 is exceptionally frightening and fear-inducing. Hence, the fear of COVID-19 is much higher than the fear of regular flu, although the latter has exterminated considerably more people. Furthermore, public health emergencies can have several mental effects on healthcare workers, expressed in fear, anxiety, and worry. The potential spread of the virus from human to human and the growing number of deaths could provoke healthcare workers' fear of becoming ill (Huang *et al*., 2020). Going by preceding research about the relationship of fear of Covid-19 and the mental health of healthcare workers, the current researcher states the following hypothesis:

H3: There is a significant correlation between fear of Covid-19 and healthcare workers' mental health in Nigeria.

Concerning the demographics of healthcare workers, Badahdah *et al*. (2020) indicated a significant influence of gender on mental health. Rodríguez-Rey *et al*. (2020) noted that women showed a significantly low mental health level. Also, Etheridge and Spantig (2020) conversed that women are more likely to experience poor mental health than men. Moreover, findings have shown that female healthcare workers have suffered more poor mental health since the coronavirus outbreak than male healthcare workers (Wang *et al*., 2020). Zhang *et al*. (2020) opined that the females showed more GAD symptoms in the early stage of the COVID-19 pandemic than the males. They further noted that the female gender was found to exhibit increased depression, insomnia, and anxiety. Badahdah *et al*. (2020) suggested that age significantly and positively correlated with mental health. This position infers that the older the participants, the better their mental health. Besides, Liang *et al*. (2020) indicated that the difference between medical staff less than 30 years old and those above was not statistically substantial. In addition, Liang *et al*. (2020) revealed no significant difference in depression and anxiety scores amongst healthcare workers within the COVID-19 related department and other departments. Rodríguez-Rey *et al*. (2020) also noted that married participants significantly increased mental health levels than single participants. In contrast, Badahdah *et al*. (2020) revealed that marital status had no impact on mental health. Liang *et al*. (2020) indicated that

nurses show a higher level of anxiety and depression than doctors. Cai *et al*. (2020) also informed that nurses were more nervous and anxious than other experts. Also, Chakraborty (2020) showed that healthcare workers with less than five years of work experience showed a reduced mental health level. Considering the educational level, respondents who had a Ph.D. indicated better mental health than those with specialized training, high-school educations, and university undergraduate studies (Rodríguez-Rey *et al*., 2020). Besides, more educated individuals should possess better mental skills, which help them cope with any disease outbreak (Mihashi *et al*., 2009; Drapeau *et al*., 2011). Intending to test more evidently the correlation between the demographics of healthcare workers and their mental health, the present researcher states the following hypothesis:

H4: There is a significant relationship between the demographics and mental health of the healthcare workers in Nigeria.

Also, the literature above has inspired the following hypothesis:

H5: Work-related stress, social support, fear of Covid-19, and demographics significantly influence the mental health of healthcare workers in Nigeria.

3. Methods

This investigation included 240 healthcare workers from both the University College Hospital in Oyo State and Lagos State University Teaching Hospital in Lagos State of Nigeria. The present researcher included one hundred and twenty (120) participants from each hospital. However, these two states were the first and third states rated high in the confirmed COVID-19 cases during the investigation period in July 2020 (Oyeniran & Chia, 2020). In the current study, participants were either nurses, doctors, midwives, or auxiliary services, who worked in fever or respiratory clinics, COVID-19 pneumonia isolation hospital ward, Intensive Care Unit (ICU), auxiliary services, or the outpatient clinics. All study participants volunteered to partake in the investigation. In this paper, the researcher conducted a cross-sectional clinical study, which involved self-reported surveys. The current researcher obtained the demographics of the healthcare workers. The present researcher also measured psychosomatic problems, namely work-related stress, perceived social support, and the fear of Covid-19, using validated scientific questionnaires. Participants completed all the questionnaires anonymously.

3.1 Instrumentation

The questionnaire used in measuring the constructs under study is comprised of different segments.

Section A: Demographic Questions

This section is for the participants' demographic data (for instance, gender, age, marital status, the highest level of education, profession, department, working experience, and state of residence).

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Section B: Psychosomatic problems (Work-related Stress)

The present researcher adopted the questionnaire on work-related stress, which came from a battery of tools exploring burnout syndrome in numerous work events, which was in the study conducted by Monterrosa-Castro *et al*. (2020). It contains 12 questions and six Likert-type answer choices. However, no investigations reporting psychometric assessments were recognized. However, the researcher realized a Cronbach's alpha coefficient of 0.95 for this scale's reliability in the current study.

Section C: Perceived Social Support

This paper adopted a 12-item scale developed by Zimet *et al*. (1988) in measuring perceived social support. It had a Cronbach's alpha of 0.85. The scale's response format consisted of a 5-point Likert alternating from strongly disagree (1) to strongly agree (5). The reliability of this scale, in this paper, Cronbach's alpha coefficient is 0.98.

Section D: Fear of Covid-19

In measuring the fear of Covid-19 in this paper, the present researcher adopted a 7-item scale that measures the fear of COVID-19 (FCV- 19S). It comprises a five-point Likert scoring format from strongly disagree (1) to strongly agree (5). The initial Cronbach's alpha of this scale was 0.82, while its reliability in the present study is 0.97.

