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Work-Related Traumatic Experiences And Alcohol Use As Predictors Of Sexual Risk Behaviours Among Military Personnel In Nigeria

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ABSTRACT

Military personnel constitute a high-risk population for sexual risk behaviours (SRBs) due to occupational stressors, including exposure to work-related trauma and elevated alcohol use. These dynamics remain understudied within the Nigerian military context. This study examined work-related trauma and alcohol use as predictors of SRBs, and tested alcohol use as a moderator of the trauma-SRB relationship, among Nigerian infantry soldiers. A cross-sectional survey was administered to a purposive sample of 292 active-duty infantry soldiers at Jaji Military Cantonment, Kaduna State (92.8% male; M age = 31.96, SD = 7.83), using the Combat Exposure Scale, the Alcohol Use Disorders Identification Test, and the Sexual Risk Behaviour Scale. Hierarchical regression and Hayes' PROCESS Macro (Model 1) were used for analysis. Work-related trauma significantly predicted SRBs when entered alone, but this effect became non-significant once alcohol use was added to the model. Alcohol use was the strongest predictor of SRBs overall. Alcohol use also significantly moderated the trauma-SRB relationship: trauma was associated with SRBs only among soldiers reporting alcohol use above the moderate-risk threshold, corresponding to roughly the top quarter of the sample. Alcohol use, rather than trauma exposure alone, appears to be a key factor linking occupational trauma to sexual risk-taking in this population. Integrated interventions combining trauma-informed care with alcohol misuse screening, rather than parallel or trauma-only programming, are recommended for the Nigerian military.

Keywords: Alcohol use, infantry soldiers, military psychology, Nigerian Army, sexual risk behaviours, work-related trauma.

Introduction

Sexual risk behaviours (SRBs), including inconsistent condom use, multiple or concurrent sexual partnerships, transactional sex, and sexual activity under the influence of alcohol, remain important contributors to the global burden of sexually transmitted infections, including HIV/AIDS, as well as unintended pregnancies (Cho & Yang, 2023; Scott-Sheldon et al., 2016; Woolf-King & Maisto, 2011). Although these behaviours occur across populations, military personnel represent a uniquely vulnerable occupational group because of the combined influence of prolonged separation from families, repeated deployments, operational stress, and exposure to traumatic events (Bryan et al., 2015; Kelley et al., 2019). Evidence from military settings across the Republic of Congo, Ethiopia, and Sri Lanka consistently shows that service members report higher rates of hazardous alcohol consumption and unsafe sexual practices than comparable civilian populations, with implications for both force readiness and public health (Tran et al., 2019; Weldesenbet et al., 2018; Jayasinghe et al., 2025).

The Nigerian military is no exception; if anything, the evidence base here is older and more consistent than is often acknowledged. Since the early 2000s, studies among Nigerian Navy personnel (Nwokoji & Ajuwon, 2004), soldiers in Ilorin (Hussain & Akande, 2009), female personnel in southwestern military cantonments (Essien et al., 2010), and soldiers more broadly (Okulate et al., 2008) have documented persistently low condom use, multiple partnerships, and continued patronage of commercial sex workers. More recently, Adetoro et al. (2024) found that roughly four in five personnel sampled from two Ibadan barracks reported at least one form of SRB, with male and unmarried soldiers at particular risk. This pattern has held for two decades across service branches, geopolitical zones, and study designs, suggesting a durable occupational vulnerability rather than an isolated finding.

What has changed is the operational backdrop against which this vulnerability now plays out. The Armed Forces remain engaged in prolonged counterinsurgency operations against Boko Haram and the Islamic State West Africa Province, alongside anti-banditry, anti-kidnapping, and internal security operations. Studies of Nigerian Army combatants deployed to the North East report significant associations between combat exposure and posttraumatic stress symptoms (Dami et al., 2018), while combat exposure, deployment

frequency, and length of service have each been linked to elevated psychological distress among non-commissioned officers (Dagona, 2022). Deployment experiences and moral injury have also been shown to predict sexual performance problems among Nigerian Army veterans, directly connecting combat trauma to sexual outcomes within this population (Aigboje et al., 2024). Unlike much of the Western literature, which focuses on veterans after deployment, Nigerian soldiers experience repeated deployment cycles while remaining actively engaged in operations, plausibly compounding the cumulative effects of occupational trauma on the behaviours documented above.

