

Depression among Healthcare Workers in Nigeria: Predictive Roles of Anxiety, Perceived Stress, Burnout, and Work Environment

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Abstract : Depression among healthcare workers is a growing global concern, with anxiety, perceived stress, burnout, and work environment identified as key predictors. However, limited research explores these factors in Nigerian healthcare workers. This study examines the relationship between these factors and depression among a sample of Nigerian healthcare workers (N=119). Using a cross-sectional survey, data on anxiety, perceived stress, burnout, and work environment were collected and analyzed through multiple regression. Results showed significant positive correlations between depression and anxiety ($r=0.55$, $p<0.01$), work environment ($r=0.33$, $p<0.01$), perceived stress ($r=0.23$, $p<0.05$) and burnout ($r=0.21$, $p<0.05$) and the most potent predictor is anxiety ($\beta=0.498$, $t=6.799$, $p<0.01$) and work environment ($\beta=0.241$, $t=3.190$, $p<0.01$) among healthcare workers in Nigeria. High workload, lack of support, and limited resources notably increased depression risk. These findings underscore the critical impact of the work environment on mental health, highlighting the need for policies and interventions targeting these predictive factors. By improving the work conditions for healthcare workers, we can help mitigate depression and enhance well-being in Nigerian healthcare settings.

Keywords: depression, healthcare professionals, anxiety, perceived stress, burnout, and work environment, Nigeria

Introduction

The prevalence of depression among healthcare workers in Nigeria is concerning, yet it remains an understudied area. Healthcare workers in Nigeria operate in a high-pressure environment marked by limited resources, long hours, poor infrastructure, staffing shortages, lack of support, and a high patient load, which can lead to significant psychological stress (Adegoke, 2018). Anxiety and perceived stress are common among these professionals, often resulting in burnout, a state of emotional, physical, and mental exhaustion caused by prolonged and intense stress (Suleiman, 2020). Burnout, in turn, has been strongly linked to the development of depressive symptoms (Maslach & Leiter, 2016).

Globally, depression is a major public health issue affecting people in various professions, but healthcare workers (HCWs) are especially vulnerable because of the demanding nature of their jobs. The prevalence of depression among healthcare workers varies by region, impacting healthcare systems in both developed and developing countries. Studies consistently show that healthcare professionals are at higher risk of depression than the general population. A systematic review and meta-analysis by Pappa et al. (2020) found that the global depression rate among healthcare workers ranges from 22% to 35%, with significant differences based on region, healthcare worker type, and specific job roles. For instance, a study of healthcare workers in China during the COVID-19 pandemic reported that about 50% of respondents showed symptoms of depression (Lai et al., 2020). Likewise, in the United States, depression rates among healthcare workers were around 28% during the same period (Sasangohar et al., 2020). Another study in the United Kingdom revealed that 40% of healthcare workers identified work-related stress as a major factor contributing to their depressive symptoms.

Moreover, burnout is strongly associated with depression among healthcare professionals globally, with rates as high as 45% in some regions (Rodrigues et al. 2018) also healthcare workers who frequently encountered traumatic events were more likely to suffer from depression (de Lima et al., 2021); healthcare workers in under-resourced hospitals reported higher rates of depression compared to those in better-equipped facilities (Hall et al., 2016). Again, the World Health Organization (WHO) highlighted that healthcare workers are experiencing higher levels of depression, anxiety, and burnout due to the pandemic (WHO, 2021).

In Africa, healthcare workers are often on the frontlines, facing a unique set of stressors that increase their vulnerability to mental health issues, including depression. These stressors include exposure to infectious diseases and the fear of contracting them, along with the responsibility of treating infected patients, which significantly contributes to anxiety and depression (Kibret et al., 2020); political and social instability (Okpala, 2018); stigma and cultural barriers (Gureje & Alem, 2019); gender disparities (Deyessa et al., 2020); and the overall burden of diseases such as HIV/AIDS, tuberculosis, and malaria (Kibret et al., 2020). Studies across

various African countries show that depression is highly prevalent among healthcare workers. For example, research in South Africa reported that nearly 30% of healthcare workers experience depressive symptoms, which is significantly higher than in the general population (Ramlall et al., 2018). In Ethiopia, the prevalence of depression among healthcare workers was about 32%, with nurses and midwives being particularly affected (Mulatu et al., 2021). Similarly, a study in Ghana found that about 27% of healthcare workers exhibited moderate to severe depressive symptoms, driven by factors such as long working hours, low salaries, and the emotional toll of caring for critically ill patients (Asante & Andoh-Arthur, 2015). In Kenya, a survey revealed that 40% of healthcare workers reported symptoms of depression, with the highest rates among those working in emergency and intensive care units (Ndeti et al., 2020). Meanwhile, Oyedele et al. (2024) discovered that gender does not influence depression responses among health workers, while younger healthcare workers are more prone to depression compared to older ones.

