

Associated Factors of Post-Traumatic Stress Disorder and Depressive Disorder Symptoms among Healthcare Workers in the Cameroon Baptist Convention Health System

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Abstract

Background: Healthcare workers (HCWs) in conflict-affected, low-resource settings face elevated occupational exposure to trauma, yet the factors that drive post-traumatic stress disorder (PTSD) and depressive symptoms in this population remain poorly characterised in Cameroon. This study determined the associated factors of PTSD and depressive disorder symptoms among HCWs in the Cameroon Baptist Convention Health System (CBHS).

Methods: A cross-sectional analytic survey was conducted among 300 HCWs at Mbingo Baptist Hospital (MBH) and Nkwen Baptist Hospital (NBH), drawn from an initial pool of 350 staff members approached (response rate: 85.7%), using purposive and quota sampling, stratified by professional cadre. PTSD and depressive symptoms were assessed using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) and the Beck Depression Inventory-II (BDI-II), alongside a socio-demographic and occupational questionnaire. Univariate and multivariate logistic regression identified factors associated with the presence of each disorder, reported as adjusted odds ratios (ORs) with 95% confidence intervals (CIs).

Results: The prevalence of PTSD was 52.7% and of depression was 57.7%. Cumulative trauma exposure was the strongest predictor of both PTSD (OR = 2.65, 95% CI 1.90–3.50, $p < .001$) and depression (OR = 2.30, 95% CI 1.75–3.05, $p < .001$). Nurses and midwives carried significantly higher odds of PTSD (OR = 2.25) and depression (OR = 2.05) than allied health staff. Perceived leadership support was protective against PTSD (OR = 0.48) and depression (OR = 0.52), as was each additional year of professional experience (OR = 0.85 and 0.90, respectively). Female gender independently predicted depression (OR = 1.70, $p = .018$) but not PTSD ($p = .420$). Hospital site, marital status, and education level were not significant predictors of either disorder.

Conclusion: Occupational and organisational variables, particularly cumulative trauma exposure, frontline clinical role, and the absence of supportive leadership, are more powerful drivers of psychological morbidity among Cameroonian HCWs than demographic background. Institutional strategies that reduce cumulative trauma exposure, strengthen trauma-informed leadership, and target frontline nursing staff are likely to yield the greatest reduction in PTSD and depression risk.

Keywords: *post-traumatic stress disorder; depression; healthcare workers; associated factors; logistic regression; Cameroon; sub-Saharan Africa*

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1. Introduction

Healthcare workers occupy a uniquely hazardous psychological position. They are routinely exposed to patient suffering, critical emergencies, and death, often while working under conditions of staff shortage, limited resources, and organisational strain. Globally, the cumulative weight of this exposure has translated into substantial rates of post-traumatic stress disorder (PTSD) and depression among clinical staff. A systematic review of 65 studies found that up to 71.2% of HCWs reported stress, 52.4% reported depression, and 20.2% reported PTSD, with high workload, inadequate protective resources, and weak organisational support identified as the principal contributing factors (Sanghera et al., 2020). Among 709 United Kingdom HCWs, Greenberg et al. (2020) similarly found that 45% met the threshold for probable PTSD or severe depression, driven largely by moral injury, insufficient managerial support, and repeated exposure to death. The World Health Organization (2021) has estimated that 23% of medical professionals suffer from depression and 39% from PTSD, while a meta-analysis of more than 33,000 HCWs reported pooled rates of 22.8% for depression and 38.9% for PTSD (Pappa et al., 2020).