Infantry personnel constitute the frontline combat arm of the Nigerian Army, typically first to engage hostile forces during operations. Consequently, they experience greater exposure to direct combat, injury, death of colleagues, and life-threatening situations than personnel in administrative or support roles (Keane et al., 1989; Adler et al., 2011; Graham et al., 2019). These occupational realities heighten their vulnerability to trauma-related psychological difficulties and associated behavioural outcomes, making infantry soldiers an appropriate population for investigating the pathways linking traumatic experience with health-risk behaviour.

Work-related traumatic experiences refer to exposure to actual or threatened death, serious injury, or other psychologically distressing events encountered in the course of occupational duty (American Psychiatric Association, 2022). Military service differs from most occupations in that such exposure is often inherent to the job itself: soldiers routinely witness death and severe injury, survive ambushes and explosions, and lose colleagues while operating under persistent threat to their own lives. Repeated exposure of this kind can overwhelm coping capacity, producing psychological distress and behavioural change that extends beyond the operational environment (Britt et al., 2016; Ogbole, 2021; Okulate & Jones, 2006).

Growing evidence suggests that trauma exposure contributes to engagement in risky sexual behaviour through emotional dysregulation, impaired judgement, avoidance coping, and increased sensation-seeking. Among military veterans, elevated posttraumatic stress symptoms have been linked to greater alcohol use and risky sexual behaviour (Tu et al., 2024), while trauma exposure has similarly been associated with hypersexual behaviour among young adults (Chakravarty & Imran, 2024), disrupted intimacy and sexual coping

among veterans (Decker et al., 2020), and elevated sexual risk among adolescents with co-occurring trauma and substance use (Lahoti et al., 2024). Findings are not fully consistent, however: some studies find that trauma symptom severity loses predictive value once alcohol use and peer influence are accounted for (Tu et al., 2024; Banks et al., 2022), suggesting that trauma alone may not fully explain SRB engagement, and pointing toward the need to examine other reinforcing mechanisms.

Recent work lends further support to this mechanism. Among survivors of military sexual trauma, posttraumatic cognitions have been shown to mediate the link between PTSD symptom severity and alcohol use (Blais et al., 2025), and to relate more strongly to sexual risk-taking specifically among male service members and veterans (Vannini et al., 2026). Although these findings arise from a distinct trauma exposure to the combat-related trauma examined here, they reinforce the broader argument that trauma-linked cognitive and behavioural pathways, rather than trauma exposure alone, warrant closer examination in relation to SRBs.

Alcohol use represents a second, closely related risk factor. It functions both as an independent predictor of SRBs, impairing attention, reducing inhibitory control, and increasing impulsivity during sexual decision-making (Steele & Josephs, 1990; Scott-Sheldon et al., 2016; Cho & Yang, 2023), and, in African military and civilian samples, as a robust correlate of transactional sex and multiple partnerships (Tran et al., 2019; Carels et al., 2023). In the Nigerian military, alcohol misuse is highly prevalent and closely tied to combat exposure (Ijomata & Lasebikan, 2016), positioning alcohol as a plausible bridge between occupational trauma and sexual risk-taking rather than a merely parallel outcome. Consistent with this bridging role, problematic alcohol use among U.S. Army Reserve and National Guard soldiers has recently been linked to broader risk-taking tendencies and co-occurring mental health symptomatology (Arif et al., 2025), lending further support to the view that alcohol use in military populations is embedded within trauma-related distress.