In Nigeria, there are numerous factors highlighted in the literature that contribute to a high level of psychological distress, making healthcare workers susceptible to mental health issues, including depression. Among these, exposure to traumatic events stands out as a significant contributor. Healthcare workers often encounter life-threatening situations, patient deaths, severe injuries, and other distressing scenarios as part of their routine duties. This repeated exposure to trauma can lead to symptoms of post-traumatic stress disorder (PTSD), which is closely linked to the development of depression (Ogunsemi et al., 2020). Also, inadequate support can cause feelings of isolation, helplessness, and hopelessness, which are core symptoms of depression (Adeoye & Olanipekun, 2019); anxiety disorders (Babatunde et al., 2020); perceived stress (Adelekan et al., 2016); burnout (Ilesanmi et al., 2021); job insecurity and financial stress which contribute to mental health decline (Okafor & Amadi, 2018; Ogbolu et al., 2018) and stigma and professional culture can discourage healthcare workers from accessing the mental health care they need, leading to untreated depression and other psychological conditions (Ogunwale et al., 2021).

Theoretically, the stress-diathesis model of depression posits that depression arises from the interaction between a person's vulnerability (diathesis) and environmental stressors (Monroe & Simons, 1991). For healthcare workers in Nigeria, the diathesis could be individual traits (e.g., pre-existing anxiety or perceived stress), while stressors may include a high workload, burnout, and a poor work environment. This model suggests that individuals with a predisposition to anxiety or heightened stress perception may be more vulnerable to depression when exposed to adverse working conditions. Meanwhile, healthcare workers in Nigeria often face chronic stressors, such as limited resources, heavy workloads, and emotional exhaustion (Adegoke, 2018; Suleiman, 2020), increasing their risk for depression, particularly when they already have anxiety or are prone to stress. Also, the job demands-resources (JD-R) model provides a framework for understanding burnout, stress, and depression in the workplace. It posits that high job demands (e.g., excessive workloads, emotional demands) and insufficient job resources (e.g., lack of support, poor work environment) lead to burnout and mental health issues like depression; and burnout is seen as a critical mediator between job stressors and depression (Demerouti, et al, 2001). In Nigeria's healthcare sector, workers are often exposed to high job demands (e.g., overwork, emotional strain from patient care) and limited job resources (e.g., inadequate infrastructure, low pay), leading to burnout and subsequent depression.

Additionally, conservation of resources (COR) theory emphasizes that individuals strive to acquire, maintain, and protect resources (such as energy, personal health, and emotional well-being). When these resources are threatened or depleted, stress occurs, leading to burnout and potentially depression (Hobfoll, 1989). Healthcare professionals under chronic stress from an unsupportive work environment or high levels of anxiety may experience resource depletion, which could manifest as depression. Nigeria healthcare workers, especially in under-resourced settings, may face continuous resource losses (e.g., physical and emotional exhaustion), contributing to perceived stress, burnout, and ultimately depression.

Moreover, the person-environment (P-E) fit theory suggests that stress and negative mental health outcomes arise when there is a misfit between the individual's abilities or needs and the work environment. In the context of healthcare workers, misfits may occur when job demands exceed the workers' capabilities or resources, leading to stress and depression. Factors like high anxiety levels or perceived stress can exacerbate this mismatch (Edwards et al, 1998). Healthcare workers in Nigeria often experience a mismatch between the demands of their work (e.g., caring for patients in high-stress environments) and the resources available (e.g., inadequate staffing or emotional support), contributing to mental health challenges, including depression. Further still, the demand-control-support model suggests that work-related stress and mental health issues are influenced by the interaction between job demands, control over one's work, and social support in the workplace. High demands, low control, and lack of support are linked to stress, burnout, and depression (Karasek, 1979). Healthcare workers with high anxiety may be more sensitive to these factors, increasing their susceptibility to depression. In Nigeria, healthcare workers often operate in environments with high job demands (e.g., long shifts, emotional labor), low autonomy (e.g., lack of decision-making control), and insufficient social support (e.g., inadequate supervisory or peer support), all of which may exacerbate depression.

