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COVID-19 ANXIETY AND COMPLIANCE WITH PREVENTIVE PROTOCOLS: A STUDY OF HEALTHCARE WORKERS IN DELTA CENTRAL SENATORIAL DISTRICT

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Abstract:
This study investigated the relationship between Covid-19 anxiety and compliance with preventive protocol among healthcare workers in Delta Central Senatorial District. Four hypotheses guided the study. The correlational research design was employed in the study. The population for the study comprised 1,296 healthcare workers in Delta Central Senatorial District. A sample size of 278 health workers was drawn from health facilities through Proportionate Stratified and convenience sampling techniques. The instrument used for data collection was a questionnaire. The instrument was assessed for face, content, and construct validities by experts, while the Cronbach alpha reliability coefficient was used to check for the reliability of the items, and it yielded a coefficient of 0.89 and 0.71 for Covid-19 Anxiety Rating Scale and Compliance with Preventive Protocols Rating Scale respectively. The hypotheses were tested with regression statistics and Fisher-z statistics at a 0.05 level of significance. The findings of the study revealed that there is a significant relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols; that there is a significant relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols; and that there is a significant relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols. The finding, however, revealed that there is no significant moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols. The study recommended amongst others, that health workers with a low level of Covid-19 anxiety should be reminded and sensitised that the fact that they have a low level of anxiety should not deter them from complying with Covid-19 preventive protocols.

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Keywords: Covid-19; corona virus; anxiety; prevention protocol; health care workers

1. Introduction

Covid-19, a novel viral disease caused by severe acute respiratory syndrome Corona virus-2 (SARS-CoV-2) broke out in Wuhan, China in November, 2019. The virus is spread primarily through small droplets from coughing, sneezing, and verbal communication. It was subsequently declared a pandemic of Public Health Emergency of International concern on the 30th of January, 2020 by the World Health Organization (WHO, 2020). Similarly, the Secretary General of the United Nations, António Guterres described it as the biggest global crisis since the Second World War (British Breasting Corporation, 2020).

As of the 30th of August, 2020 over 25 million people have been infected globally, over 17 million recovered while more than 836,000 deaths were recorded (Worldometer, 2020). In Africa, over 874,000 persons were infected, 18,498 recovered while 524,557 died as a result of complications from the disease. In Nigeria, 53,317 tested positive for the virus, 40,726 recovered and 1054 deaths were recorded (Nigeria Centre for Disease Control, 2020).

As the number of infections and death toll increased globally, as a result of the unpredictable nature and fast spreading of the disease, the world began to panic, social activities such as sports, schools, and businesses were closed, flights were suspended and borders were shut. Lockdown measures were also introduced as people were ordered to stay at home in order to reduce the spread of the virus. However, healthcare workers were on duty to take care of infected patients (Greenberg, et al., 2020; Lai, et al., 2020).

The World Health Organization (as cited in Adewole & Ajala, 2020) defined healthcare workers as people engaged in actions with the primary intent to enhance health. They include doctors, nurses, midwives, social workers, pharmacists, medical lab personnel, paramedical staff, hospital administrators, and support staff such as Ambulance drivers, hospital cleaners, etc. By the nature of their occupation, healthcare workers are a high-risk group exposed to infection during the pandemic (Koh, 2020). For example, in May 2020, the International Council of Nurses reported that at least 90,000 healthcare workers have been infected and more than 260 nurses had died as a result of Covid-19 virus complications (The Independent News, 2020).

On 8th August 2020, the India Medical Association announced that 198 doctors died in India due to Covid-19 (Economic Times, 2020). Similarly, in United State of America, an interactive database reported that more than 900 frontline healthcare workers have died of Covid-19 (Guardian News, 2020). In Europe, healthcare workers also accounted for a substantial proportion of all Covid-19 cases. Chersich et al., (2020) reported that in Italy, as of 3rd April 2020, about 10,000 healthcare workers have been infected and 74 have died. In the United Kingdom, Kursumovic, et al. (2020) reported that the healthcare workers' database shows that nearly 200 deaths were highlighted of which 157 were confirmed as of 3rd May 2020.

A global review of Covid-19 infection and mortality among healthcare workers by Bandyopadhyay et al (2020) using parallel searches of academic bibliographic databases recorded as at 5th June, 2020, shows a total number of 152,888 infections and 1,413 deaths. This consists of doctors, nurses, non-clinical staff, support workers, and other allied health professionals. The report added that nurses had the highest number of infections while deaths were mainly among doctors, with Europe having the highest number of reported cases of infections and deaths (Adewole & Ajala, 2020).