The burden is, if anything, more severe in sub-Saharan Africa, where systemic resource constraints compound occupational trauma. In Nigeria, Falade et al. (2022) found that 45.4% of HCWs met criteria for clinically significant depression and 30% screened positive for PTSD, with excessive workload, limited organisational support, and stigma against help-seeking identified as the strongest predictors. In South Africa, Naidoo et al. (2020) reported that 41% of HCWs had depression, 33.1% had PTSD symptoms, and risk was associated with exposure to high patient mortality, inadequate personal protective equipment, and extended working hours. In Cameroon specifically, Fotsing et al. (2022) surveyed 394 HCWs across public and faith-based hospitals and found that 37% reported depressive symptoms and 21% met PTSD criteria, with exposure to medical emergencies, high workload, limited psychiatric support, and cultural stigma identified as the key associated factors. At Laquintinie Hospital in Douala, an even more extreme picture emerged, with 60.3% of HCWs exhibiting PTSD symptoms and 81.4% presenting with depressive symptoms (Ngasa et al., 2021).

Despite this accumulating evidence, the factors that place Cameroonian HCWs at risk of PTSD and depression remain inadequately characterised, particularly within faith-based health systems operating in regions affected by ongoing civil conflict. The Cameroon Baptist Convention Health System (CBHS) operates two of the principal referral and regional hospitals in the conflict-affected North-West Region: Mbingo Baptist Hospital (MBH), a 300-bed tertiary referral and teaching hospital, and Nkwen Baptist Hospital (NBH), a smaller regional facility, where staff face the combined burden of routine clinical trauma and chronic political insecurity. Identifying which individual, occupational, and organisational factors most strongly predict PTSD and depression in this setting is a necessary precursor to designing targeted, resource-appropriate mental health interventions.

This study therefore determined the factors associated with the presence of PTSD and depressive disorder symptoms among HCWs in the CBHS, using standardised diagnostic screening and multivariate logistic regression to quantify the relative contribution of demographic, occupational, and organisational predictors.

This study was guided primarily by Trauma Theory, which conceptualises PTSD and depression as products of the disruption that traumatic exposure causes to an individual's psychological and physiological regulatory systems (Herman, 1992; van der Kolk, 2014). A central tenet of this framework is that the effects of trauma are cumulative rather than fixed: repeated or prolonged exposure to threat, loss, and suffering progressively overwhelms existing coping capacity, producing a dose-response relationship in which each additional traumatic encounter further elevates symptom risk. This proposition directly informed the inclusion of cumulative trauma exposure count as a candidate predictor in the regression models and provides the principal theoretical lens through which the resulting dose-response findings are interpreted.

A secondary, complementary lens was drawn from Social Cognitive Theory, specifically Bandura's construct of perceived self-efficacy as it applies to post-traumatic recovery (Benight & Bandura, 2004). This framework proposes that an individual's belief in their capacity to manage trauma-related demands moderates the psychological impact of exposure, and that this belief is shaped by external resources such as organisational support and accumulated professional mastery. Self-efficacy theory therefore offered a basis for anticipating that occupational and organisational variables, specifically perceived leadership support and years of professional experience, would emerge as protective factors, by virtue of strengthening workers' confidence in their ability to withstand and recover from occupational trauma. Together, these two frameworks structured the selection of predictors entered into the logistic regression models: trauma-theory-derived exposure and role variables as risk factors, and self-efficacy-relevant organisational and experiential variables as protective factors.

2. Methods

2.1 Design and setting

This paper reports the cross-sectional, predictor-focused component of a larger quasi-experimental study evaluating an intervention for PTSD and depression among HCWs in the CBHS. The analysis presented here corresponds to the baseline diagnostic screening phase, in which all eligible HCWs at two CBHS facilities were screened for PTSD and depression and the resulting cross-sectional data were used to identify associated factors. The study was conducted at MBH and NBH, both located in the North-West Region of Cameroon. Both facilities offer established mental health services and operate in the same conflict-affected environment, allowing comparison of risk profiles between a tertiary referral hospital and a smaller regional facility.

2.2 Population and sampling

The target population comprised HCWs engaged in direct patient care at MBH and NBH, including medical doctors, nurses and midwives, pharmacists, radiographers, physiotherapists, and other allied health staff. A combination of purposive and quota sampling was used: purposive sampling identified HCWs who screened positive on standardised diagnostic instruments, while quota sampling ensured proportional representation across professional

cadres (doctors, 25%; nurses/midwives, 60%; allied health staff, 15%), reflecting the typical composition and risk distribution of frontline clinical workforces. Of 350 questionnaires distributed, 300 were returned and usable, yielding a response rate of 85.7%. These 300 respondents constitute the analytic sample for the present study.