Section D: Mental health assessment

The present study used four measuring instruments to evaluate healthcare workers' mental health. These scales are the 7item Generalized Anxiety Disorder (GAD-7), the 9-item Patient Health Questionnaire (PHQ-9), the 22-item Impact of Event Scale-Revised (IESR), and the 7-item Insomnia Severity Index (ISI). These instruments were adopted to evaluate anxiety, depression, distress, and insomnia, respectively. The GAD-7 evaluates the severity of stress, having a four-point Likert scale format ranging from Not At All Sure (0) to Nearly Every day (3) (Löwe *et al*., 2008). The PHQ-9 assesses the severity of depression. It comprises a four-point Likert format scale from Not At All (0) to Nearly Every day (3) (Kocalevent *et al*., 2013). Concerning the ISI that measures the severity of insomnia, it comprises a five-point Likert scale format from None (0) to Very Severe (4) (Morin *et al*., 2011). Moreover, the IES-R evaluates specific stressful life events. The measuring instrument has a five-point Likert scale format from Not At All (0) to Extremely (4) (Weiss, 2007). As Kang *et al*. (2020) used, this battery of scales had a Cronbach's alpha of 0.89. However, this paper realized a Cronbach's alpha coefficient of 0.91 for this scale's reliability.

To validate the measuring scales' effectiveness, the current researcher adopted a pilot study to detect any possible difficulties in completing the questionnaires. The present researcher assured the participants' privacy was well-maintained in the inquiry process as inclusive of the primary research. The current researcher retrieved a total number of 215 valid questionnaires, and these questionnaires were analyzed.

4. Results

The statistical package for social sciences (SPSS v 26) was utilized in analyzing the data obtained from the respondents. The results are presented in Table 1.

Table 1

Descriptive statistics of the healthcare workers' demographic and professional features

		Freq.	%			Freq.	%
Gender	Male	100	46.5	**Profession**	Doctor	94	43.7
	Female	115	53.5		Nurse & Midwife	70	32.6
	Total	**215**	**100**		Auxiliary Services	51	23.7
Age	20-29	60	27.9		**Total**	**215**	**100**
	30-39	49	22.8	**Department**	Fever clinic or respiratory clinic	44	20.5
	40-49	53	24.7		COVID-19 pneumonia isolation Hospital ward	86	40.0
	50 and Above	53	24.7		Intensive Care Unit (ICU)	35	16.3
	Total	**215**	**100**		Auxiliary services	34	15.8
Marital Status	Single	78	36.3		Outpatient clinics	16	7.4
	Married	137	63.7		**Total**	**215**	**100**
	Total	**215**	**100**	**Work Experience**	Less than 2 years	52	24.2
Highest Level of Education	College Degree or Below	108	50.2		2 – 5 years	72	33.5
	Bachelor's Degree	44	20.5		5 years and above	91	42.3
	Master's Degree or Above	63	29.3		**Total**	**215**	**100**
	Total	**215**	**100**	**State of Residence**	Lagos State	112	52.1
					Oyo State	103	47.9
					Total	**215**	**100**

Source: Author's Findings

A total of 215 out of 240 healthcare workers completed the survey questionnaire. Of those, 100 (46.5%) were male while 115 (53.5%) were female. Sixty (27.9%) of these healthcare workers were between the age of 20-29, 49 workers (22.8%) between the age of 30-39, 53 (24.7%) between 40-49 years of age, while the remaining 53 (24.7%) were 50 years and above. Also, 78 (36.3%) of the participants were single, whereas the other 137 (63.7%) were married. Besides, 108 (50.2%) of the healthcare workers had a college degree or below, 44 (20.5%) had a Bachelor's degree, while 63 (29.3%) healthcare workers had a Master's degree or above.

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In addition, out of the 215 healthcare workers that completed the questionnaire, 94 (43.7%) were doctors, 70 (32.6%) were nurses and midwives, while 51 (23.7%) of them were rendering auxiliary services. The current study also included pertinent hospital clinical units, with 44 (20.5%) responses from fever clinic or respiratory clinic, followed by staff from COVID-19 pneumonia isolation Hospital ward 86 (40.0%), 35 (16.3%) from the intensive care unit (ICU), 34 (15.8%) auxiliary services units, then outpatient clinics 16 (7.4%). Moreover, 52 (24.2%) of the healthcare workers had work experience less than two years, 72 (33.5%) had between 2 – 5 years work experience, while the remaining 91 (42.3%) healthcare workers had work experience of 5 years and above. This paper shows that 112 (52.1%) of the 215 healthcare workers resided in Lagos State, while 103 (47.9%) resided in Oyo State.

As earlier stated, this paper's first objective is to look into the relationships between the independent variables of study WRS, SS, FoCovid-19, demographics, and the MH of HCWs in Nigeria during the current Covid-19 pandemic. Hence, this paper has carried out a Zero-Order correlation analysis to achieve this objective, and the results are in Table 2.

Table 2

Zero Order Correlations showing the relationship between the independent variables work-related stress, social support, fear of Covid-19, demographics, and the mental health of healthcare workers in Nigeria during the current Covid-19 pandemic

Variables	Work-related Stress	Social Support	Fear of Covid19	Gender	Age	Mrt. Status	Highest Level of Edu.	Profsn	Dept	Wk Exp.	State of Res	M.H	Mean	SD
Work-related Stress	1								.				28.61	5.299
Social Support	-.557**	1											49.68	8.751
Fear of Covid-19	.707**	-.319**	1										16.29	3.117
Gender	.099	-.041	.232**	1									1.53	.500
Age	-.144*	-.037	-.126	-.049	1								2.46	1.143
Marital Status	.072	.017	.021	-.025	.118	1							1.64	.482
Highest Level of Education	.061	-.089	.071	.055	.008	.019	1						1.79	.869
Profession	-.038	.006	-.172*	-.094	.153*	-.044	-.162*	1					1.80	.798
Department	.077	-.056	-.069	-.064	-.128	.088	-.147*	.075	1				2.50	1.195
Work Experience	-.085	-.056	-.084	-.127	.457**	.075	-.066	.307**	.047	1			2.18	.797
The State of Res.	-.165*	.196**	-.027	.073	.168*	-.167*	-.101	-.122	.123	.109	1		1.48	.501
Mental Health	-.757**	.857**	-.599**	-.170*	-.075	-.075	-.044	.114	-.068	-.064	.196**	1	105.48	14.299