The theoretical development of this study suggests that anxiety, perceived stress, burnout, and work environment are significant contributors to depression among healthcare workers. The stress-diathesis model, JD-R model, COR theory, person-environment fit theory, and demand-control-support model all provide a comprehensive understanding of how these factors interact to predict mental health outcomes. The link between burnout and depression further underscores the importance of addressing these predictors in

healthcare settings to mitigate depression risk. Putting together, none of these theories single-handedly explain all the variables (Mental Health, Depression, Anxiety, Perceived Stress, Burnout, and Work Environment) under review. This shows that there is a need for a comprehensive theory to jointly explain these variables.

In the same vein, depression among healthcare workers not only affects their personal lives but also has profound implications for patient care and the overall healthcare system. Studies have shown that depression can lead to reduced productivity, increased absenteeism, and a higher likelihood of medical errors, all of which can compromise patient safety and care quality (Reuben & Mberu, 2019). Anxiety, perceived stress, burnout, and the work environment have all been identified as significant predictors of depression in various studies globally. However, there is a need for more localized research to jointly explore these predictors within the Nigerian context, considering the unique socio-economic and cultural factors that may influence mental health outcomes. Also, there is no known study in Nigeria who had considered the complex contributions of the variables to the development of depression among healthcare professionals in Nigeria and Africa. This study, therefore, aims to examine the predictive roles of anxiety, perceived stress, burnout, and work environment on the development of depression among healthcare workers in Nigeria. By identifying the key factors that contribute to depression, this research will provide insights into potential intervention strategies to support the mental well-being of healthcare workers, ultimately improving the quality of healthcare delivery in Nigeria.

Purpose of the study

The purpose of the study is to examine the predictive roles of anxiety, perceived stress, burnout, and work environment in the development of depression among Healthcare Workers in Nigeria. Specifically,

- To explore the nature of the relationship between anxiety, perceived stress, burnout, work environment, and the development of depression among health workers in Nigeria.
- To examine the extent to which the work environment, anxiety, perceived stress, and burnout collectively contribute to the development of depression among healthcare workers in Nigeria
- To examine the relative contribution of anxiety, perceived stress, burnout, and the work environment on the development of depression among health workers in Nigeria

Research Questions

- What is the nature of the relationship between anxiety, perceived stress, burnout, the work environment, and depression among healthcare workers in Nigeria?
- To what extent do the work environment, anxiety, perceived stress, and burnout collectively contribute to the development of depression among healthcare workers in Nigeria?
- What is the individual contribution of anxiety, perceived stress, burnout, and the work environment to the development of depression among healthcare workers in Nigeria?

Method and Measures

To measure stress and burnout among health professionals, a comprehensive scale that covers various dimensions of stress and burnout specific to their work environment was used. Stress and Burnout Scale for Health Professionals (SBS-HP) with items adapted and modified from validated instruments of the Maslach Burnout Inventory (MBI) and the Perceived Stress Scale (PSS) by Cohen (1983), tailored to the context of health professionals. The items were divided into sections such as perceived stress, burnout, work environment, and anxiety. Also, the Health Professionals Anxiety and Depression Scale (HPADS) was employed to assess mental health conditions. The anxiety items were adapted and modified by incorporating additional items relevant to health professionals from the Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983). The scale was scored as follows: 0–7 (normal range), 8–10 (mild anxiety/depression), 11–14 (moderate anxiety/depression), and 15–21 (severe anxiety/depression). The scale has seven items, each with a specificity of 0.78 and a sensitivity of 0.9. for anxiety, and a specificity of 0.79 and a sensitivity of 0.83. for depression, respectively. The data collection technique uses Google Forms, distributed via WhatsApp and WhatsApp groups of healthcare professionals in Oyo State and Ekiti State, respectively. 119 healthcare professionals responded to the scales.