2.3 Measures

A researcher-developed socio-demographic and occupational questionnaire captured age, gender, marital status, education level, professional category, department, years of professional experience, cumulative count of distinct traumatic clinical events experienced, and perceived leadership support for mental health. PTSD symptoms were assessed using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), a structured clinical interview and the gold-standard diagnostic measure for PTSD, evaluating the 20 DSM-5 symptoms across the intrusion, avoidance, negative cognition/mood, and arousal/reactivity clusters; presence of PTSD required endorsement of the requisite number of symptoms per cluster at a severity rating of 2 or higher, with total severity scored from 0 to 80. Depressive symptoms were assessed using the Beck Depression Inventory-II (BDI-II), a 21-item self-report instrument with total scores ranging from 0 to 63; a score of 14 or above (mild to severe) was classified as the presence of depression, and scores of 0–13 as the absence of depression (minimal symptoms).

2.4 Statistical analysis

Descriptive statistics (frequencies and percentages) characterised the socio-demographic profile of respondents and the prevalence of PTSD and depression by hospital site. Associated factors were identified using univariate followed by multivariate logistic regression, with the binary presence/absence of PTSD and depression, respectively, as outcomes, and trauma exposure count, professional role, leadership support, years of experience, age, gender, marital status, education level, and hospital site entered as candidate predictors. Adjusted odds ratios with 95% confidence intervals are reported; statistical significance was set at $p < .05$. Analyses were conducted in SPSS version 27.

2.5 Ethical considerations

The study received institutional ethical approval and was conducted in accordance with the principles of the Declaration of Helsinki. All participants provided written informed consent after being briefed on the study purpose, procedures, and their right to withdraw without penalty. Confidentiality was maintained through coded identifiers, secure password-protected data storage, and aggregate reporting of findings. Participants who showed signs of psychological distress during screening were offered referral to mental health support services.

3. Results

3.1 Sample characteristics

Table 1 presents the socio-demographic and occupational characteristics of the 300 HCWs screened. Consistent with the quota sampling frame, nurses and midwives constituted the majority of the sample (60.0%), followed by medical doctors (25.0%) and allied health staff (15.0%). The sample was predominantly female (71.0%) and relatively young, with 39.0% aged 21–30 years and 40.0% aged 31–40 years. Over two-fifths of respondents (41.0%) had fewer than five years of professional experience. Most respondents were married or cohabiting (51.0%), and just under half held a diploma or certificate as their highest qualification (47.3%).

Table 1: Socio-demographic and occupational characteristics of respondents (N = 300)

Characteristic	Category	n	%
Professional category	Medical Doctor	75	25.0
	Nurse / Midwife	180	60.0
	Allied Health Staff	45	15.0
Gender	Female	213	71.0
	Male	87	29.0
Age group (years)	21–30	117	39.0
	31–40	120	40.0
	41+	63	21.0
Years of experience	< 5 years	123	41.0
	6–10 years	97	32.3
	11+ years	80	26.7
Marital status	Single	132	44.0
	Married / Cohabiting	153	51.0
	Divorced / Widowed	15	5.0
Education level	Diploma / Certificate	142	47.3
	Bachelor's degree	120	40.0
	Postgraduate degree	38	12.7

Note. Percentages are calculated within the total screened sample (N = 300).

3.2 Prevalence of PTSD and depression

Table 2 shows the prevalence of PTSD and depression by hospital site. Overall, 52.7% of respondents screened positive for PTSD and 57.7% for depression. Prevalence was broadly comparable across the two facilities (PTSD: 51.5% at MBH versus 54.1% at NBH; depression: 55.8% at MBH versus 60.0% at NBH), suggesting that the psychological burden reflects systemic occupational hazards shared across the CBHS rather than facility-specific conditions.