In Africa, the World Health Organization (2020) reported that over 10,000 healthcare workers tested positive for Covid-19 in July 2020. According to the Director-General of the Nigeria Centre for Disease Control, as of the 2nd June 2020, 812 healthcare workers have tested positive for Covid-19 and 29 of the affected are staff of Nigeria Centre for Disease Control (Punch Health-wise, 2020). Covid-19 is not only a pandemic but also a psychological crisis that placed an enormous burden on healthcare workers due to the severity and mortality of the disease (Corona-virus Pneumonia Emergency Response Epidemiology Team, 2020).

Adverse psychological outcomes among healthcare workers are caused by a variety of factors during a pandemic such as Covid-19 with a high level of mortality. These include inadequate medical/personal protective equipment, fears of contracting the disease and spreading it to family members, grief over the death of professional colleagues and patients, stigma, and discrimination (Jalloh, et al., (2018); Brooks, et al., (2020). According to Greenberg, et al., (2015) witnessing a high number of infections and death among professional colleagues and patients during the rampaging Covid-19 pandemic put careers at risk of poor psychological outcomes such as anxiety, depression, and post-traumatic stress disorder.

Anxiety is one of the important factors contributing to higher levels of stress among healthcare workers. It is a cognitive disorder brought on by erroneous ideas about a person's health or illness, which leads to misunderstandings regarding disease symptoms and physical manifestations (Fergus, et al. 2016; Jamshidian, et al. 2018). The notion that one has the disease, the fear of the sickness, the inability to cope with the disease, and the inadequacy of medical therapies are four distinct beliefs that are linked to Covid-19 anxiety (Mokhtari, et al., 2020). This form of anxiety is more common in less experienced and often younger healthcare workers, which may lead to depression, headaches, insomnia, and even suicidal thoughts (Janzen Claude, et al. 2014).

Covid-19 anxiety is a continuum ranging from mild worries about physical sensations to intense fears of severe illnesses and preoccupations with bodily sensations. These worries are often reinforced by emotional and mental images, making patients experience severe Covid-19 anxiety. Individuals experiencing severe Covid-19 anxiety meet the diagnostic criteria of the Covid-19 anxiety disorder based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Research shows that Covid-19 anxiety leads to disabilities and huge costs for the nursing community (Babaei, et al., 2018).

In order to stop and reduce the spread of Covid-19, a number of measures referred to as Covid-19 protocols have been introduced by World Health Organisation (WHO)

and Centre for Disease Control (CDC). It is expected that the public including healthcare workers should comply with these protocols. The level of anxiety felt by healthcare workers, however, could have a severe impact on compliance with prevention protocol. For example, Everett et al. (2020) reported how anxiety among healthcare workers has a modest effect on increasing a propensity to engage in behaviours that enhance a delay in the transmission of the virus (e.g., hand washing, avoiding large gatherings, and sharing government advice on preventing the spread of Covid-19).

Both depression and anxiety have been shown to have negative effects on compliance, which may be explained by the cognitive biases co-occurring with anxiety, such as interpretation and attention biases and harm-avoidance tendencies (Mevorach, et al., 2021). Uncertainty stemming from the pandemic may lead to increased anxiety and an increase in the prevalence and influence of cognitive biases in assessing threats (Sher, 2020). Research into the effects of uncertainty on the public has found that they are correlated with lower levels of medical compliance and lower levels of mental well-being (Satici, et al., 2020). Uncertainty may lead to less compliance because it is associated with anxiety, and it may interrupt goal-directed functioning and promote distress. Conversely, Akesson et al. (2020) showed that offering accurate and reliable information on the rate of Covid-19 infection had a positive impact on the public's willingness to comply with regulations.

In view of the above, there is, therefore, a need to find out the level of Covid-19 anxiety among healthcare workers and how such anxiety influences their compliance with the preventive protocol. Hence, the aim of this study is to examine the influence of Covid-19 anxiety on compliance with prevention protocol among healthcare workers in Delta Central Senatorial District.