This dual role suggests alcohol use may not only follow trauma but shape how trauma translates into sexual risk-taking. The Self-Medication Hypothesis proposes that individuals experiencing persistent trauma-related distress use alcohol to relieve intrusive thoughts, anxiety, and hyperarousal (Khantzian, 1997; Hawn et al., 2020; Haller & Chassin, 2014), while Alcohol Myopia Theory

holds that intoxication narrows attention to immediately salient cues, such as sexual gratification, at the expense of distal consequences like infection risk (Steele & Josephs, 1990). Together, these perspectives suggest that trauma may encourage alcohol use as a coping response, while alcohol simultaneously impairs the judgement needed to avoid risky sexual encounters, indicating that alcohol use may moderate, rather than simply accompany, the trauma-SRB relationship.

Despite this growing evidence base, four gaps remain. First, most available studies have been conducted in Western military populations, particularly among United States veterans, limiting their applicability to active-duty personnel in African military contexts. Second, African studies have largely examined HIV prevalence or alcohol use in isolation rather than the interplay between trauma, alcohol, and sexual risk behaviour. Third, very few studies have tested alcohol use as a moderating mechanism through which trauma translates into SRBs. Finally, despite two decades of Nigerian evidence on military SRBs and a growing, separate literature on combat-related trauma, empirical work linking the two within a single explanatory model remains scarce, particularly among infantry soldiers sustaining repeated exposure through counterinsurgency operations.

The present study addresses these gaps by examining whether work-related traumatic experiences predict SRBs among Nigerian infantry soldiers, whether alcohol use independently predicts SRBs, and whether alcohol use moderates the association between trauma exposure and SRBs. Findings are expected to contribute to military psychology by extending evidence from African military populations, while offering practical implications for trauma-informed mental health services, alcohol misuse prevention programmes, and sexual health interventions within the Nigerian Armed Forces. Three hypotheses guided the study:

H1: Work-related traumatic experiences will significantly predict sexual risk behaviours among infantry soldiers in Kaduna.

H2: Alcohol use will significantly predict sexual risk behaviours among infantry soldiers in Kaduna.

H3: Alcohol use will significantly moderate the relationship between work-related traumatic experiences and sexual risk behaviours among infantry soldiers in Kaduna.

Theoretical Framework

This study is grounded in two complementary theoretical frameworks that together explain how work-related traumatic experiences and alcohol use converge to produce sexual risk-taking.

The Cognitive-Behavioural Theory of Trauma (Beck, 1976; Ehlers & Clark, 2000) provides the primary framework for understanding the link between traumatic exposure and SRBs. According to this framework, traumatic experiences distort cognitive processing by generating maladaptive schemas and automatic negative thoughts centred on danger, loss of control, and helplessness (Brewin et al., 2000). These distortions impair emotional regulation and blunt the self-protective instincts that would ordinarily guide safer decision-making, leaving affected individuals more susceptible to impulsive, self-destructive behaviours, including unsafe sexual practices (Contractor et al., 2017). Within military populations, repeated combat exposure appears to reinforce rather than resolve these cognitive distortions, so trauma-driven risk-taking tends to intensify rather than fade with continued exposure (Hoge et al., 2006).

The Self-Medication Hypothesis (Khantzian, 1985) complements this cognitive account by explaining the role of alcohol as a mediating and moderating agent in the trauma-SRB pathway. The hypothesis holds that individuals drink to blunt intolerable trauma-related distress, a pattern that becomes self-reinforcing: each episode of drinking that brings even temporary relief makes the next episode more likely through negative reinforcement (Baker et al., 2004; Hawn et al., 2020). This relief comes at a cost. Once consumed, alcohol narrows attentional capacity in the way described by Alcohol Myopia Theory (Steele & Josephs, 1990), pulling attention toward immediately salient cues, such as sexual opportunity, while suppressing awareness of more distal consequences, such as infection risk. Alcohol therefore plays a double role in this model: it is the behaviour trauma survivors reach for to manage distress, and, once consumed, the mechanism that strips away the cognitive safeguards that would otherwise restrain risky sexual decision-making. This dual framework, cognitive distortion as the route from trauma to risk-taking, and alcohol as both a coping response and a disinhibiting agent, underpins the moderation model tested in the present study.