Table 2: Prevalence of PTSD and depression by hospital site (N = 300)

Hospital	Disorder	n positive	N screened	Prevalence (%)
MBH	PTSD	85	165	51.5
	Depression	92	165	55.8
NBH	PTSD	73	135	54.1
	Depression	81	135	60.0
Total	PTSD	158	300	52.7
	Depression	173	300	57.7

Note. MBH = Mbingo Baptist Hospital; NBH = Nkwen Baptist Hospital.

3.3 Predictors of PTSD

Multivariate logistic regression identified five significant predictors of PTSD (Table 3). Cumulative trauma exposure was the strongest predictor: for every additional type of traumatic clinical event experienced, respondents were 2.65 times more likely to screen positive for PTSD (OR = 2.65, 95% CI 1.90–3.50, $p < .001$). Professional role was also significant, with nurses and midwives 2.25 times more likely to screen positive than allied health staff (95% CI 1.25–4.10, $p = .008$). Two factors were protective: perceived leadership support reduced the odds of PTSD by 52% (OR = 0.48, 95% CI 0.32–0.75, $p = .002$), and each additional year of professional experience reduced the odds by 15% (OR = 0.85, 95% CI 0.78–0.94, $p = .010$). Age was also a weak but significant protective factor (OR = 0.92, $p = .035$). Gender, marital status, education level, and hospital site were not significant predictors of PTSD (all $p > .05$).

Table 3: Multivariate logistic regression: predictors of PTSD presence (N = 300)

Predictor	Category	OR	95% CI	p
Trauma exposure count	Per unit increase	2.65	1.90–3.50	< .001*
Professional role	Nurse/Midwife (Ref: Allied Health)	2.25	1.25–4.10	.008*
Leadership support	Supportive (Ref: Neutral/Unsupportive)	0.48	0.32–0.75	.002*
Years of experience	Per year	0.85	0.78–0.94	.010*
Age	Per year	0.92	0.86–0.99	.035*
Gender	Female (Ref: Male)	1.15	0.80–1.70	.420
Marital status	Married (Ref: Single)	0.96	0.62–1.45	.850
Education level	Postgraduate (Ref: Diploma)	1.08	0.72–1.60	.680
Hospital site	MBH (Ref: NBH)	0.99	0.68–1.42	.950

*Note. OR = odds ratio; CI = confidence interval. * $p < .05$.*

3.4 Predictors of depression

Table 4 presents the predictors of depression. As with PTSD, trauma exposure count was the strongest predictor (OR = 2.30, 95% CI 1.75–3.05, $p < .001$), followed by professional role, with nurses and midwives 2.05 times more likely to screen positive than allied health staff (95% CI 1.12–3.75, $p = .012$). Leadership support was again protective, reducing the odds of depression by 48% (OR = 0.52, 95% CI 0.38–0.78, $p = .004$), as was years of experience, which reduced the odds by 10% per additional year (OR = 0.90, 95% CI 0.82–0.98, $p = .025$). Notably, gender emerged as a significant predictor of depression — but not of PTSD — with female HCWs 1.70 times more likely to screen positive than male HCWs (95% CI 1.15–2.65, $p = .018$). Marital status, education level, and hospital site were not significant predictors of depression (all $p > .05$).

Table 4: Multivariate logistic regression: predictors of depression presence (N = 300)

Predictor	Category	OR	95% CI	p
Trauma exposure count	Per unit increase	2.30	1.75–3.05	< .001*
Professional role	Nurse/Midwife (Ref: Allied Health)	2.05	1.12–3.75	.012*
Leadership support	Supportive (Ref: Neutral/Unsupportive)	0.52	0.38–0.78	.004*
Gender	Female (Ref: Male)	1.70	1.15–2.65	.018*
Years of experience	Per year	0.90	0.82–0.98	.025*
Marital status	Married (Ref: Single)	0.98	0.65–1.55	.880
Education level	Postgraduate (Ref: Diploma)	1.15	0.78–1.68	.550
Hospital site	MBH (Ref: NBH)	1.05	0.75–1.48	.895

Note. OR = odds ratio; CI = confidence interval. * $p < .05$.