2. Hypotheses

The following hypotheses were tested at a 0.05 level of significance:

1) There is no significant relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols
2) There is no significant relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols
3) There is no significant relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols
4) There is no significant moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols

2.1 Theoretical Framework of the Study

The study was anchored on the Fear-Drive Theory, propounded by Janis (1967). According to the theory, fear is a driver state that motivates individuals to adopt recommendations expected to mitigate a negative state. In the case of the fear aroused in response to a message, a need for fear reduction occurs that resulting in an attitudinal

change (Walton, 2000). According to the drive theory, the more fear that is aroused, the greater the likelihood that the fear appeal will be successful. According to this model (Janis, 1967), there is an inverted U-shaped relationship between fear and attitudinal change. In this model, it is claimed that fearful messages create a motivational urge to attitudinal change; yet, on the other hand, in the case of causing excessive fear, the expected attitudinal change will decrease.

Janis (1967) argued that the undesired high level of tension that emerges as a result of a threat motivates individuals to ignore their fears instead of changing their attitudes and adopting the proposed attitudinal change. It is feasible to lessen that dread by following the suggested course of action if the suggested new attitude indicates a specific approach to prevent the frightful outcome. When attitudinal change is regarded as being powerful enough to reduce or end the fear, it can be perceived as a reward, and the individual is motivated to act in line with the proposed new attitude. However, if the recommended attitude is perceived as ineffective in reducing the fear, the individual will likely choose to ignore the frightening result or reject the fear message.

According to this theory, it is critical to find the optimal level of fear appeal at which the likelihood of attitudinal change is maximized. If the level of fear is inadequate, the corresponding fear arousal will be insufficient to initiate the expected change. On the other hand, if the resultant level of fear is considered too high, the fear appeal may cause defensive processes such as message denial or threat derogation (Manyiwa & Brennan, 2012).

Based on this theory, the study has embarked on determining the various levels of Covid-19 anxiety according to low, moderate, and high and to find out their relationship to attitudinal change which in this study, is in compliance with Covid-19 protocol.

3. Methods

The correlational research design was adopted in this study. The population of the study was made up of 1,296 healthcare workers in Delta Central Senatorial District. A sample of 278 was selected through proportionate stratified and convenience sampling techniques. The research instrument that was used in the study is a questionnaire, which comprises three sections; section A contains the demographic data of the respondents including their gender and years of experience. Section B contains Covid-19 Anxiety Rating Scale, which was adopted from the Coronavirus Pandemic Anxiety Scale (CPAS-11), developed by Bernardo, et al. (2020). It contains 13 items, structured on a 4-point scale, ranging from 1 for strongly disagree to 4 for strongly agree. Section C of the questionnaire contains Compliance with Preventive Protocols Rating Scale, which was self-constructed in line with WHO's recommended Covid-19 prevention protocol. The scale contains a total of 34 items (10 items for handwashing protocol, 10 items for social distancing protocol, seven items for use of facemask protocol, and seven items for Self-Isolation protocol. The scale was structured on a 4-point scale, ranging from 1 for strongly disagree to 4 for Strongly Agree.

The questionnaire was presented to experts for face validity. These experts assessed the instruments for appropriateness and suitability to the objective of the study. Some of the items were corrected in terms of language choice to suit the purpose of the study. The face validity was therefore considered adequate through experts' judgement. Factor analysis was used to ensure the content and construct validity of the instrument. The principal component analysis of the extraction method was used to estimate the content validity of the instrument. It yielded a value of 69.49% and 69.44% for Covid-19 Anxiety Rating Scale and Compliance with Preventive Protocols Rating Scale respectively. The rotated component matrix of the varimax method was used to estimate the construct validity of the instrument. It yielded the following range of values: 0.7-0.91 for Covid-19 Anxiety Rating Scale and 0.52-0.86 for Compliance with Preventive Protocols Rating Scale. Before the validity, the instrument had a total of 47 items (13 items for Covid-19 Anxiety Rating Scale and 34 items for Compliance with Preventive Protocols Rating Scale). However, after the validation, the instrument now has a total of 28 items (12 items for Covid-19 Anxiety Rating Scale and 16 items for Compliance with Preventive Protocols Rating Scale).

In order to ascertain the reliability of the research instrument, the questionnaire was administered to 50 healthcare workers in Ukwuani Local Government Area, which is not part of the study area. The data were analysed using Cronbach alpha reliability. A coefficient of 0.89 and 0.71 was obtained for the Covid-19 Anxiety Rating Scale and Compliance with Preventive Protocols Rating Scale respectively. The questionnaire was administered to the respondents directly by the researchers with the help of three research assistants. The researchers and the research assistants visited the various health facilities to administer the questionnaire after obtaining permission from the management of the health centers. The completed questionnaire was retrieved immediately to avoid loss of data. Regression and fisher-z statistics were used to test the stated hypotheses at a 0.05 level of significance.