Method

Research Design

A cross-sectional survey design was employed. This design was selected for its cost-effectiveness and logistical suitability within a high-mobility population with operational constraints (Wang & Cheng, 2020). The design facilitated simultaneous measurement of predictor variables (trauma, alcohol use) and the outcome variable (SRBs), enabling the examination of both predictive and moderating relationships.

Study Setting

The study was conducted at Jaji Military Cantonment, Kaduna State, Nigeria. Jaji Military Cantonment is one of the Nigerian Army's principal military installations and serves as a major centre for combat training, operational preparedness, and professional military education. The cantonment houses the Nigerian Army School of Infantry (NASI), the premier institution responsible for the training and professional development of infantry personnel, as well as the Armed Forces Command and Staff College (AFCSC), where officers from the Nigerian Armed Forces and allied countries receive command and staff training. These institutions make Jaji a strategic location where soldiers with diverse operational experiences converge for training, career development, and operational preparation.

The present study focused on infantry soldiers attending courses at the Nigerian Army School of Infantry. Infantry personnel are the primary ground combat force of the Nigerian Army and are routinely deployed to counterinsurgency, internal security, and other high-risk military operations. Consequently, they are more likely than personnel in administrative or support corps to experience direct combat, witness injury and death, operate under sustained threats to life, and encounter other potentially traumatic occupational experiences. These characteristics make infantry soldiers particularly suitable for investigating the relationship between work-related traumatic experiences, alcohol use, and sexual risk behaviours.

Jaji Military Cantonment was considered an appropriate study site because it accommodates a large concentration of active-duty infantry personnel drawn from different formations across Nigeria. Soldiers attending training at the cantonment often have recent operational experience from combat and internal security deployments, thereby providing access to participants with relevant exposure to the study variables. Furthermore, the structured military environment facilitated coordinated data collection while minimizing disruption to routine military

activities and ensuring adequate access to eligible participants.

Sampling

The target population comprised approximately 1,000 active-duty infantry soldiers stationed at Jaji Military Cantonment, Kaduna State, Nigeria. Using Yamane (1967) formula with a 5% margin of error, a minimum sample size of 286 participants was determined. To complement this, an a priori power analysis was conducted using G*Power 3.1 (Faul et al., 2009) for a multiple linear regression with seven predictors, assuming a medium effect size ($f^2 = .15$), $\alpha = .05$, and power = .80. This indicated a minimum required sample size of 105, well below both the Yamane-derived target and the achieved sample of 292, confirming that the study was adequately powered to detect the hypothesised effects.

A purposive sampling technique was employed to recruit eligible participants who met the following inclusion criteria: (a) active-duty infantry personnel with at least one year of military service; (b) deployment in high-risk military operations within the two years preceding the study; (c) aged between 18 and 50 years; and (d) ability to read and understand English. A total of 300 questionnaires were distributed to eligible participants. Following data screening, eight questionnaires were excluded because of incomplete responses, resulting in a final sample of 292 participants, representing a response rate of 97.3%.

Participants

The final sample comprised 271 males (92.8%) and 21 females (7.2%), reflecting the gender composition typical of combat infantry units. Mean age was 31.96 years ($SD = 7.83$), and mean years of service was 7.67 ($SD = 6.08$). In terms of rank, 32.9% were Privates to Corporals, 12.7% were Sergeants to Warrant Officers, 35.6% were Lieutenants to Captains, and 18.8% were Majors and above. Participants had a mean deployment count of 2.23 ($SD = 1.30$).

Instruments

Combat Exposure Scale (CES). Work-related traumatic experiences were assessed using the Combat Exposure Scale (Keane et al., 1989), a 7-item self-report measure of wartime stressors experienced in the line of duty. Items assess events such as firing at the enemy and being on dangerous duty, rated on frequency and duration scales. Total scores range from 0 to 41, classified into five exposure categories from light (0–8) to heavy (33–

41). The CES demonstrated excellent test-retest reliability ($r = .97$) and internal consistency ($\alpha = .85$; Keane et al., 1989). In the Nigerian military context, Aroh and Adole (2023) reported a Cronbach's alpha of .73 among Nigerian soldiers from counter-insurgency operations.