4. Discussion

This study set out to determine the factors associated with PTSD and depressive symptoms among HCWs in the CBHS. Five consistent findings emerged: cumulative trauma exposure and frontline nursing role increased risk for both disorders; leadership support and years of professional experience were protective against both disorders; and female gender selectively predicted depression but not PTSD. Hospital site did not differentiate risk, indicating that the psychological burden is institutionalised across the CBHS rather than confined to a single facility. Consistent with the dual theoretical framework guiding this study, the risk factors identified map onto the cumulative-exposure mechanism proposed by Trauma Theory, while

the protective factors align with the self-efficacy mechanism proposed by Social Cognitive Theory, suggesting that both frameworks are needed to fully account for the pattern of findings.

Cumulative trauma exposure was, by a wide margin, the strongest predictor identified, more than doubling the odds of both PTSD and depression. This dose-response pattern is consistent with Trauma Theory, which holds that repeated exposure to threat and loss progressively erodes psychological and physiological homeostasis, producing more complex and persistent symptom presentations than single-incident trauma. The finding mirrors the systematic review by Sanghera et al. (2020), in which the bulk of psychological distress among HCWs globally traced back to frequent exposure to death and high workload, and it echoes the Cameroonian findings of Fotsing et al. (2022), who identified exposure to medical emergencies as a primary driver of PTSD among HCWs in public and faith-based facilities. Within the CBHS, where staff face not only the routine hazards of clinical practice but also the chronic threat environment associated with the region's ongoing civil conflict, this cumulative burden plausibly explains why prevalence in the present sample (52.7% PTSD, 57.7% depression) so substantially exceeds international benchmarks.

Professional role also carried significant weight: nurses and midwives were more than twice as likely as allied health staff to screen positive for either disorder. Nurses provide the most prolonged, direct, and emotionally demanding patient contact of any cadre, and the literature consistently identifies this group as bearing a disproportionate share of psychological morbidity. Rice et al. (2023), analysing the United States HERO registry, found that nurses reported a significantly higher PTSD symptom burden than physicians, while Pappa et al. (2020) reported consistently higher depressive symptom levels among nurses across global samples. The concentration of risk in this cadre, which also constitutes the numerical majority of the CBHS clinical workforce, has direct implications for where institutional mental health resources should be targeted.

Perceived leadership support emerged as the most actionable protective factor identified in this study, reducing the odds of PTSD by roughly half and of depression by nearly half. This finding situates organisational culture, rather than only individual resilience, as a central lever for mental health outcomes. It is consistent with Greenberg et al. (2020), who identified insufficient managerial support and moral injury as key predictors of the 45% PTSD/severe depression prevalence among UK HCWs, and with broader evidence that supportive supervision and adequate staffing buffer the psychological impact of occupational stress. Within Cognitive Behavioral Theory, supportive leadership can be understood as strengthening workers' sense of self-efficacy, enabling them to interpret stressful clinical events through a less catastrophising cognitive lens.

Years of professional experience conferred an additional protective effect, with each additional year reducing the odds of both disorders. This is consistent with evidence that seasoned clinicians develop more robust coping repertoires and a degree of professional emotional distancing that junior staff have not yet acquired (Rice et al., 2023; Que et al., 2020). The corresponding vulnerability of younger, less experienced staff — who, in this sample, represented a substantial share of the workforce — points to a clear institutional priority: structured mentorship and early-career psychological support could meaningfully narrow this risk gap.