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Source: Author's Findings

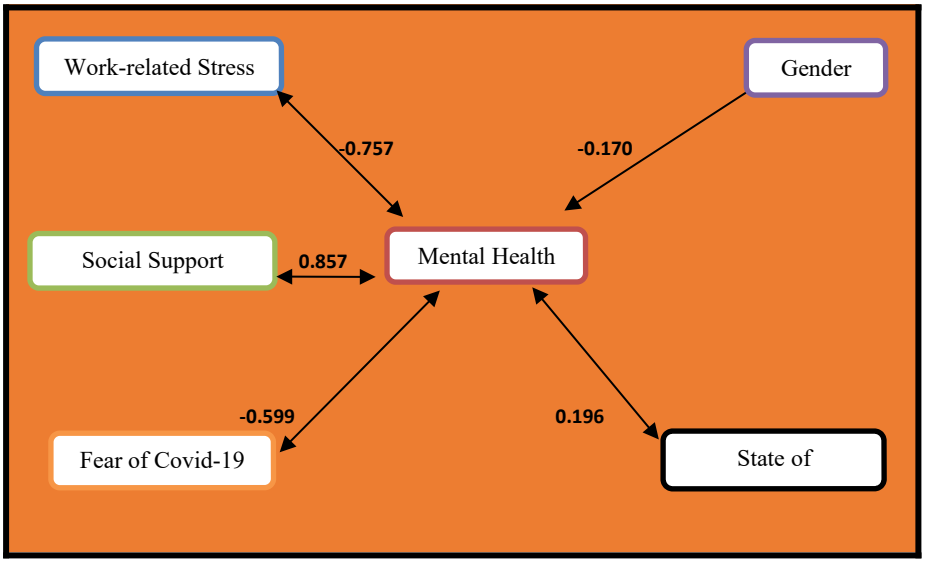
From Table 2, the result matrix shows that work-related stress has a significant negative relationship with mental health at (r= -0.757; p<.01). Hence, an increase in healthcare workers' work-related stress in Nigeria will decrease their mental health. Results also reveal that social support substantially correlates with an individual's mental health (r=0.857; p<.01). This position means that an increase in healthcare workers' social support in Nigeria receives better mental health. Also, the current results indicate that the fear of Covid-19 negatively relates to mental health at (r= -0.599; p<.01). This result infers that the healthcare workers' fear of Covid-19 within Nigeria reduces their mental health level.

Furthermore, the current results indicate a significant negative correlation between the gender of healthcare workers in Nigeria and their mental health at (r= -0.170; p<.05). These results also show that the healthcare workers' state of residence, where they practice their profession, positively correlates with their mental health (r= 0.196; p<.01). However, these results also indicated that age, marital status, level of education, profession, department, and work experience of healthcare workers in Nigeria, do not correlate with their mental health at (r= -0.075; p>.05; r= -0.075; p>.05; r= -0.044; p>.05; r= 0.114; p>.05; r= -0.068; p>.05; and r= -0.064; p>.05) respectively.

Therefore, this paper has achieved its first objective: to look into the relationships between the independent variables of study work-related stress, social support, fear of Covid-19, demographics, and healthcare workers' mental health in Nigeria the current Covid-19 pandemic. Figure 1 displays the correlation matrix between the independent variables and mental health among healthcare workers in Nigeria.

Figure 1:

Relationship matrix between the independent variables and mental health among healthcare workers in Nigeria



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Source: Author's Findings.

The findings shown in Table 3 revealed that work-related stress, social support, fear of Covid-19, and demographics significantly and strongly jointly influence the sustenance of mental health amongst healthcare workers in Nigeria (R= .955, R2 = .913, F (11, 203) = 193.411, p<.01). This result infers that work-related stress, social support, fear of Covid-19, and demographics accounted for 91% of the observed changes in the self-reported mental health level amongst healthcare workers in Nigeria. In contrast, the remaining 9% attributes to other factors not considered in this study.

Table 3

Multiple regressions showing the sustenance of the mental health of healthcare workers in Nigeria, as influenced by psychosomatic problems (work-related stress), social support, fear of Covid-19, and demographics

Influencers	B	β	t	Sig	95.0% Confidence Interval for B		R	R^2	F (11, 203)	P
					Lower Bound	Upper Bound				
Constant	94.173		22.518	**.000**	85.927	102.418				
Work-Related Stress	-.715	-.265	-7.523	**.000**	-.903	-.528				
Social Support	1.013	.620	23.762	**.000**	.929	1.097				
Fear of Covid-19	-.916	-.200	-6.332	**.000**	-1.201	-.631	.955	.913	193.411	<.01
Gender	-2.523	-.088	-4.076	**.000**	-3.744	-1.303				
Age	-1.632	-.130	-5.292	**.000**	-2.240	-1.024				
Marital Status	-.667	-.022	-1.028	.305	-1.946	.612				
Highest Level of Education	1.049	.064	2.977	**.003**	.354	1.743				
Profession	2.134	.119	5.171	**.000**	1.320	2.947				
Department	-.656	-.055	-2.465	**.015**	-1.181	-.131				
Work Experience	-1.040	-.058	-2.349	**.020**	-1.913	-.167				
State of Residence	2.385	.084	3.603	**.000**	1.080	3.690				

Source: Author's Findings. Dependent Variable: Mental Health

Further findings revealed the significant independent effect of each independent factor on the variance in the MH of HCWs in Nigeria: work-related stress contributed about 27% variance in mental health (β = -.265, t= -7.523; p<.05), social support about 62% (β = .620, t= 23.762; p<.05), and fear of Covid-19 about 20% (β = -.200, t= -6.332; p<.05) variance in mental health. Moreover, gender contributed about 8% variance in mental health (β = -.088, t= -4.076; p<.05), age about 13% (β = -.130, t= -5.292; p<.05), highest level of education about 6% (β = .064, t= 2.977; p<.05),

and profession about 12% (β = .119, t= 5.171; p<.05) variance in mental health. In addition, department contributed about 6% change in mental health (β = -.055, t= -2.465; p<.05), work experience about 6% (β = -.058, t= -2.349; p<.05), and state of residence about 8% (β = .084, t= 3.603; p<.05) change in mental health. However, the marital status of healthcare workers in Nigeria did not significantly influence their mental health. Nonetheless, the overall results largely achieved the second purpose of this paper, which is to investigate the influence of WRS, SS, FoCovid-19, and demographics on the MH of HCWs in Nigeria during the recent Covid-19 pandemic.

