NEW-Psycho-demographic Factors and Mental Health of Caregivers of Orthopaedic Patients in Benue Northwest, Nigeria

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Abstract
Caregiving for orthopaedic patients, often involving chronic conditions like fractures, arthritis, and spinal injuries, places significant psychological strain on informal caregivers. This study examined psycho-demographic predictors of mental health among caregivers of orthopaedic patients in Benue Northwest, Nigeria. A cross-sectional survey design was employed, involving 103 informal caregivers selected from four major hospitals. Data was collected using the Secondary Traumatic Stress Scale (STSS) and the General Health Questionnaire-12 (GHQ-12). Results from multiple regression analysis revealed that exposure to trauma, particularly symptoms of intrusion, avoidance, and arousal, significantly predicted poor mental health outcomes ($R^2 = .148$, $p < .001$). Furthermore, univariate analysis showed that while sex had no significant main effect, educational attainment significantly influenced mental health ($F(3, 96) = 12.260$, $p < .001$), with caregivers of lower educational levels experiencing more psychological distress. A significant interaction effect between sex and education was also observed ($F(2, 96) = 14.802$, $p < .001$). The findings suggest that trauma exposure and low educational attainment are key risk factors for poor mental health among caregivers. Interventions should prioritize trauma-focused support, especially for caregivers with limited education, to enhance mental health resilience and caregiving effectiveness.

Keywords: mental health, traumatic experience, caregivers of orthopaedic patients, educational attainment, Benue Northwest, Nigeria.

Introduction

One vital yet challenging responsibility is caregiving, particularly for informal caregivers of orthopaedic patients who provide physical, emotional, and psychological support. Orthopaedic conditions, such as fractures, arthritis, spinal injuries, and joint replacements, often require long-term care, rehabilitation, and assistance with daily activities. That being so, caregivers experience significant stress, which negatively impacts their mental health. Besides, caregivers' exposure to patients' pain, suffering, and functional limitations can contribute to secondary traumatic stress and other illness conditions (head and body aches). This condition, characterized by emotional distress resulting from indirect exposure to trauma, can negatively affect caregivers' psychological resilience and overall mental health (Bachmann, 2020; Kingston, et al., 2015; World Health Organization, 2013;).

Aledeh et al., 2025 highlighted the negative impact of caregiver burden on the mental health

and well-being of family members who provide informal care for their loved ones. Personal fulfilment and strengthened family bonds are among the inherent rewards of informal caregiving. However, it is associated with physical, emotional/psychological, social, and financial burdens. Caregivers mostly suffer from caregiver burdens such as stress, anxiety, post-traumatic stress disorder (PTSD), compassion fatigue, burnout, depression, and suicidal ideation. Informal caregivers are pivotal in providing informal care for their families and loved ones, particularly in low-and middle-income countries (LMICs) such as Ghana and Nigeria. Family caregivers who provide informal care are often at risk of becoming invisible victims of poor mental health outcomes.

Research indicates a strong link between exposure to trauma and mental health challenges among caregivers, particularly in stressful caregiving settings. Notably, continuous exposure to traumatic medical conditions, coupled with emotional strain, heightens caregivers' susceptibility to poor mental health outcomes (Sprang et al., 2019). Recent studies on caregivers of orthopaedic patients have revealed that many experience symptoms of post-traumatic stress disorder (PTSD), emotional exhaustion, and burnout as a result of their caregiving duties **(Onyekwere & Ogunbiyi, 2021;** Carmassi et al,2020).

Similarly, empirical studies have increasingly recognized the significant impact of demographic factors, particularly sex and educational level, on the mental health outcomes of caregivers providing support to orthopaedic patients. In a qualitative study conducted in Nigeria, caregivers of older adults with hip fractures reported considerable physical and emotional burdens. Male and more educated caregivers exhibited better coping strategies and resilience, suggesting that sex and education are critical factors in moderating caregiving stress (Gausman et al., 2020), and that underscores the psychological vulnerability linked to demographic disparities.