4. Results

Hypothesis 1: There is no significant relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols.

Table 1: Regression analysis of the relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols

Model	**Sum of Square**	***df***	**Mean Square**	***F***	***p***
Regression	138.460	1	138.460	101.780	.000[b]
Residual	110.191	81	1.360		
Total	248.651	82			
Variables in Equation					
Model	**Unstandardized Coefficient**		**Standardised Coefficient**	***t***	***P***
	B	**Std. Error**	**Beta**		
Constant	45.583	.785	.746	58.080	.000

Low Covid-19 Anxiety	-.444	.044		10.089	.000
α = 0.05, R = 0.746, R-Square = 0.557 a. Dependent Variable: Low Covid-19 Anxiety b. Predictors (Constant): Compliance with Covid-19 Preventive Protocol					

Table 1 is the result of a regression analysis of the relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols. The result shows that $F(1, 82) = 101.780$, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant relationship between health workers with low Covid-19 anxiety and compliance with preventive protocols. The beta value of 0.746 showed that low Covid-19 anxiety accounted for 55.7% of the variance in compliance with Covid-19 preventive protocol.

Hypothesis 2: There is no significant relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols.

Table 2: Regression analysis of the relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols

Model	**Sum of Square**	***df***	**Mean Square**	***F***	***p***
Regression	549.342	1	549.342	702.951	.000[b]
Residual	78.148	100	.781		
Total	627.490	101			
Variables in Equation					
Model	**Unstandardized Coefficient**		**Standardised Coefficient**	***t***	***P***
	B	**Std. Error**	**Beta**		
Constant	118.689	2.360	.936	50.289	.000
Moderate Covid-19 Anxiety	-2.212	.083		-26.513	.000
α = 0.05, R = 0.936, R-Square = 0.875 a. Dependent Variable: Moderate Covid-19 Anxiety b. Predictors (Constant): Compliance with Covid-19 Preventive Protocol					

Table 2 is the result of a regression analysis of the relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols. The result shows that $F(1, 101) = 702.951$, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant relationship between health workers with moderate Covid-19 anxiety and compliance with preventive protocols. The beta value of 0.936 showed that moderate Covid-19 anxiety accounted for 87.5% of the variance in compliance with the Covid-19 preventive protocol.

Hypothesis 3: There is no significant relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols.

Table 3: Regression analysis of the relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols

Model	**Sum of Square**	***df***	**Mean Square**	***F***	***p***
Regression	175.735	1	175.735	581.260	.000[b]
Residual	27.512	91	.302		
Total	203.247	92			
Variables in Equation					
Model	**Unstandardized Coefficient**		**Standardised Coefficient**	***t***	***P***
	B	**Std. Error**	**Beta**		
Constant	85.665	.990		86.501	.000
High Covid-19 Anxiety	.556	.023	.930	24.109	.000

$\alpha = 0.05$, $R = 0.930$, R-Square = 0.865
a. Dependent Variable: High Covid-19 Anxiety
b. Predictors (Constant): Compliance with Covid-19 Preventive Protocol

Table 3 is the result of a regression analysis of the relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols. The result shows that $F(1, 92) = 581.260$, $p < 0.05$ level of significance. Hence, the null hypothesis is rejected, meaning that there is a significant relationship between health workers with high Covid-19 anxiety and compliance with preventive protocols. The beta value of 0.930 showed that high Covid-19 anxiety accounted for 86.5% of the variance in compliance with Covid-19 preventive protocol.

Hypothesis 4: There is no significant moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols.

Table 4: Pearson's correlation and Fisher's Z statistics of the moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols

Gender	**Variable**	***N***	***r***	**Fisher-z**	**Remark**
Male	Covid-19 Anxiety	138	0.858	0.610	Not Significant
	Compliance				
Female	Covid-19 Anxiety	140	0.842		
	Compliance				

Table 4 shows a Pearson's correlation analysis, which was used to examine the moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols. The result shows that for male health workers, $r = 0.858$, while for female health workers, $r = 0.842$.

