



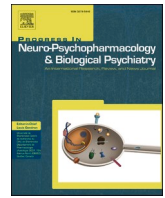
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Psychological distress and sleep problems in healthcare workers in a developing context during COVID-19 pandemic: Implications for workplace wellbeing

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ABSTRACT

Background: Emotional wellbeing of healthcare workers is critical to the quality of patient care, and effective function of health services. The corona virus disease-2019 (COVID-19) pandemic exerted unique physical and emotional demands on healthcare workers, however little is known about the emotional wellbeing of healthcare workers during the COVID-19 pandemic in resource-restricted settings. This study investigated the prevalence of psychological distress, and sleep problems in healthcare workers in a COVID-19 referral hospital in Nigeria.

Methods: A total of 303 healthcare workers were interviewed with the 12-item General Health Questionnaire (GHQ-12) to evaluate psychological distress, and the Pittsburgh Sleep Quality Index (PSQI) to assess multidimensional aspects of sleep, including quality, latency, duration, habitual efficiency, disturbances, use of sleeping medications and daytime dysfunction.

Results: The participants were mostly males, 183(60.4%) and mean age was 38.8(SD = 8.9) years. Most of the participants were married (70.3%), had spent less than 10 years in service (72.9%), and had no medical comorbidity (92.1%). The prevalence of psychological distress was 23.4%, and six in every ten participants reported sleep problems. The largest proportion of participants reported difficulty in sleep latency (81.5%), duration (71.3%), and daytime dysfunction (69.6%), while approximately one third (32%) each reported using sleep medication, and had difficulty with sleep quality. Psychological distress was inter-related with poor sleep problems ($p = 0.001$; effect size = 0.2).

Conclusion: The prevalence rates of psychological distress and sleep problems during the COVID-19 pandemic were several folds the rates previously reported in similar contexts. Preventative psychosocial support services for healthcare workers are indicated. The creation of a culturally-sensitive interdisciplinary blueprint for locally-viable actions model are strongly suggested ahead of future emergency situations.

1. Introduction

Globally, healthcare workers are estimated to be about 59 million, and a recent projection showed that as many as 80 million would be needed by 2030 (Joseph and Joseph 2016; Liu et al., 2017; WHO, 2006).

Impairment in the emotional wellbeing of healthcare workers is recognized as a major problem that may alter the quality of patient care, and impede effective functioning of healthcare services (Brady et al., 2018; Ogunidipe et al. 2014). While diminished emotional wellbeing can vary in nature and severity (e.g., burn out, distress, mental breakdown,

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anxiety, poor sleep, and major mental disorders etc), impaired wellbeing in healthcare workers can raise serious personal safety or work-related risk concerns, especially during emergency or crisis situations similar to the one associated with corona virus disease-2019 (COVID-19) pandemic.

COVID-19 has had a wide-reaching impact on many populations and groups globally, however healthcare workers are arguably one of the most impacted populations by the huge demands of COVID-19 pandemic. For example, there is a growing body of literature indicating the serious psychological impacts of COVID-19 on healthcare workers (da Silva and Neto, 2021a, b; Lai et al., 2020). The heightened anxiety regarding the risk of contracting COVID-19, uncertainty about fatality/survival, and limited effective treatment options are important concerns impacting on people working in the healthcare sector. Further, the demands from high COVID-19 caseloads, frequent shifts to cover sick co-workers, and the intensive nature of the care required by many COVID-19 patients can also place additional burden on healthcare workers. In a recent meta-analysis that included eight studies from China, da Silva and Neto (2021a) reported that healthcare workers were severely affected by psychiatric problems such as depression, anxiety, distress, insomnia, and stress since the COVID-19 pandemic.

The psychosocial experience of healthcare workers in underserved regions in developing countries during the COVID-19 pandemic is less understood due to scarcity of literature. Most of the available literature are mainly from settings with better resources, more advanced health services, and disparity in sociocultural context. Hence, their findings may have limited relevance in developing countries. In light of this, we pursued this study to describe the psychological wellbeing (assessed by measures of psychological distress and sleep problems) of healthcare workers during COVID-19 pandemic as part of the evidence base for drafting appropriate recommendations. We postulated that the prevalence of psychological distress and sleep problems will be greater in healthcare workers during COVID-19 pandemic compared to previous estimates reported in comparable settings. The specific study objectives are:

- (i) to investigate the prevalence of psychological distress among healthcare workers in a COVID-19 referral hospital in an underserved region in Nigeria.
- (ii) to categorise sleep problems in healthcare workers, and describe the prevalence of difficulties in multiple aspects of sleep.
- (iii) to investigate any relationship between psychological distress and sleep problems in healthcare workers.
- (iv) to describe the implications of our findings in the context of ongoing COVID-19 pandemic, and present an initial outline of recommendations for scalable psychosocial support services for healthcare worker's wellbeing during emergencies.