Alcohol Use Disorders Identification Test (AUDIT). Alcohol use was measured using the AUDIT (Saunders et al., 1993), a 10-item WHO-developed screening tool assessing hazardous alcohol use, dependence symptoms, and alcohol-related harm. Scores range from 0 to 40, with 0–7 indicating low-risk use, 8–15 indicating hazardous use, 16–19 indicating harmful use, and 20–40 suggesting probable alcohol dependence (Babor et al., 2001). Adewuya (2005) reported strong internal consistency ($\alpha = .85$) in Nigerian samples, and Gureje et al. (2007) confirmed excellent test-retest reliability ($r = .92$). The AUDIT has been validated in Nigerian occupational groups, supporting its suitability for use with infantry soldiers.

Sexual Risk Behaviour Scale (SRBS). Sexual risk behaviours were assessed using the 6-item SRBS developed by Lawal (2013). The scale measures SRBs occurring in the preceding three months across behaviours including alcohol-influenced sex and sex with new casual partners. Items are rated on a 4-point Likert scale from never (1) to always (4). Participants scoring at or above the mean of 15.64 are classified as exhibiting higher SRBs. Lawal (2013) reported a Cronbach's alpha of .85 in the original validation with a general Nigerian adult sample (Lawal, 2013), a value replicated by Lawal and Olley (2017) among Nigerian long-distance truck drivers.

Procedure

A letter of introduction was first obtained from the Department of Psychology, Nigerian Defence Academy, Kaduna (Reference No. **NDA/PSY/57/G**) and submitted to the Nigerian Army School of Infantry (NASI), Jaji, to facilitate ethical review. Subsequently, ethical approval for the study was granted by the Nigerian Army School of Infantry Research Ethics Committee (Approval No. **NASI/G7/230/69**). Participation was voluntary that is they have the right to decline participation or withdraw from the study at any stage without any adverse consequences. A written informed consent was gotten from all participants prior to questionnaire administration. Participants were assured of the confidentiality and anonymity of their responses. Data collection was coordinated around soldiers' training schedules to minimise operational disruption. Sessions were conducted in

private classrooms with no supervising officers present. All questionnaires were administered and collected within a single day. Given the potentially sensitive nature of the trauma- and alcohol-related content, additional safeguards were put in place to protect participants' psychological wellbeing. A member of the research team who is a Lieutenant in the Nigerian Army and a clinical psychologist with the Behavioural Medicine Unit of 44 Nigerian Army Reference Hospital, Kaduna (44 NARHK), was part of the data collection team and remained on standby throughout administration to respond to any signs of distress. No participant required psychological support or referral during data collection. At the end of the session, participants were debriefed on the purpose of the study and given the opportunity to ask questions or discuss any concerns arising from their participation

Data Analyses

Data analyses were conducted using IBM SPSS Statistics Version 28 and Hayes' PROCESS Macro (Hayes, 2022). Descriptive statistics and bivariate correlations were computed for all study variables. Prior to hypothesis testing, the data were screened for violations of the assumptions underlying multiple regression, including normality of residuals (Shapiro-Wilk test), homoscedasticity (Breusch-Pagan test), and independence of errors (Durbin-Watson statistic). Given the moderate-to-high bivariate correlations observed among some predictors (e.g., age and rank, years of service and rank, number of deployments and trauma), multicollinearity diagnostics (variance inflation factor (VIF), tolerance, and condition index) were computed for all predictors to confirm that collinearity did not compromise the stability of the regression estimates.

Hierarchical linear regression was employed to test Hypotheses 1 and 2, with demographic control variables (age, gender, years of service, rank, number of deployments) entered in Block 1, work-related trauma in Block 2, and alcohol use in Block

3. Changes in R^2 were used to quantify the incremental predictive power of each block, and F-change statistics were computed to test the significance of each increment. Regression coefficients are reported as unstandardized (B) and standardized (β) values, together with exact p-values and 95% confidence intervals, in line with APA reporting conventions.