Results

Research Question 1: What is the nature of the relationship between anxiety, perceived stress, burnout, the work environment, and depression among healthcare workers in Nigeria?

Table 1: Zero-order correlation summary of variables under investigation

Variables	Mean	St.dv	1	2	3	4	5
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Depression	11.18	2.18	1.00				
Anxiety	13.45	2.53	0.55**	1.00			
Perceived stress	16.52	3.13	0.23*	0.10	1.00		
Burnout	15.00	3.38	0.21*	0.08	0.02	1.00	
Work environment	25.32	7.67	-0.33*	0.11	0.16*	0.22*	1.00

(* significant at 0.05 level, ** significant at 0.01 level)

Source: Field Survey, 2024

Table 1 reveals that there is a significant relationship between depression and anxiety ($r=0.55$, $p<0.01$), work environment ($r=0.33$, $p<0.01$), perceived stress ($r=0.23$, $p<0.05$), and burnout ($r=0.21$, $p<0.05$). This implies that the high influence of anxiety, perceived stress, and burnout will increase depression among health workers. An increase in the influence of the work environment will reduce depression in health workers in Nigeria.

Research Question 2: What is the joint contribution of work environment, anxiety, perceived stress, and burnout on depression among health workers in Nigeria?

Table 2: Regression summary showing the joint contribution of the independent variables on the dependent variable

R= 0.639 R ² = 0.408 Adj R ² = 0.387 Std Error= 1.705					
Model	Sum of squares	Df	Mean square	F	Sig.
Regression	226.73	4	56.68	19.49	0.00
Residual	328.52	113	2.91		
Total	555.25	117			

Source: Field Survey, 2024

Table 2 reveals that there is a joint contribution of work environment, anxiety, perceived stress, and burnout to the prediction of depression among health workers in Nigeria. Regression coefficient $R= 0.64$, $R^2= 0.41$, Adj. $R^2= 0.39$. When the four factors are combined, they account for a 38.7% variance in depression among health workers. However, the remaining percentage (61.3%) accounts for the change in depression experienced by health workers that are beyond this study. Therefore, work environment, anxiety, perceived stress, and burnout jointly predict depression in health workers in Nigeria; $F_{(4,113)}=19.49$, $p<0.01$.

Research Question 3: To what extent do the work environment, anxiety, perceived stress, and burnout collectively contribute to the development of depression among healthcare workers in Nigeria?

Table 3: Multiple Regression summary showing the collective contribution of the independent variables to the dependent variable

Model	Unstandardised Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(constant)	1.031	1.312		0.789	0.434
Anxiety	0.429	0.063	0.498	6.799	0.000
Perceived Stress	0.094	0.051	0.134	1.826	0.070
Burnout	0.072	0.048	0.112	1.508	0.134
Work Environment	0.068	0.021	0.241	3.190	0.002

Source: Field Survey, 2024

Table 3 reveals that two of the four factors (anxiety and work environment) are significant predictors of depression in healthcare workers in Nigeria, while perceived stress and burnout are not significant predictors. The most potent predictor is anxiety ($\beta=0.498$, $t=6.799$, $p<0.01$) and work environment ($\beta=0.241$, $t=3.190$, $p<0.01$) except perceived stress ($\beta=0.134$, $t=1.826$, $p>0.05$) and burnout ($\beta=0.112$, $t=1.508$, $p>0.05$). This implies that anxiety will increase the tendency of depression in health workers by 49.8% while the work environment will increase the tendency of depression by 24.1%.

Discussion

Table 1 presents a crucial statistical analysis of the relationships between depression and several psychosocial factors among healthcare workers in Nigeria. The findings reveal that depression is significantly correlated with anxiety, work environment, perceived stress, and burnout, providing insights into how these factors interplay to affect the mental health of healthcare professionals. The strong positive correlation between depression and anxiety indicates that as anxiety levels increase among healthcare workers, the likelihood of experiencing depression also increases. This relationship is statistically significant, implying that anxiety is a substantial predictor of depression in this population. The relationship is consistent with existing literature that suggests anxiety often co-occurs with depression, leading to worsened mental health outcomes in high-stress professions like healthcare (e.g., Suleiman, 2020). Also, the positive correlation between work environment and depression suggests that aspects of the work environment significantly impact depression levels among healthcare workers. However, contrary to what might be expected, this positive relationship indicates that negative aspects of the work environment, such as poor support, high job demands, or unsafe conditions, are associated with increased depression. Improving the work environment, therefore, could be a protective factor, potentially reducing depression levels among healthcare workers in Nigeria.