In order to determine the moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols, the statistical significance of the difference between the correlation coefficients of male and female health workers was conducted and a value of 0.610 was obtained, which is less than 1.96, the correlation coefficients are therefore not statistically significantly different. Hence, the null hypothesis is accepted, which means that there is no significant moderating impact of

gender in the relationship between Covid-19 anxiety and compliance with preventive protocols.

6. Discussion

The first finding revealed that a significant relationship exists between health workers with low Covid-19 anxiety and compliance with preventive protocols. What this finding implies is that Covid-19 anxiety actually has a way of affecting the level of compliance with the preventive protocols. This is because, when the health workers perceive that it does not pose much threat to their lives, they will not bother to comply with the preventive protocols recommended by the World Health Organisation (WHO).

The above finding is in line with the finding of Satici, et al. (2020), which revealed that uncertainty in the public has found that they are correlated with lower levels of medical compliance and lower levels of mental well-being. It also agrees with Grupe and Nitschke (2013), who found that uncertainty may lead to less compliance because it is associated with anxiety, and it may interrupt goal-directed functioning and promote distress. The finding is further in line with Spinhoven, et al. (2014), who found that depression and anxiety are related to lower extraversion, sociability, and increased risk aversion, which could increase motivations to comply.

The second finding showed that a significant relationship exists between health workers with moderate Covid-19 anxiety and their compliance with preventive protocols. This finding implies that the level of Covid-19 anxiety has a way of affecting how people will comply with its preventive protocols. Those with moderate anxiety are likely to exhibit moderate compliant levels when it comes to compliance with its protocol. This is true of Health workers who believe that the pandemic poses little or no threat to their lives. They may not fully comply with its preventive protocol.

The above finding agrees with the finding of Harper, et al. (2020), who found that anxiety was higher during the Covid-19 pandemic, partly driven by specific fears about catching the virus, with data suggesting both these state worries and trait anxiety levels may encourage compliance. The finding also agrees with Perin et al. (2015), whose finding suggested that fear is a negative emotion symptomized by extreme levels of emotive avoidance in relation to specific stimuli. The finding, however, disagrees with Pulcu, et al. (2015), whose finding revealed that depression with lower self-efficacy and lower altruism is linked to non-compliance with medical treatments, more generally.

The third finding revealed that there is a significant relationship between health workers with high Covid-19 anxiety and their compliance with preventive protocols. This finding has shown that when Covid-19 anxiety is high among health workers, they are more likely to indulge in activities that prevent its spread. For instance, those who perceive that the pandemic is high risk and needs to be prevented at all costs will do anything possible to comply with the preventive protocols needed to curtail its spread.

The above finding is in line with Wise et al. (2020), who found in their study, that feeling personally at risk of infection predicted a greater propensity to engage in hand

washing and social distancing behaviours in the early stages of the pandemic. The finding also agrees with Li et al. (2020)'s study, which found that subjectively judged self-control attenuated the association between perceived Covid-19 severity and worse mental health. These findings imply that combining a reasonable level of fear about the illness with messages related to personal hygiene could promote safety-promoting behaviors such as hand hygiene and social seclusion. The finding supports the finding of Zettler et al. (2020), who found that emotionality, a HEXACO personality domain, was linked to a higher level of acceptance of personal restraints imposed by the government.

The fourth finding revealed that there is no moderating impact of gender in the relationship between Covid-19 anxiety and compliance with preventive protocols. This finding implies that gender has no role to play when it comes to the influence of Covid-19 anxiety and compliance with preventive protocols. The possible reason for this finding may be that both male and female health workers may have the same level of awareness and training on how to prevent the spread of Covid-19. Hence, gender may not have any role to play in how anxiety level influences their level of compliance with the preventive protocols.

7. Conclusions and Recommendations

Based on the findings of the study, it was concluded that Covid-19 anxiety, whether low, moderate, or high, can possibly influence the level of compliance with preventive protocols. Gender does not moderate the possible influence of Covid-19 anxiety on the level of compliance to its preventive protocols among health workers. Based on the findings of the study, the following recommendations were advanced:

1) Health workers with a low level of Covid-19 anxiety should be reminded and sensitised that the fact that they have a low level of anxiety should not deter them from complying with Covid-19 preventive protocols
2) There should be adequate preventive facilities and monitoring for those with moderate Covid-19 anxiety so that they can actively comply with its preventive protocols
3) Health workers with high Covid-19 anxiety should be encouraged by the provision of facilities needed to continue to comply with its preventive protocols

Conflict of Interest Statement

The authors declare no conflicts of interest.

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