However, these results require further clarifications on the influence of demographics on mental health. For instance, two significant demographics, gender and state of residence will be further analyzed using a t-test, as presented in table 4.

Table 4 shows a significant difference in score between the two levels of gender among healthcare workers at (t(213)= 2.513; p=<.05 in Nigeria, two-tailed with male healthcare workers (M = 108.08, SD = 14.41) scoring higher than female healthcare workers (M = 103.22, SD = 13.87). With a negative influence of gender on mental health as earlier indicated (β = -.088, t= -4.076; p<.05), this result infers that male healthcare workers with a lower mean score have better mental health compared to their female counterparts. Hence, the result further shows that gender groups significantly influenced mental health among healthcare workers in Nigeria.

Table 4

T-Test Summary showing the influence of gender and state of residence on mental health

DV		N	Mean	SD	df	t	P
	Gender						
Mental Health	Male	100	108.08	14.41	213	2.513	<.05
	Female	115	103.22	13.87			
	State of Residence						
Mental Health	Lagos	112	102.80	14.22	213	-2.916	<.05
	Oyo	103	108.40	13.88			

Source: Author's Findings.

Furthermore, Table 4 indicates a substantial difference in score between the two levels of residence among healthcare workers at (t(213)= -2.916; p=<.05 in Nigeria. It two-tailed with healthcare workers in Oyo State (M = 108.40, SD = 13.88) scoring higher than healthcare workers in Lagos State (M = 102.80, SD = 14.22). With a positive influence of the state of residence on mental health as earlier specified (β = .084, t= 3.603; p<.05), this result, therefore, infers that healthcare workers who resided in Lagos State with a higher mean score have better mental health than those who lived in Oyo State. Thus, the result further shows that the state of residence significantly influenced mental health among healthcare workers in Nigeria.

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Moreover, other significant demographics, such as education, age, profession, department, and work experience, will be analyzed using one-way ANOVA. Table 5 shows that group 1 (20-29 years old) and group 2 (30-39 years old) are not significantly different from each other in mental health. Besides, group 1 (20-29 years old) and group 4 (50 years old and above) are not significantly different. However, group 1 (workers who are 20-29 years old) and group 3 (workers who are 40-49 years old) are considerably different from each other at a p=<.05 level in terms of their mental health. Also, results indicate that group 3 (40-49 years old) is the only group that is significantly different from all other groups in terms of their mental health, as every other group is not substantially different from the other.

Table 5

One-way ANOVA - Multiple Comparisons (age, level of education, profession, department, and work experience groups).

Multiple Comparisons						
Dependent Variable: Mental Health						
(I) Age	**(J) Age**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
20-29	30-39	-6.02075	2.51423	.081	-12.5316	.4902
	40-49	10.52296	2.46145	.000	4.1487	16.8972
	50 and Above	-2.11855	2.46145	.825	-8.4928	4.2557
30-39	20-29	6.02075	2.51423	.081	-.4902	12.5316
	40-49	16.54370	2.58779	.000	9.8423	23.2451
	50 and Above	3.90219	2.58779	.435	-2.7992	10.6036
40-49	20-29	-10.52296	2.46145	.000	-16.8972	-4.1487
	30-39	-16.54370	2.58779	.000	-23.2451	-9.8423
	50 and Above	-12.64151	2.53654	.000	-19.2102	-6.0728
50 and Above	20-29	2.11855	2.46145	.825	-4.2557	8.4928
	30-39	-3.90219	2.58779	.435	-10.6036	2.7992
	40-49	12.64151	2.53654	.000	6.0728	19.2102
(I) Level of Education	**(J) Level of Education**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
College Degree or Below	Bachelor's Degree	-.46633	2.56529	.982	-6.5212	5.5885
	Master's Degree or Above	1.58201	2.27389	.766	-3.7850	6.9491
Bachelor's Degree	College Degree or Below	.46633	2.56529	.982	-5.5885	6.5212
	Master's Degree or Above	2.04834	2.81805	.748	-4.6031	8.6998
Master's Degree or Above	College Degree or Below	-1.58201	2.27389	.766	-6.9491	3.7850
	Bachelor's Degree	-2.04834	2.81805	.748	-8.6998	4.6031
(I) Profession	**(J) Profession**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
Doctor	Nurse & Midwife	-.74073	2.25069	.942	-6.0530	4.5716
	Auxiliary Services	-4.38611	2.47937	.183	-10.2382	1.4659
Nurse & Midwife	Doctor	.74073	2.25069	.942	-4.5716	6.0530
	Auxiliary Services	-3.64538	2.62461	.349	-9.8402	2.5495
Auxiliary Services	Doctor	4.38611	2.47937	.183	-1.4659	10.2382
	Nurse & Midwife	3.64538	2.62461	.349	-2.5495	9.8402
(I) Department	**(J) Department**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**