To test Hypothesis 3, PROCESS Model 1 (Hayes, 2022) with 5,000 bootstrap samples was used to examine the moderating effect of alcohol use on the trauma-SRB relationship. Bias-corrected 95% bootstrap confidence intervals were used to determine the significance of the interaction term, and the Johnson-Neyman technique was employed to identify the precise threshold of alcohol use at which the conditional effect of trauma on SRBs became significant. Where the two predictors of interest (trauma and alcohol use) demonstrated substantial shared variance, this is addressed directly in the Results and Discussion sections rather than treated as two independent effects.

Assumption Testing and Multicollinearity Diagnostics

Because several predictors were moderately-to-strongly intercorrelated (e.g., age and rank, $r = .86$; years of service and rank, $r = .68$; number of deployments and trauma, $r = .88$), multicollinearity diagnostics were computed prior to interpreting the regression results. All tolerance values exceeded the conventional threshold of .10, and all variance inflation factors (VIF) were below 10 (Table 2), indicating that although the study variables were correlated, multicollinearity was not severe enough to destabilise the regression coefficients. The overall condition index for the model was 27.9, below the threshold of 30 typically taken to indicate a serious collinearity problem. The interpretation of the individual coefficients of the intercorrelated demographic predictors should be done with caution.

Results

Preliminary Analyses: Descriptive Statistics and Correlations

Table 1: Means, Standard Deviations, and Intercorrelations Among Study Variables ($N = 292$)

Variable	M	SD	1	2	3	4	5	6	7	8
1. SRBs	8.45	4.11	—	.30***	-.05	.45***	.33***	.58***	.63***	.79***
2. Age	31.96	7.83		—	-.01	.60***	.86***	.42***	.37***	.31***
3. Gender	1.07	.26			—	.05	-.02	-.09	-.12*	.02
4. Yrs. Service	7.67	6.08				—	.68***	.64***	.54***	.48***
5. Rank	2.40	1.13					—	.42***	.36***	.31***
6. Deployments	2.23	1.30						—	.88***	.68***
7. Trauma (CES)	15.54	9.87							—	.76***
8. Alcohol (AUDIT)	7.89	6.67								—

Note. $N = 292$. SRBs = sexual risk behaviours; CES = Combat Exposure Scale; AUDIT = Alcohol Use Disorders Identification Test. Gender coded 1 = male, 2 = female. Dashes (—) indicate the diagonal of the correlation matrix. * $p < .05$. *** $p < .001$ (two-tailed).

Descriptive statistics and zero-order (Pearson) correlations for all study variables ($N = 292$) are presented in Table 1. The mean score for work-related trauma ($M = 15.54$, $SD = 9.87$) indicated light-to-moderate trauma exposure in this sample, while the mean alcohol use score ($M = 7.89$, $SD = 6.67$) fell within the hazardous-to-harmful use range. A detailed categorization of alcohol use by standard AUDIT risk bands showed that 151 (51.7%) of participants were low-risk (0–7) users, 96 (33.0%) were hazardous (8–15) users, 30 (10.3%) were harmful (16–19) users, and 15 (5.0%) in the probable dependent (20+) users, indicating that nearly half the sample engaged in alcohol use meeting or exceeding hazardous levels. Sexual risk behaviours had a mean score of 8.45 ($SD = 4.11$). SRBs showed significant positive correlations with age, years of service, rank, number of deployments, work-related trauma, and alcohol use (all $ps < .001$); gender was not significantly associated with SRBs ($r = -.05$, $p > .05$). The correlations shown in Table 1 above are expected. Age, years of service, and rank all track roughly the same thing in the military career structure: a measure of how long someone has served. Soldiers do not gain rank independently of time served, so these variables naturally move together. Likewise, deployment count and trauma exposure are closely linked because deployment is how these soldiers encounter combat-related trauma in the first place; the two are almost measuring the same underlying experience. So rather than signalling a problem with the model, this pattern shows that the demographic block is really capturing one broad dimension: operational exposure and seniority.