A systematic review by Treanor et al. (2019), analyzing 28 studies involving over 3,000 caregiver-patient dyads, confirmed that sex and education were associated with caregiver burden. Older caregivers and those with lower educational attainment experienced heightened stress and diminished quality of life. These findings collectively emphasize the importance of demographic factors in shaping caregivers' mental health. Similarly, Gausman et al (2020) found that male and more educated caregivers exhibited better coping strategies and resilience, suggesting that sex and education are critical factors in moderating caregiving stress.

Few studies have explored the mental health of caregivers in Nigeria, but existing research highlights the connection between traumatic exposure and psychological distress. A study on caregivers of orthopaedic patients found a significant relationship between exposure to trauma and adverse mental health outcomes (**Onyekwere et al., 2021**). However, there is a dearth of empirical studies exploring the role of these variables in the mental health caregivers of orthopedic patients in Nigeria, particularly among caregivers in Benue Northwest.

Given the limited research in this field, further studies are needed to examine how sex, education, and mental health interact among caregivers. Understanding these dynamics will help develop targeted psychological interventions that can address the unique challenges faced by caregivers of different sex and educational attainment and improve mental health outcomes for caregivers of orthopaedic patients. This study aims to fill this gap by investigating the relationship between traumatic experiences, demographic factors and mental health among caregivers of orthopaedic patients in Benue Northwest, Nigeria.

The study therefore hypothesized that;

1. Traumatic experience will significantly predict mental health of caregivers of orthopaedic patients in Benue Northwest.
2. There will be a significant sex difference in the mental health of caregivers of orthopaedic patients in Benue Northwest.
3. Educational attainment will significantly predict the mental health of caregivers of orthopaedic patients in Benue Northwest.

Method

Design/ Participants

The research adopted a cross-sectional survey design and sampled participants from informal caregivers of orthopaedic patients in the Northwest Senatorial district of Benue State. The study purposively selected 103 informal caregivers of orthopaedic patients, comprising 28 (27.2%) males and 75 (72.8%) females. Their ages ranged from 17 to 58 years with a mean age of 33.738 (SD=4.150). Among them, 19 (18.4%) had no formal education, 21 (20.4%) had primary education, 31 (30.1%) had post-primary education, while 32 (31.1%) had tertiary education. In terms of hospitals, 19 (18.4%) were from Blue Cross Hospital Makurdi, 17 (16.5%) were from Benue State University Teaching Hospital Makurdi, 21 (20.4%) were from Federal Medical Centre Makurdi while 46 (44.7%) were from MKAR Rehabilitation Hospital Gboko. The selected participants met the inclusion criteria: 1) They were caregivers who provided care to orthopaedic patients, 2) caregivers who presented with significant symptoms of mental problems, and 3) those who demonstrated the capability to read and write in English.

Measures.

Exposure to trauma- Exposure to trauma was assessed using a 17-item secondary traumatic stress scale (STSS) (Bride et al, 2004). This is a widely used measure designed to specifically assess exposure to secondary traumatic stress among active duty caregivers. This scale assesses the symptoms of intrusion, avoidance, and arousal by caregivers. Items are rated on a 5-point frequency (1= no or never to 5= very often), with high scores indicating secondary traumatic stress. STSS demonstrated a Cronbach's alpha value of .74 for intrusion, .701 for avoidance and .80 for arousal, respectively. The present study found a Cronbach's alpha of 83 for the overall scale, .72, .71, and .81 for intrusion, avoidance and arousal subscales, respectively.

Mental health – Mental health was assessed using the General Health Questionnaire-12 – 12 (GHQ-12) (Goldberg and Williams, 1988). This is a 12-item measure of mental health and more general measures of mental wellbeing. The instrument assessed the severity of mental problems over the past few weeks using a 4-point scale (from 0 to 3). The scale has internal consistency, with a Cronbach's alpha reliability coefficient of .91 for the entire scale. Responses to the instrument can be used in generating scores ranging from 0 to 36, with high scores indicating poor mental health and low scores suggesting sound mental health. The present study obtained an alpha coefficient of .79 for the scale.