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Fever clinic or respiratory clinic	COVID-19 pneumonia isolation Hospital ward	2.05814	2.63518	.936	-5.1929	9.3092
	Intensive Care Unit (ICU)	4.87143	3.22008	.555	-3.9890	13.7319
	Auxiliary services	-1.08824	3.24635	.997	-10.0210	7.8445
	Outpatient clinics	7.68750	4.15053	.347	-3.7332	19.1082
COVID-19 pneumonia isolation Hospital ward	Fever clinic or respiratory clinic	-2.05814	2.63518	.936	-9.3092	5.1929
	Intensive Care Unit (ICU)	2.81329	2.85052	.861	-5.0303	10.6568
	Auxiliary services	-3.14637	2.88016	.810	-11.0715	4.7787
	Outpatient clinics	5.62936	3.87084	.593	-5.0217	16.2805
Intensive Care Unit (ICU)	Fever clinic or respiratory clinic	-4.87143	3.22008	.555	-13.7319	3.9890
	COVID-19 pneumonia isolation Hospital ward	-2.81329	2.85052	.861	-10.6568	5.0303
	Auxiliary services	-5.95966	3.42346	.411	-15.3797	3.4604
	Outpatient clinics	2.81607	4.29047	.965	-8.9897	14.6218
Auxiliary services	Fever clinic or respiratory clinic	1.08824	3.24635	.997	-7.8445	10.0210
	COVID-19 pneumonia isolation Hospital ward	3.14637	2.88016	.810	-4.7787	11.0715
	Intensive Care Unit (ICU)	5.95966	3.42346	.411	-3.4604	15.3797
	Outpatient clinics	8.77574	4.31022	.253	-3.0844	20.6359
Outpatient clinics	Fever clinic or respiratory clinic	-7.68750	4.15053	.347	-19.1082	3.7332
	COVID-19 pneumonia isolation Hospital ward	-5.62936	3.87084	.593	-16.2805	5.0217
	Intensive Care Unit (ICU)	-2.81607	4.29047	.965	-14.6218	8.9897
	Auxiliary services	-8.77574	4.31022	.253	-20.6359	3.0844
(I) Work Experience	**(J) Work Experience**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
Less than 2 years	2 – 5 years	-2.65598	2.59212	.562	-8.7742	3.4622
	5 years and above	1.64011	2.47604	.786	-4.2041	7.4843
2 – 5 years	Less than 2 years	2.65598	2.59212	.562	-3.4622	8.7742
	5 years and above	4.29609	2.24657	.138	-1.0065	9.5987
5 years and above	Less than 2 years	-1.64011	2.47604	.786	-7.4843	4.2041
	2 – 5 years	-4.29609	2.24657	.138	-9.5987	1.0065

*** The mean difference is significant at the 0.05 level.**

Source: Author's Findings.

Table 5 shows that all the levels of education groups: group 1 (healthcare workers with a college degree or below), group 2 (healthcare workers with a Bachelor's degree), and group 3 (healthcare workers with a Master's degree or above) are not considerably different from one another, with regards to their mental health. Furthermore, Table 5 shows that all the professional groups: group 1 (Doctor), group 2 (Nurse and Midwife), and group 3 (Auxiliary service provider) are not significantly different from one another at a p=> .05 levels concerning their mental health. Also, Table 5 indicates that all the department groups: group 1 (Fever clinic or respiratory clinic), group 2 (COVID-19 pneumonia isolation Hospital ward), group 3 (Intensive Care Unit - ICU), group 4 (Auxiliary services), and group 5 (Outpatient clinics) are not significantly different from one another at a p=>.05 level about their mental health. Moreover, Table 5 shows that all the work experience groups, namely, group 1 (with less than 2 years work experience),

group 2 (with 2 – 5 years work experience), and group 3 (with 5 and more years' work experience) are not significantly different from one another regarding mental health.

Also, Table 6 shows the actual differences in the mean scores between all the sets of groups. The results in Table 6 show the substantial difference between the mean scores of age groups: group 1 (workers who are 20-29 years old = 106.18), group 2 (workers who are 30-39 years old = 112.20), group 3 (workers who are 40-49 years old = 95.66), and group 4 (workers who are 50 years old and above = 108.30). As earlier stated, age negatively influence mental health (β = -.088, t= -4.076; p<.05). This result infers that the younger the healthcare worker, the better their mental health, and vice versa. Hence, younger healthcare workers who fall under group 2 (for instance, 30-39 years old) have the highest mean score of 112.20 and experience better mental health. Also, the above-stated results show that out of the three-level of education groups: group 1 (healthcare workers with a college degree or below = 105.85), group 2 (healthcare workers with a Bachelor's degree = 106.32), and group 3 (healthcare workers with a Master's degree or above = 104.27), group 2 (healthcare workers with a Bachelor's degree) has the highest mean score (mean = 106.32). As mentioned earlier, there is a significant positive influence of education level on mental health (β = .064, t= 2.977; p<.05). It infers that the higher the level of education of healthcare workers, the better their mental health. So, group 2 (healthcare workers with a Bachelor's degree) has better mental health than other groups. Besides, the current results show that out of the three groups of the profession: group 1 (Doctors = 104.20), group 2 (Nurses and Midwives = 104.94), and group 3 (Those in the auxiliary services = 108.59), group 3 (Those in the auxiliary services) has the highest mean score (mean = 108.59). The results earlier stated indicated a significant positive influence of profession on mental health (β = .119, t= 5.171; p<.05), meaning that group 1 (Doctors, mean = 104.20) and group 2 (Nurses and Midwives, mean = 104.94), have poor mental health compared with group 3 (Those in the auxiliary services).