2. Methods

This cross-sectional descriptive study on the mental wellbeing of healthcare workers was conducted in a federal public tertiary hospital in Kebbi state located in north-western part of Nigeria. The study location is the foremost general hospital that renders general medical services in Kebbi State, and the state's referral center for COVID-19 testing, isolation, and treatment. Notably, the state is underserved and has limited mental health resources, and may be a model for the situation in several developing countries. For example, the total population of the state where this study was conducted has a grossly inadequate number of mental health professionals, consisting of two consultant psychiatrists, two senior residents in psychiatry, one medical officer in psychiatry, 10 psychiatric nurses, four medical social workers, and no clinical psychologists for a population of 4,440,000 people (NBS 2016).

Ethical approval was granted by the institution research and ethics committee. A written informed consent was obtained from all participants after the study objectives were explained. The study eligibility

criteria included signed informed consent, aged 18 years or older, permanent staff status, and English Language literacy. A total of 350 participants were approached for enrolment (Krejcie & Morgan, 1970) during the study duration spanning eight weeks from June 2020 to August 2020. However, only 303 participants were ultimately included in the final analysis, representing a response rate of 86.6%.

2.1. Data collection and measures

Data collection was conducted by one of the study investigators (AB), and six trained research assistants. Specifically, sociodemographic, medical and work related-data were collected from all the study participants using a designed questionnaire. The data collected included age, gender, marital status, educational status, ethnicity, type of living area, number of years in service, type of department, living situation, and medical morbidities (e.g., hypertension, diabetes, asthma and epilepsy etc.)

The *12-item general health questionnaire (GHQ-12)* was used to assess psychological distress (Goldberg et al., 1997). The GHQ-12 is a self-rated questionnaire used to assess general wellbeing or psychological distress. Each item is rated on a bimodal scoring scheme (0–0–1–1) to produce total scores that ranged from zero to twelve. A cut-off score ≥ 2 on the GHQ-12 is indicative of psychological distress, and higher score indicates greater severity of distress (Goldberg et al., 1997; Gureje & Obikoya, 1990; Obadeji et al. 2018; Ogunsemi et al. 2019). The GHQ-12 has been validated and used extensively in Nigeria (Gureje & Obikoya, 1990; Erinfolami et al. 2016; Ogundipe et al. 2014; Olagunju et al. 2012; Olagunju et al., 2015; Olagunju et al., 2017; Yussuf and Balogun, 2006).

The *Pittsburgh Sleep Quality Index (PSQI)* was administered to participants to characterize their sleep problems (Buysse et al. 1989). The PSQI is a 24-item standardized, self-rated questionnaire used to measure sleep difficulties, and identify individuals showing symptoms of sleep problems. It is designed to assess problems in seven dimensions or components, including sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications and daytime dysfunction (subscale scores range from zero to three, with zero indicating no difficulty and three showing most severe difficulty). A global score can be generated by addition of the seven-component scores. The global score ranges from 0 to 21, and a higher score is indicative of poorer sleep problems. The PSQI has been widely used in Nigeria, and a cut-off of score 5 in the global scale is validated to dichotomize participants into those with and without good sleep quality (Aloba et al. 2007; Ogunsemi et al. 2019).

All consented study participants were allowed sufficient time to complete the self-rated study measures, and support was provided to participants on any areas of difficulties during the completion of the measures. All the measures were administered in English Language, the Lingua Franca in Nigeria, and this is also consistent with the requirement for educational trainings of the participants.

2.2. Statistical analysis

The data analyses were completed with the Statistical Package of Social Sciences for windows Version 26 [SPSS-26] (IBM, 2012). The sociodemographic, medical and work-place attributes of the study participants, and the prevalence of psychological distress as well as sleep problems were presented using descriptive statistics, including frequencies, percentages, and means (SD). Furthermore, Pearson correlation analysis was conducted to investigate the relationship between psychological distress (GHQ-12 total scores) and sleep problems (PSQI global scores). All the tests were conducted with p -value ≤ 0.05 considered as significant.