The gender-specific finding for depression, but not PTSD, is noteworthy. Female HCWs were 70% more likely than male HCWs to screen positive for depression, while gender showed no association with PTSD risk. This pattern suggests that the traumatic clinical environment of the CBHS affects PTSD risk relatively uniformly across genders, while depression risk is shaped by additional gendered burdens, plausibly including the combined weight of professional duties and domestic and caregiving responsibilities. Comparable findings have been reported in China, where Lai et al. (2020) found that being female was independently associated with greater depression and distress severity among 1,257 HCWs, and in Nigeria, where Falade et al. (2022) reported that gender and professional role jointly predicted higher psychological morbidity.

The absence of a significant effect for hospital site, marital status, or education level is itself informative. It indicates that the occupational hazards driving PTSD and depression in the CBHS— cumulative trauma exposure, frontline role, and organizational climate— operate relatively uniformly across personal and institutional background characteristics. In practical terms, this means that interventions targeted narrowly at a single facility, demographic subgroup, or credentialing tier are unlikely to address the systemic nature of the risk; system-wide strategies are required.

Taken together, these findings depict a composite high-risk profile within the CBHS: a relatively junior nurse or midwife with high cumulative trauma exposure and low perceived leadership support, with female staff at additional risk of depression specifically. This profile is consistent with, but more severe than, comparable findings from elsewhere in sub-Saharan Africa (Falade et al., 2022; Naidoo et al., 2020) and aligns closely with prior Cameroonian evidence from Laquintinie Hospital in Douala (Ngasa et al., 2021), reinforcing that Cameroonian HCWs occupy the upper end of the global distribution of occupational psychological morbidity.

5. Conclusion

Among healthcare workers in the Cameroon Baptist Convention Health System, cumulative occupational trauma exposure and frontline nursing role were the principal drivers of both PTSD and depressive symptoms, while leadership support and professional experience served as significant protective buffers. Female gender carried an additional, disorder-specific risk for depression. Demographic and institutional variables that are typically assumed to differentiate risk— marital status, education level, and hospital site— did not do so in this population, underscoring that the psychological burden facing Cameroonian HCWs is predominantly occupational and organizational rather than personal in origin. These findings provide an empirical basis for prioritising trauma exposure mitigation, leadership development, and frontline nursing support within CBHS mental health policy.

6. Implications for Practice and Policy

Several actionable implications follow from these findings. First, institutions should prioritise mechanisms that reduce cumulative trauma exposure among frontline staff, such as scheduled rotation out of high-acuity units (e.g., emergency, surgery, paediatrics) to limit the density of repeated exposure to patient death and critical emergencies. Second, given the magnitude of the protective effect of leadership support, trauma-informed leadership training for unit managers and supervisors should be considered a priority, low-cost intervention. Third, nurses and midwives, who carry the highest risk and the largest share of the workforce, warrant

dedicated psychological support tracks rather than generic, profession-blind wellness programming. Fourth, structured mentorship pairing junior with senior staff could accelerate the development of the coping resources that years of experience appear to confer naturally. Finally, depression screening and support programming should explicitly account for the additional burden reported by female staff, rather than assuming risk is gender-neutral, as it appears to be for PTSD.

7. Limitations and Recommendations for Further Research

This study has several limitations. First, the cross-sectional design precludes causal inference; reported associations, including the apparent protective effect of leadership support, should be interpreted as predictive rather than causal. Second, both PTSD and depression status, as well as trauma exposure and leadership support, were derived from self-report instruments administered at a single time point, introducing potential recall and social desirability bias. Third, the study was confined to two faith-based hospitals in a single conflict-affected region, which may limit the generalisability of the findings to public, private, or secular healthcare facilities elsewhere in Cameroon. Future research should employ longitudinal designs capable of testing whether leadership support and experience causally buffer symptom development over time, extend sampling to a wider range of institutional types and regions, and explore qualitatively how Cameroonian HCWs themselves characterise the organisational and occupational sources of their psychological distress.

Declarations

Ethics approval: This study was approved by the relevant institutional review board and conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

Conflict of interest: The authors declare no conflict of interest.

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Data availability: De-identified data are available from the corresponding author upon reasonable request.

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