Again, the correlation between depression and perceived stress is moderate but significant, indicating that higher levels of perceived stress are associated with higher levels of depression. This finding aligns with the understanding that perceived stress is a crucial factor in the development of depression, especially in professions where workers face high levels of psychological and emotional demands, as is often the case (Huang et al., 2020). Additionally, the relationship between burnout and depression indicates a significant but somewhat weaker correlation compared to anxiety and work environment. Burnout, characterized by emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment, can gradually lead to depression if not addressed (Shanafelt et al., 2020). The correlation, although weaker, still highlights burnout as a significant contributor to depression, emphasizing the need for interventions that address burnout to improve mental health outcomes among healthcare workers.

Moreover, the adjusted R, which accounts for the number of predictors in the model, shows that the model remains robust even after adjusting for the potential overestimation. This adjusted value indicates that approximately 39% of the variance in depression can be reliably attributed to the predictors included in the model. The finding that these four factors account for 38.7% of the variance in depression highlights the significant impact these variables have on the mental health of healthcare workers. However, it is also important to note that 61.3% of the variance in depression remains unexplained by this model. This suggests that other factors not captured in this study may also play a crucial role in influencing depression among healthcare workers in Nigeria. The statistical significance of the model is confirmed by the F-ratio $F_{(4,113)}=19.49$, with a p-value less than 0.01, indicating that the combination of work environment, anxiety, perceived stress, and burnout significantly predicts depression in this population. This result underscores the need for interventions targeting these specific areas to mitigate the risk of depression among healthcare workers.

The study provides strong evidence that the work environment, anxiety, perceived stress, and burnout are significant predictors of depression among healthcare workers in Nigeria. However, further research is needed to explore other potential factors that may contribute to depression in this population, given that a substantial portion of the variance remains unexplained.

Further still, the findings indicate that among the four factors analyzed—anxiety, perceived stress, burnout, and work environment—anxiety and the work environment emerged as significant predictors of depression in healthcare workers in Nigeria. These findings are crucial for understanding the mental health challenges faced by healthcare workers and point to specific areas where interventions may be most effective. Anxiety was found to be the most potent predictor of depression. This means that anxiety significantly contributes to depression, with a 49.8% increase in the likelihood of depression among healthcare workers for every one-unit increase in anxiety. This strong association aligns with existing literature, which consistently shows that anxiety disorders are closely linked to depression, often acting as both a precursor and a comorbid condition (Kessler et al., 2005). The high levels of anxiety among healthcare workers, exacerbated by high job demands, exposure to traumatic events, and concerns about personal safety, could be a major driver of depressive symptoms (Tawfik et al., 2019). Also, the work environment was the second significant predictor. This indicates that a less favorable work environment can increase the likelihood of depression by 24.1%. Factors like inadequate working conditions, insufficient support, heavy workloads, and hazardous work environments elevate stress levels, potentially leading to depression (The Lancet, 2021). The significance of the work environment as a predictor is consistent with studies that highlight the critical role of organizational factors in the mental health of healthcare workers (Friganović et al., 2017).

Interestingly, perceived stress and burnout did not significantly predict depression in this study. Although perceived stress and burnout are generally associated with depression in various settings (Maslach & Leiter, 2016), their non-significant impact in this context could be due to the overlapping nature of these constructs with anxiety and work environment factors, which might have already captured the variance that perceived stress and burnout would explain.