Table 6

Descriptive

Descriptive								
Mental Health								
	N	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
20-29	60	106.1833	10.27007	1.32586	103.5303	108.8364	90.00	132.00
30-39	49	112.2041	15.69764	2.24252	107.6952	116.7130	81.00	133.00
40-49	53	95.6604	15.02683	2.06409	91.5185	99.8023	76.00	124.00
50 and Above	53	108.3019	10.90445	1.49784	105.2962	111.3075	89.00	126.00
Total	215	105.4837	14.29883	.97517	103.5615	107.4059	76.00	133.00
	N	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
College Degree or Below	108	105.8519	12.78493	1.23023	103.4131	108.2906	76.00	133.00
Bachelor's Degree	44	106.3182	19.15758	2.88811	100.4937	112.1426	80.00	133.00

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Master's Degree or Above	63	104.2698	12.91686	1.62737	101.0168	107.5229	80.00	133.00
Total	215	105.4837	14.29883	.97517	103.5615	107.4059	76.00	133.00
	N	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
Doctor	94	104.2021	13.67250	1.41021	101.4017	107.0025	81.00	133.00
Nurse & Midwife	70	104.9429	16.02795	1.91571	101.1211	108.7646	76.00	132.00
Auxiliary Services	51	108.5882	12.63040	1.76861	105.0359	112.1406	80.00	126.00
Total	215	105.4837	14.29883	.97517	103.5615	107.4059	76.00	133.00
	N	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
Fever clinic or respiratory clinic	44	107.5000	13.47608	2.03160	103.4029	111.5971	80.00	129.00
COVID-19 pneumonia isolation Hospital ward	86	105.4419	15.73277	1.69651	102.0687	108.8150	76.00	132.00
Intensive Care Unit (ICU)	35	102.6286	14.59872	2.46763	97.6137	107.6434	81.00	126.00
Auxiliary services	34	108.5882	11.72957	2.01161	104.4956	112.6809	81.00	133.00
Outpatient clinics	16	99.8125	10.99223	2.74806	93.9552	105.6698	89.00	118.00
Total	215	105.4837	14.29883	.97517	103.5615	107.4059	76.00	133.00
	N	**Mean**	**Std. Deviation**	**Std. Error**	**95% Confidence Interval for Mean**		**Minimum**	**Maximum**
					Lower Bound	**Upper Bound**		
Less than 2 years	52	105.2885	11.16777	1.54869	102.1793	108.3976	81.00	123.00
2 – 5 years	72	107.9444	15.31720	1.80515	104.3451	111.5438	81.00	133.00
5 years and above	91	103.6484	14.90367	1.56233	100.5445	106.7522	76.00	132.00
Total	215	105.4837	14.29883	.97517	103.5615	107.4059	76.00	133.00

Source: Author's Findings.

Furthermore, the current results show that out of the departments where healthcare workers discharge their duties: group 1 (Fever clinic or respiratory clinic = 107.50), group 2 (COVID-19 pneumonia isolation hospital ward = 105.44), group 3 (Intensive Care Unit (ICU) = 102.63), group 4 (Auxiliary services = 108.59), and group 5 (Outpatient clinics = 99.81), group 5 (Outpatient clinics, mean= 99.81) has the least mean score. As mentioned earlier, the department significantly negatively influences mental health (β = -.055, t= -2.465; p<.05), which infers that healthcare workers that fall within group 5 (Outpatient clinics, mean= 99.81), with the least, mean score, experience better mental health than healthcare workers in other departments. Moreover, the present results indicate that out of the groups of work experience: group 1 (Less than 2 years = 105.29), group 2 (2 – 5 years = 107.94), and group 3 (5 years and above = 103.65), group 3 (5 years and above = 103.65) has the lowest mean score. As earlier noted, work

experience has a substantial negative influence on mental health (β = -.058, t= -2.349; p<.05), which infers that the lower the work experience of healthcare workers, the better their mental health, and vice versa. Therefore, healthcare workers who have 2-5 years of work experience (with the highest mean) are lower than workers with 5 years of work experience, which places them as healthcare workers with better mental health.

Therefore, the results above have achieved the study's second objective: to investigate the effect of psychosomatic problems (work-related stress), social support, fear of Covid-19, and demographics on healthcare workers' mental health in Nigeria Covid-19 pandemic.

5. Discussion

The current results indicate that work-related stress negatively affects mental health. These results also confirmed that healthcare workers' work-related stress in Nigeria significantly reduces their mental health. Hence, this position confirms the assertion of Panagioti *et al*. (2018), who noted that healthcare workers' stress during a pandemic would impair cognitive functioning, attention, and clinical decision-making. Therefore, consistent reduction of the work-related stress of healthcare workers will promote their mental health. The current findings also show that social support positively relates to mental health among healthcare workers in Nigeria and that social support increases their mental health. Therefore, the present results support Prati and Pietrantoni (2010); Kent de Grey *et al*. (2018) indicated that adequate social support positively affects mental health. The results also support Yang *et al*. (2018), who suggested a significant impact of social support on mental health, indicating that social support reduces anxiety and improves self-efficacy. Thus, an increase in the social support received by healthcare workers will promote their mental health. In addition, the current results show that the fear of Covid-19 negatively influences mental health. The results further indicate that the fear of Covid-19 amongst healthcare workers in Nigeria significantly reduces their mental health. These facts support the positions of (Lee *et al*., 2018), who posited that the fear of getting infected has an adverse mental influence on health experts. Hence, a steady reduction in the healthcare workers' fear of Covid-19 will promote their mental health in Nigeria.