Table 2: Collinearity Diagnostics for the Final Regression Model

Predictor	Tolerance	VIF
Age	.251	3.99
Gender	.947	1.06
Years of Service	.372	2.69

Rank	.210	4.76
Number of Deployments	.184	5.43
Trauma	.169	5.90
Alcohol Use	.408	2.45

Note. *VIF* = variance inflation factor. Tolerance values above .10 and *VIF* values below 10 indicate that multicollinearity did not compromise the stability of the regression estimates

Residual diagnostics indicated a departure from normality (Shapiro-Wilk $W = .965$, $p < .001$) and evidence of heteroscedasticity (Breusch-Pagan LM = 54.29, $p < .001$); the Durbin-Watson statistic (2.14) indicated no evidence of autocorrelated errors. To evaluate whether these violations affected the substantive conclusions, the final regression model was re-estimated using heteroscedasticity-consistent (HC3) standard errors. The pattern and significance of all predictors was unchanged, indicating that the regression results reported below are robust to the observed violations of normality and homoscedasticity. On this basis, no predictors were removed and no respecification of the regression model was undertaken.

Table 3: Hierarchical Regression Analysis Predicting Sexual Risk Behaviours

Model	Variable	B	β	t	p	95% CI	R	R ²	ΔR^2	F Δ
Model 1	Age	-.023	-.043	-.46	.650	[-.12, .08]	.594	.352	.352	31.14***
	Gender	-.109	-.007	-.14	.887	[-1.62, 1.41]				
	Years of Service	.055	.082	1.06	.289	[-.05, .16]				
	Rank	.365	.100	.98	.327	[-.37, 1.10]				
	No. of Deployments	1.603	.507	8.05	<.001	[1.21, 2.00]				
Model 2	Trauma	.222	.532	5.64	<.001	[.15, .30]	.646	.417	.065	31.75***
Model 3	Alcohol Use	.458	.743	13.25	<.001	[.39, .53]	.800	.640	.223	175.64***

Note. $N = 292$. B = unstandardized regression coefficient; β = standardized regression coefficient; CI = confidence interval. R , R^2 , ΔR^2 , and $F\Delta$ are model-level statistics reported once per block, alongside the block's first-listed predictor; blank cells indicate the value is unchanged from that row. *** $p < .001$.

In Block 1, the demographic variables collectively accounted for a significant proportion of the variance in SRBs, $R^2 = .35$, $F(5, 286) = 31.14$, $p < .001$; number of deployments was the only significant individual predictor ($B = 1.60$, $\beta = .51$, $t = 8.05$, $p < .001$, 95% CI [1.21, 2.00]). The addition of work-related trauma in Block 2 significantly improved the model, $\Delta R^2 = .07$, $F\Delta(1, 285) = 31.75$, $p < .001$, with trauma emerging as a significant positive predictor of SRBs at this step ($B = .22$, $\beta = .53$, $t = 5.64$, $p < .001$, 95% CI [.15, .30]). The addition of alcohol use in Block 3 produced a further significant improvement, $\Delta R^2 = .22$, $F\Delta(1, 284) = 175.64$, $p < .001$, with the full model accounting for 64.0% of the variance in SRBs, $R^2 = .64$, $F(7, 284) = 72.14$, $p < .001$. Alcohol use was a significant positive predictor of SRBs at this final step ($B = .46$, $\beta = .74$, $t = 13.25$, $p < .001$, 95% CI [.39, .53]).

Table 4: Regression Coefficients for the Final Model (Block 3)

Predictor	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	95% CI
Constant	5.373	.986	—	5.45	<.001	[3.43, 7.31]
Age	-.024	.037	-.045	-.63	.527	[-.10, .05]
Gender	-.950	.583	-.060	-1.63	.104	[-2.10, .20]
Years of Service	.027	.039	.039	.68	.499	[-.05, .10]
Rank	.352	.278	.097	1.26	.207	[-.20, .90]
Number of Deployments	.151	.256	.048	.59	.556	[-.35, .66]
Trauma	-.010	.036	-.023	-.27	.786	[-.08, .06]
Alcohol Use	.458	.035	.743	13.25	<.001	[.39, .53]

Note. $n = 292$. *B* = unstandardized regression coefficient; *SE* = standard error; β = standardized regression coefficient; *CI* = confidence interval. The dash (—) indicates that a standardized coefficient is not applicable to the intercept. This table presents all predictors re-estimated simultaneously in the final model (Block 3); see Table 3 for coefficients at the block in which each predictor was first entered.