3. Results

3.1. Sociodemographic, medical and work-related characteristics of participants

Table 1 presents the sociodemographic characteristics of the participants. The participants were mostly males, 183(60.4%), and their mean age was 38.8 (SD = 8.9) years. The largest proportion (41.3%) of the participants were in their fifth decade of life, belonging to age group 41–50 years. Most of the participants were married (70.3%), had spent less than 10 years in service (72.9%), and had no medical comorbidity (92.1%). Approximately 54.9% of the participants had postgraduate degrees.

3.2. Prevalence of psychological distress and sleep problems among the participants

Table 2 showed the prevalence of psychological distress based on GHQ-12 score to be 23.4%, and 60.4% reported sleep problems based on PSQI score. The participants mean (SD) total scores on GHQ-12 and PSQI were 1.02 (SD = 2.44), and 7.85 (SD = 6.102) respectively. The participants mean scores (SD) on PSQI components range from 0.39 (SD = 0.63) [mean score on subjective sleep quality] to 1.10(SD = 0.73) [mean score on sleep latency]. Similarly, significant proportions of participants reported sleep difficulty in several aspects, including sleep latency (81.5%), sleep duration (71.3%), sleep disturbances (75.9%), and daytime dysfunction (69.6%). Approximately, 32% each reported using sleeping medication, and having difficulty with sleep quality. See Table 3.

The Pearson correlation analysis showed a significant association

Table 1
Socio-demographic, medical and work-related characteristics of participants.

Variables	Frequency (n)	Percent (%)
Age group (yrs)		
≤30	86	28.4
41–50	125	41.3
>50	92	30.4
Sex		
Male	183	60.4
Female	120	39.6
Marital status		
Unmarried	90	29.7
Married	213	70.3
Education level		
Diploma	81	26.7
University degree	166	54.8
Postgraduate	56	18.5
Living area		
Rural	52	17.2
Urban	251	82.8
Duration in service (yrs)		
<10	221	72.9
11–20	68	22.4
>20	14	4.6
Tribe		
Hausa	135	44.6
Ibo	29	9.6
Yoruba	70	23.1
Others	68	22.4
Department		
Clinical	236	77.9
Non-clinical	67	22.1
Living with family		
Yes	243	80.2
No	60	19.8
Medical morbidity		
Yes	24	7.9
No	279	92.1

Yrs = years.

Table 2
Prevalence of psychological distress and sleep problem.

Variable	Frequency (n)	Percent (%)
Psychological distress (GHQ-12)		
Yes	71	23.4
No	232	76.6
Sleep quality index (PSQI)		
Good	120	39.6
Poor	183	60.4

GHQ-12- 12-item General Health Questionnaire; PSQI = Pittsburgh Sleep Quality Index.

Table 3
Sleep problems based on PSQI components.

PSQI components	Mean	SD	Sleep difficulty	
			No n(%)	Yes n(%)
1: Subjective sleep quality	0.39	0.63	206(68.0)	97(32.0)
2: Sleep latency	1.10	0.73	56(18.5)	247(81.5)
3: Sleep duration	1.04	0.89	87(28.7)	216(71.3)
4: Habitual sleep efficiency	0.50	0.94	222(73.3)	81(26.7)
5: Sleep disturbances	0.99	0.69	73(24.1)	230(75.9)
6: Use of sleeping medication	0.39	0.62	206(68.0)	97(32.0)
7: Daytime dysfunction	0.85	0.68	92(30.4)	211(69.6)

% = percent; n = frequency; PSQI = Pittsburgh Sleep Quality Index; SD = standard deviation.

between psychological distress (measured by GHQ-12 score) and sleep problems based on PSQI total score, with a small effect size ($r = 0.2$; $p = 0.001$).

4. Discussion

This study investigated parameters of mental wellbeing (indexed by pattern of psychological distress and sleep problems) in healthcare workers during the COVID-19 pandemic in an underserved region of Nigeria. A total of 303 healthcare workers in a COVID-19 referral hospital were interviewed with validated screening tools for psychological distress and sleep problems. Importantly, this study provides important perspectives on the mental health wellbeing and needs of healthcare workers during the COVID-19 pandemic that may model the situation in settings with limited resources or developing countries.

Approximately 23.4% of the healthcare workers reported psychological distress. The rate of psychological distress in the present study is several folds higher than the rates previously reported in the general population in similar contexts (Erinfolami et al. 2016; Gureje et al. 2006). This study rate is also moderately higher than the rates previously reported in healthcare workers, 17.2% (Obadeji et al. 2018); doctors, 14.9% and 13.6% (Issa et al., 2014; Ogunsemi et al. 2019); and company executives, 14.2% in similar contexts using the same screening tool. While the rates of psychological distress in this study is moderately high, it is conceivable that this estimate of psychological distress in healthcare workers may be conservative given the pervasive reluctance to disclose mental health problems due to stigmatization (Knaak et al. 2017; Yussuf and Balogun, 2006). Moreover, healthcare workers may not report or minimize their mental problems as a result of the culture of wanting to portray themselves as “always coping”, fear about damaging job prospect, and uncertainty about who to tell (Dyrbye et al. 2011; Fadipe et al., 2020; Knaak et al. 2017).