Moreover, the current findings reveal that gender negatively relates to mental health and that state of residence significantly positively correlates with mental health among healthcare workers in Nigeria. These results further indicate that the gender and state of residence of healthcare workers in Nigeria significantly affect their mental health. The further analysis noted that male healthcare workers have better mental health than their female counterparts and that healthcare workers who reside in Lagos State have improved mental health than those who lived in Oyo State. These results sustain the positions of Rodríguez-Rey *et al*. (2020), who noted that women showed a significantly low mental health level, and Etheridge and Spantig (2020), who opined that women are more prone to experience poor mental health than men. These results also confirm the findings of (Wang *et al*., 2020), who noted that female gender healthcare workers suffered more poor mental health to the coronavirus outbreak than male healthcare workers. Furthermore, the current findings establish a significant effect on healthcare workers'

age on their mental health. These results also demonstrated that healthcare workers who are 30-39 years old experience better mental health than all other age groups. These results could not sustain the position of Liang *et al*. (2020), who indicated no statistically substantial difference between medical staff at a younger age (less than 30 years) and their colleagues with older age (30 years and above). The present findings also show a significant negative correlation between age and mental health, which is different from the direction suggested by Badahdah *et al*. (2020), who opined that age significantly and positively correlated with mental health.

The present results show that education and the healthcare workers' specific profession in Nigeria positively affect their mental health. Further analysis established that healthcare workers with Bachelor's degrees experience better mental health than other groups. The analysis also noted that doctors, nurses, and midwives have poor mental health compared to healthcare workers in auxiliary services. These results affirm the position of Rodríguez-Rey *et al*. (2020). They noted that participants with a higher level of education (such as Ph.D.) showed better mental health than respondents with specialized training, high-school educations, and university undergraduate studies. The results also corroborate the suggestion of (Mihashi *et al*., 2009; Drapeau *et al*., 2011), who noted that more educated people possess better mental skills, which may help cope with the concern of any disease outbreak. However, this paper indicates explicitly that healthcare workers with a Bachelor's degree experience better mental health than other groups. However, the above-stated results could not support the findings of Liang *et al*. (2020), who indicated that nurses were a lot more anxious and depressed than doctors, and that of Cai *et al*. (2020), who also suggested that nurses are significantly more nervous and anxious than other experts. This is because the present results show no significant difference in doctors' mental health (mean = 104.20) and nurses (mean = = 104.94). Hence, the current investigation suggests no variance between doctors' and nurses' mental health in Nigeria.

Furthermore, the present results indicate that healthcare workers' department and work experience in Nigeria negatively influence their mental health. Further analysis recognized that healthcare workers who work within the outpatient clinics experience better mental health than those in other departments. This position is not in agreement with Liang *et al*. (2020), who indicated no substantial difference in depression and anxiety scores amongst healthcare workers within the COVID-19-associated department and other sections. Hence, healthcare workers in departments such as the fever clinic or respiratory clinic, COVID-19 pneumonia isolation hospital ward, and the Intensive Care Unit (ICU) experience more declining mental health. Further investigation indicated that workers who have 2-5 years of work experience have better mental health. This paper's position concerning healthcare workers' work experience in Nigeria disconfirms Chakraborty's opinion (2020), who noted that healthcare workers with less than five years of work experience showed a reduced mental health level. The present results also show that healthcare workers' marital status in Nigeria does not influence their mental health. This position is tangent with that of Badahdah *et al*. (2020), who revealed that marital status had no impact on mental health.

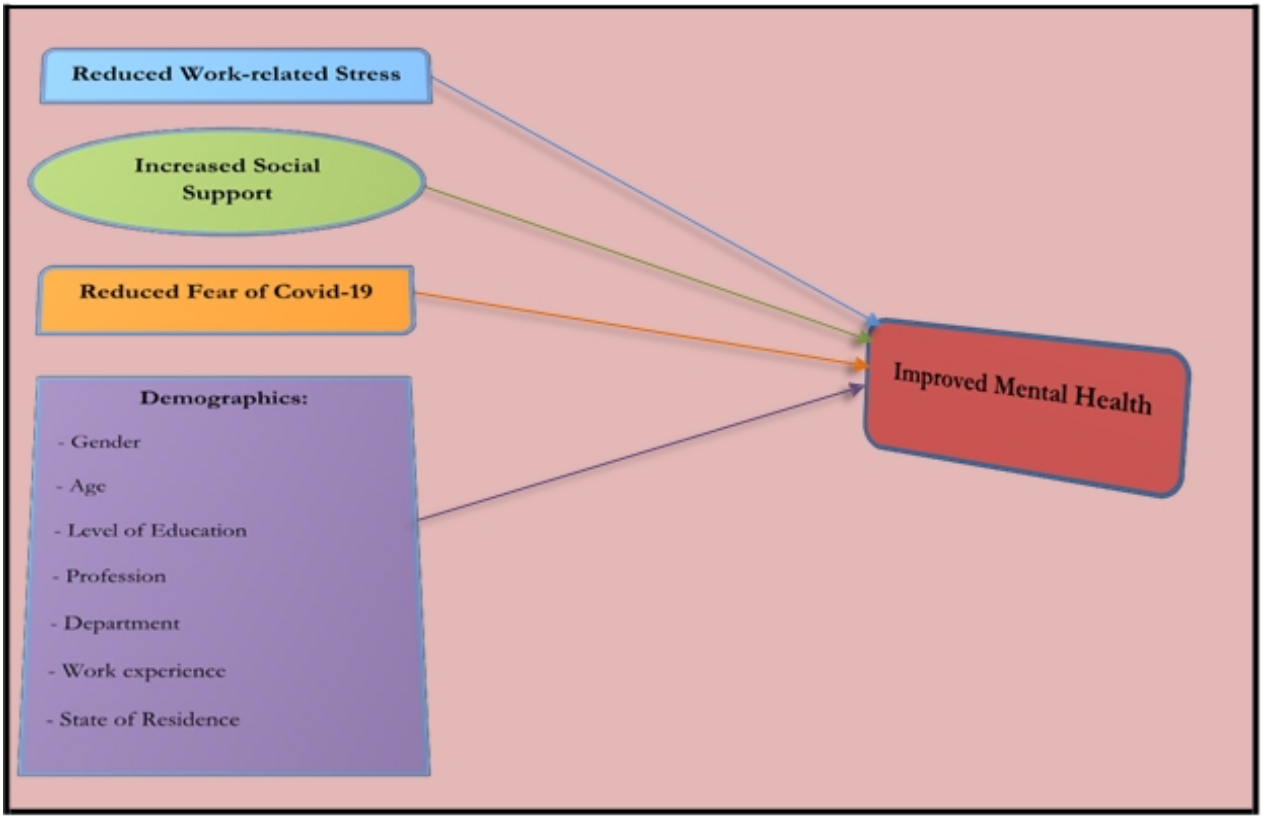
Notably, this paper has achieved its first and second objectives: to look into the relationships between the independent variables of study WRS, SS, FoCovid-19, demographics, and the MH of healthcare workers in Nigeria during the current Covid-19 pandemic. To investigate the effect of