Procedure

Potential participants who met the criteria for inclusion were provided with relevant information about the study, the procedure, and the research protocol. Participants were given informed consent and were thereafter assessed using secondary traumatic stress scale (Bride et al., 2004) as well as the general health questionnaire – 12 (GHQ-12) (Goldberg and Williams, 1988). Completed data). Completed data were retrieved and analyzed using Statistical Package for Social Sciences (SPSS) Version-20.

Ethical Consideration

The study was approved by the head of medical unit at the studied hospitals. Apart from the institutional approval, the researchers ensured that voluntary participation was allowed and data collected were treated with absolute confidentiality. Participants duly consented and were provided with the research's purpose, procedure, and processes before being given questionnaires to fill out.

Data Analysis

Multiple regression and univariate analysis of variance were used to test the research hypothesis. The result is presented in Tables 1 and 2.

Table 1: Multiple linear regression showing the influence of exposure to traumatic experience on mental health of caregivers of orthopaedic patients in Benue Northwest.

Variables	R	R^2	df	F	β	t	Sig
Constant	.385	.148	3,99	118.885		15.212	.000
Intrusion					-.388	-15.772	.002
Avoidance					-.287	-16.709	.000
Arousal					-.255	-17.429	.009

Table 1 revealed that exposure to traumatic experiences significantly predicted mental health among caregivers of orthopaedic patients [R= .385, R^2 = .148, F (3, 99) = 118.885, p < .001]. This means that traumatic experience exposure explained 14.8% of the variation in the caregivers' mental health. Looking at individual predictors, intrusion had a significant negative effect on mental health (â = -0.388, t = -15.772, p < .05), suggesting that frequent intrusive thoughts are likely to diminish caregivers' mental wellbeing. Similarly, both avoidance (â = -0.287, t = -16.709, p < .001) and arousal (â = -0.255, t = -17.429, p < .01) also showed significant negative impacts on the mental health of these caregivers.

Table 2. Univariate analysis of variance showing the main and interaction effect of sex and education on mental health of caregivers of orthopaedic patients in Benue State.

Source	Sums of Square	df	Mean Square	F	Sig.	eta
Corrected model	1508.289	6	251.382	9.656	.000	.376
Intercept	20045.731	1	20045.731	770.001	.000	.889
Sex	.287	1	.287	.011	.917	.000
Education	957.494	3	319.165	12.260	.000	.277
Sex * Education	770.668	2	385.334	14.802	.000	.236
Error	2499.206	96	26.033			
Total	33132.000	103				

The findings from Table 2 revealed that sex did not have a significant main effect on the mental health of orthopaedic caregivers [F (1, 96) = .011, p > .05], with a negligible effect size of .000. This suggests that there is no meaningful difference in mental health between male and female caregivers. This is supported by the close mean scores: males (M = 17.39, SD = 7.63) and females (M = 16.60, SD = 5.72). In contrast, education level showed a significant influence on mental health [F (3, 96) = 12.260, p < .001], with a notable effect size of .277. Caregivers with primary education reported higher mental health scores (M = 19.38, SD = 6.30), followed closely by those with post-primary education (M = 19.36, SD = 6.13). Caregivers with tertiary education had lower scores (M = 15.00, SD = 4.73), and those with formal education had the lowest (M = 12.90, SD = 6.05). Moreover, the interaction between sex and education was statistically significant [F(2, 96) = 14.802, p < .001], indicating that the relationship between education and mental health differs based on sex. Therefore, hypothesis three was confirmed by the data.

Table 3. Summary of Scheffe Test showing the mean difference of education on mental health ofg caregivers of orthopaedic patients in Benue State.

Education (i)	Education (j)	Mean Difference (i-j)	Standard Error	Sig.
	Primary	-6.4862	1.6155	.002
No Formal	Post-Primary	-6.4601	1.4866	.001
	Tertiary	-2.1053	1.4777	.569
	No Formal	6.4862	1.6155	.002
Primary	Post primary	.0261	1.4420	.000
	Tertiary	4.3810	1.4329	.030
	No Formal	6.4601	1.4866	.001
Post-primary	Primary	-.0261	1.4420	.000
	Tertiary	4.3548	1.2858	.012
	No Formal	2.1053	1.4777	.569
Tertiary	Primary	-4.3810	1.4329	.030
	Post-Primary	-4.3548	1.2858	.012