In the same vein, as many as six in every ten participants reported sleep problems. This is significantly higher than the prevalence of sleep problems (36.4%) reported in physicians in a local study using the same instrument (Ogunsemi et al. 2019). About eight in every ten participants reported difficulty in the aspects of sleep latency and other disturbances, while seven in ten participants had daytime dysfunction and difficulties

with sleep duration. Approximately, one third uses sleeping medication and reported difficulty with sleep quality. These study findings are not surprising given the magnitude of demands on healthcare services since the COVID-19 pandemic. However, the experience of psychological burden in healthcare workers is concerning because of the beneficial effects of sleep on mental wellbeing, emotion regulation, body homeostasis (Magnavita and Garbarino 2017), and by extension the capability to perform professional roles. Notably, emotional wellness in healthcare workers are particularly important to cope with the high demands of COVID-19 pandemic or similar crisis (Lai et al., 2020). On a different note, sleep difficulties might be tell-tale signs of imminent or ongoing mental health decompensation (Singh et al., 2020). Closely related is that poor sleep can increase the risk of serious professional errors or breach in safety protocols (Lai et al., 2020; da Silva and Neto, 2021a, b). Although not surprising, psychological distress correlated significantly with poor sleep, such that participants with sleep problems were more likely to report psychological distress.

Taking together these study findings underscored the significant psychological impacts of COVID-19 pandemic on healthcare workers, and the need for scalable psychosocial support services as well as culturally-sensitive interventions to promote wellbeing. The need for comprehensive assessments to identify emotional needs, and characterize modifiable risk factors for psychological burden in healthcare workers during crisis cannot be overstated.

4.1. Study limitations

Several limitations were identified in this study. For example, there is need for caution in the generalization of these study findings to other healthcare workers, especially in those in settings with better resources. The cross-sectional nature of the study limits the establishment of a cause-effect relationship between sleep problems and psychological distress. It is also likely that the prevalence and level of mental health problems reported in this study is conservative due poor disclosure of mental health problems because of stigmatization. Information on medical morbidities might be impacted by recall bias. Notwithstanding, our study findings are timely, and may add important perspectives to ongoing efforts to promote workers' wellness in the healthcare sectors.

4.2. Conclusion and recommendations

Maintaining emotional wellbeing in healthcare workers during crisis is critical, and deserve improved attention, including deliberate investment of resources. The following recommendations are proposed based on our study findings.

1. Further detailed studies in diversified developing cultures are needed.
2. Awareness and advocacy to reduce the stigma associated with mental illness in general population would impact professionals in all levels.
3. Counseling of members of the hospital staff on coping with stress during a major natural disaster such as an outbreak of diseases is badly needed. Optimally, it should commence prior to the crisis.
4. Developing a structured guideline for comprehensive assessment and communication about mental health problems, including sleep difficulties should be promoted. For instance, the design of the PSQI is such that the items and the component scores can form standard areas of focus during consultations.
5. Use of time-efficient validated screening tools should be promoted for early identification, categorization of needs, and appropriate matching with psychosocial support services.
6. Activities to destigmatize mental health problems should be promoted to improve uptake and retention of healthcare workers in psychosocial support services.

7. Provision of recreational facilities within the hospital (e.g., relaxation exercise, massage therapy, games, and gym-based activities based on recommended guidelines etc.), and encouragement of participation in social activities to mitigate stress are suggested.
8. Advocacy, policy implementation, and staff training to promote wellness in healthcare workers are needed.
9. Development of a culturally-sensitive interdisciplinary blueprint for locally-viable actions model are strongly suggested ahead of future emergency situations.
10. Research practice to estimate the unmet needs in healthcare workers, and improve current understanding of modifiable risk factors for psychosocial burden in healthcare workers in developing contexts during crisis are needed.

Ethical approval

Institutional Review Board (IRB) approval was obtained before the study was commenced. In addition, we adhered to the ethical standards of the institutional-national research committee, and with the 1964 Helsinki declaration and its recent amendments or comparable ethical standards regarding all procedures involving human participants in the study.

Informed consent

Informed consent was obtained from individual participants included in the study.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

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