psychosomatic problems (work-related stress), social support, FoCovid-19, and demographics on the mental health of HCWs in Nigeria, during the current Covid-19 pandemic.

Figure 2 in the current study shows a practical model of promoting mental health amongst healthcare workers in Nigeria. Hence, the present results suggest the indicated model for promoting mental health and thus achieved the third objective of the study to develop an empirical model in ensuring the sound MH of HCWs in Nigeria during the current Covid-19 pandemic.

Figure 2

A practical model of promoting mental health amongst healthcare workers in Nigeria



Source: Author's Findings.

5.1 Practical implications

The current findings have several implications for further research and suitable scientific and developmental strategic intervention essential for reducing work-related stress, the fear of vulnerability on the job, improving social support, and mental health promotion among healthcare workers. These results will also positively impact healthcare workers' mental health in Nigeria, particularly during the current Covid-19 pandemic.

6. Conclusion

Pandemic infectious diseases such as COVID-19 impose a significant level of depression, anxiety, and stress on healthcare workers who take care of infected patients, with their greatest fear of contracting the infection or spreading it to their families. Thus, the mental and social readiness of this pandemic conveys global importance. Nonetheless, this paper's main goal was to examine how to promote healthcare workers' mental health in Nigeria, during the current Covid-19 pandemic, by looking into work-related stress, social support, fear of Covid-19, and demographics as influencers. Based on its results, work-related stress, social support, fears of Covid-19, and demographics have a strong joint and independent effect on mental health sustainability amongst healthcare workers in Nigeria.

Moreover, this study has indicated that work-related stress significantly negatively influences mental health sustainability amongst healthcare workers in Nigeria. Also, this paper established that social support significantly and positively impacts the sustenance of mental health amongst healthcare workers in Nigeria. The current study also concluded that the fear of Covid-19 amongst healthcare workers in Nigeria negatively affects the sustenance of their mental health. This paper further concluded that the gender, age, level of education, profession, work department, work experience, and state of residence of healthcare workers in Nigeria significantly affect their mental health. However, it showed that healthcare workers' marital status in Nigeria does not significantly affect their mental health.

Hence, the findings of this paper show that reduced work-related stress, increased social support, reduced fear of Covid-19, and demographics (such as gender, age, level of education, profession, work department, work experience, and state of residence) significantly influence the sustenance of mental health amongst healthcare workers in Nigeria, especially during the current Covid-19 pandemic.

7. Recommendation

Efficient and comprehensive actions should be taken promptly to positively increase the healthcare workers' mental health in Nigeria, particularly during the Covid-19 pandemic. Hence, the current results suggest the necessity for timely mental health screening in HCWs during public health crises and indicate the importance of timely strategies to reduce these workers' workload. The government should consider shorter working duration, regular rest periods, and rotating shifts for healthcare workers during this outbreak. Clinic managers should make available logistic backing for medical staff and create care groups for them, as reduced work-related stress improves healthcare workers' mental health.

There is a need for adequate support to healthcare workers from their families, colleagues, friends, and significant others, especially during a global health emergency. This action will go a long way in helping them achieve and maintain better mental health. Adequate awareness should be made on the importance of support (emotional, physical, social, and work) for healthcare workers in Nigeria at these critical moments.

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Moreover, government and healthcare organizations should deploy protection facilities and measures to reduce the fear and concerns of frontline workers during social and public health crises, such as the current Covid-19 pandemic. The government and healthcare entities should arrange for well-furnished quarantine wards mainly for ill healthcare workers and insurance schemes for work-related harms.

Also, special attention should be accorded to female healthcare workers' mental health, work environment, and psychosocial needs, including nurses, community health workers, midwives, and facility support staff. The current study findings show that they are more susceptible to poor mental health, particularly during the current Covid-19 pandemic. Given the female healthcare workers' high-level vulnerability, decisive actions need to be in place to avert mental, social, and physical distress.

More than that, government and health facilities should set up counseling services for healthcare workers, especially the older ones, as they are more susceptible to declining mental health. Equally, healthcare workers, especially the older ones, should be conscious of the signs of mental health-related issues and seek help.

Furthermore, evidence-based education and training of healthcare workers in Nigeria on preparedness for the pandemic are indispensable to improving the experience, skills, and MH of medical staff in this pandemic and any future outbreak. Also, healthcare workers in Nigeria with a higher education level need to use their awareness, training, and experience in handling this outbreak, bringing about a lower level of anxiety, depression, fear, and a higher positive attitude.

Also, healthcare workers (especially doctors and nurses) should be adequately guarded as they discharge their duties in the current pandemic face because they experience poor mental health more than other workers. Adequate PPE, ongoing counseling and support should be made available to them.

In this study, the more years of healthcare workers' work experience, the less likely for them to enjoy good mental health. This fact could be due to their several encounters with what diseases and outbreaks have done to their patients and the rigor they need to exert in line with their knowledge of tackling problems. Hence, it is recommended that the more experienced workers help other workers by providing adequate support and counseling to reduce workloads.

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