The result presented in Table 3 shows the post-hoc analysis using Scheffe test of the effect of education on mental health among caregivers. The result of the mean difference indicated that caregivers who had no formal education differed significantly from those who had primary education (MD=-6.486, p<.01), and from those who had post-primary education (MD=-6.460, p<.001) but did not differ significantly from those who had tertiary education (MD=-2.105, p>05). Also, those who had primary education differed significantly from those who had post-primary education (MD=.026, p<.001), and those who had tertiary education (MD=4.381, p<.05). Those who had post-primary education differed from those who had tertiary education (MD=4.355, p<.05).

Discussion

This study examined the psycho-demographic factors as predictors of mental health among caregivers of orthopaedic patients in Benue northwest. Result indicated that trauma-related symptoms are associated with poorer mental health. Overall, these findings support hypothesis one, confirming that exposure to traumatic experiences adversely affects the mental health of orthopaedic caregivers. The findings of this study corroborate those of the Bachmann (2020), Kingston et al. (2015) and World Health Organization (2013) that exposure to trauma heightens vulnerability to poor mental health among caregivers, including those of orthopaedic patients.

The study was necessitated owing to the dearth of empirical findings on the factors that lead to high mental health problems among informal caregivers. Consequently, it was hypothesized that exposure to traumatic experience, age, sex and educational attainment will significantly independently and jointly predict mental health problems among caregivers of orthopaedic patients. Results revealed independent prediction of mental health by exposure to traumatic experience. While there is no significant effect of sex on mental health, present findings on sex contradicts these authors who also reported sex differences in mental health among caregivers of orthopaedic patients. Wilson and Clark (2022) analysed sex differences in caregiver stress among palliative care providers in Australia. Among 180 caregivers (55% female, mean age 45), women reported 30% higher stress levels, while male caregivers showed better coping skills. It is recommended that, irrespective of sex, treatment for mental health problems among caregivers of orthopaedic patients should incorporate trauma focused component with particular attention to caregivers with low educational attainment to improve symptoms and enhance productivity.

The main and interactive effects of educational attainment and sex on mental health were confirmed. As expected, the result on exposure to traumatic experience revealed a facilitating effect, such that caregivers with higher exposure to traumatic experience were the ones with severe mental health problems. On the other hand, educational attainment was associated with mental health, as those with tertiary level of education experienced less symptoms of mental health irrespective of sex. Overall, these results imply that caregivers who are exposed to traumatic experience who have lower educational attainment will experience mental health problems irrespective of their sex. This result is in agreement of Johnson and Smith (2020) who examined the relationship between education and mental health among caregivers of dementia patients in the United States. A cross-sectional study of 200 caregivers (60% female, mean age 48) revealed that those with higher education levels reported 25% lower levels of anxiety and depression compared to those with less education. Also, Okafor and Nwosu (2020) analyzed the role of age and education in mental health outcomes among caregivers of orthopedic patients in Nigeria. Using a sample of 160 caregivers (55% female, mean age 42), the study found that caregivers with higher education experienced 40% fewer depressive symptoms, while older caregivers reported higher overall well-being.

The present study is not without limitations. First, the study was limited to a cross-sectional investigation and cannot explain causality or relationship changes over time. Secondly, the self-report measure could have made it possible for faking, affecting the study's validity. Despite those mentioned above, the study has highlighted the role of exposure to traumatic experience and demographic factors in caregivers with mental health problems. It could guide clinicians

to recognize and incorporate trauma as a significant component in managing mental health problems among caregivers of orthopaedic patients recommending integrating education-focused interventions into caregiver support programs. Healthcare providers and support organizations to implement trauma-informed care strategies. Orthopaedic patients' caregivers should be educated about the psychological effects of trauma and offered resources for coping with stress and trauma. This approach will help caregivers better understand and manage the emotional and psychological challenges associated with caregiving.

Suggestions for Future Research

Researchers should explore more factors that can possibly influence caregivers' mental health and a mixed method approach should be used to examine psycho-demographic factors and mental health of caregivers of orthopaedic patients.

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