Conclusion

The research results indicate a significant relationship between depression and several factors among healthcare workers in Nigeria, specifically anxiety, work environment, perceived stress, and burnout:

The correlation findings show there is a strong positive relationship between depression and anxiety, suggesting that higher levels of anxiety are associated with higher levels of depression among healthcare workers. There is also a moderate positive relationship between depression and the work environment, indicating that a more negative work environment is associated with higher levels of depression. However, a weak positive relationship exists between depression and perceived stress as well as burnout, suggesting that increased perceived stress and burnout contribute to higher depression levels, though to a lesser extent. From the regression analysis, the combination of work environment, anxiety, perceived stress, and burnout significantly predicts depression among healthcare workers. Together, these factors account for approximately 38.7% of the variance in depression, meaning they are substantial but not exclusive contributors to depression. The remaining 61.3% suggests that other factors not explored in this study also play a role in depression levels among healthcare workers. The individual predictor analysis among the four factors, only anxiety and work environment, are significant predictors of depression in healthcare workers in Nigeria. This indicates that higher anxiety levels and poorer work environments are the most critical factors in contributing to depression. Perceived stress and burnout, while related to depression, do not independently predict it to a significant degree in this sample.

Suggestions for Further Studies

Future research should investigate other potential factors contributing to depression among healthcare workers that were not covered in this study, such as personal life stressors, financial concerns, or access to mental health resources, which might explain the remaining 61.3% variance. Longitudinal studies should also be conducted to examine how the relationships between anxiety, work environment, perceived stress, burnout, and depression evolve among healthcare workers. This can provide insight into the casualty and the long-term effects of these factors on mental health. Finally, the study should be expanded to include a more diverse population of healthcare workers across different regions and settings in Nigeria. This can help determine if the findings are consistent across various demographics and work environments. By addressing these areas, future research can provide a more comprehensive understanding of the factors contributing to depression among healthcare workers and help develop targeted strategies to improve their mental health and well-being.

Recommendations

Based on the findings that anxiety and the work environment are significant predictors of depression among healthcare workers in Nigeria, the following recommendations are proposed:

- ❖ Development and implementation of programs aimed at reducing anxiety among healthcare workers. This could include regular mental health screenings, counseling services, stress management workshops, and mindfulness training.
- ❖ Employers should offer access to psychological support services, such as on-site counselors or partnerships with mental health professionals, to address anxiety-related issues before they escalate into depression.
- ❖ Improve working conditions by ensuring adequate staffing, reducing excessive workloads, and promoting a work-life balance. This can be achieved through better shift management, equitable distribution of tasks, and allowing flexible working hours where possible.
- ❖ To foster a supportive work culture by encouraging open communication, providing regular feedback, and recognizing the contributions of healthcare workers. Management should be trained in supportive leadership practices that emphasize empathy and understanding.
- ❖ While perceived stress and burnout were not significant predictors in this study, they are still important factors that can contribute to anxiety and a negative work environment. Initiatives should be introduced to identify and mitigate sources of stress within the workplace.
- ❖ Stress-reduction programs, such as relaxation techniques, physical exercise opportunities, and time management training, should be integrated into the work environment. Regular assessments of stress levels and workplace satisfaction can help in identifying areas for improvement.
- ❖ Healthcare institutions should prioritize organizational support by providing resources and policies that promote employee well-being. This includes ensuring that healthcare workers have access to sufficient resources to perform their duties effectively and safely.

- ❖ Resilience training programs that equip healthcare workers with skills to cope with workplace challenges and build psychological resilience should be introduced. These programs can help in reducing the impact of work-related stressors on mental health.
- ❖ Advocate for policies at the institutional and national levels that prioritize the mental health of healthcare workers. This may include legislation that mandates mental health programs in healthcare institutions, the inclusion of mental health services in employee benefits, and the protection of workers' mental health rights.
- ❖ Engage stakeholders, including government bodies, professional associations, and healthcare organizations, to raise awareness of the mental health challenges faced by healthcare workers and to drive collective action towards addressing these issues.
- ❖ Encourage further research to explore the underlying causes of anxiety and poor work environment conditions in healthcare settings. This research should aim to identify specific factors within the Nigerian context that contribute to these issues and test the effectiveness of different interventions.
- ❖ Future studies should collect and analyze data on the mental health of healthcare workers across different regions and healthcare facilities in Nigeria to gain a comprehensive understanding of the scope of the problem and to tailor interventions accordingly.

By implementing these recommendations, healthcare institutions in Nigeria can create a more supportive and conducive work environment that prioritizes the mental health and well-being of their workers, ultimately reducing the incidence of depression and enhancing the overall quality of care provided.

Availability of data and material

The data on which the article reports are available from the author on reasonable written request.

Disclosure Statement

The author reports no conflict of interest

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