It is important to note that Table 3 reports each predictor's coefficient at the step it was entered. When Age, Gender, Years of Service, Rank, and Number of Deployments were re-estimated in the final model alongside Trauma and Alcohol Use, the effect of Trauma dropped to non-significance ($B = -.01$, $\beta = -.02$, $t = -.27$, $p = .786$, 95% CI [-.08, .06]), while Alcohol Use remained the strongest predictor. This is consistent with the substantial shared variance between trauma and alcohol use noted above ($r = .76$) and suggests that trauma's association with SRBs is largely accounted for by its overlap with alcohol use, rather than reflecting two independent predictive pathways. Hypothesis 1 (trauma predicts SRBs) was therefore supported only prior to controlling for alcohol use, while Hypothesis 2 (alcohol use predicts SRBs) was supported in the full model.

Table 5: Moderation of the Trauma–SRBs Relationship by Alcohol Use

Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Constant	5.388	.265	20.34	<.001	[4.87, 5.91]
Trauma (X)	-.041	.030	-1.36	.174	[-.10, .02]
Alcohol Use (W)	.297	.063	4.73	<.001	[.17, .42]
Trauma $\times$ Alcohol Use	.008	.003	2.84	.005	[.002, .013]

Note. $N = 292$. Model 1 of Hayes' (2022) PROCESS macro, 5,000 bootstrap samples. *X* = focal predictor; *W* = moderator. *B* = unstandardized regression coefficient; *SE* = standard error; *CI* = confidence interval.

Hypothesis 3 was tested using Model 1 of Hayes' (2022) PROCESS macro with 5,000 bootstrap samples and heteroscedasticity-consistent (HC3) standard errors, with SRBs as the outcome, trauma as the focal predictor (X), and alcohol use as the moderator (W). The overall model was significant, $R = .80$, $R^2 = .65$, $F(3, 288) = 115.07$, $p < .001$. As shown in Table 5, the Trauma $\times$ Alcohol Use interaction term was a significant predictor of SRBs ($B = .008$, $SE = .003$, $t = 2.84$, $p = .005$), and the addition of the interaction term produced a significant increase in explained variance, $\Delta R^2 = .018$, $F(1, 288) = 8.09$, $p = .005$. The 95% confidence interval for the interaction effect did not contain zero [.002, .013], confirming that alcohol use significantly moderated the relationship between work-related trauma and sexual risk behaviours.

Table 6: Conditional Trauma on SRBs at Values of Alcohol Effects of Use

Alcohol Use (AUDIT score)	Effect	SE	t	p	95% CI
1.3 (low)	-.041	.030	-1.36	.174	[-.10, .02]
8.0 (mean)	.014	.023	.61	.545	[-.03, .06]
14.6 (high)	.079	.033	2.41	.017	[.01, .14]

Note. $N = 292$. Effect = conditional effect of trauma on SRBs at the stated value of alcohol use. SE = standard error; CI = confidence interval. Standard errors, t -values, and confidence intervals are heteroscedasticity-consistent (HC3).

Trauma was not significantly associated with SRBs at low ($p = .174$) or mean ($p = .545$) levels of alcohol use, but became a significant positive predictor at high levels of alcohol use ($B = .079$, $p = .017$). The Johnson-Neyman technique identified the precise point at which this conditional effect became significant: trauma significantly predicted SRBs only among soldiers whose alcohol use score exceeded 11.98, corresponding to approximately the top 27% of alcohol users in the sample. Below this threshold, work-related trauma was not significantly related to sexual risk behaviours.

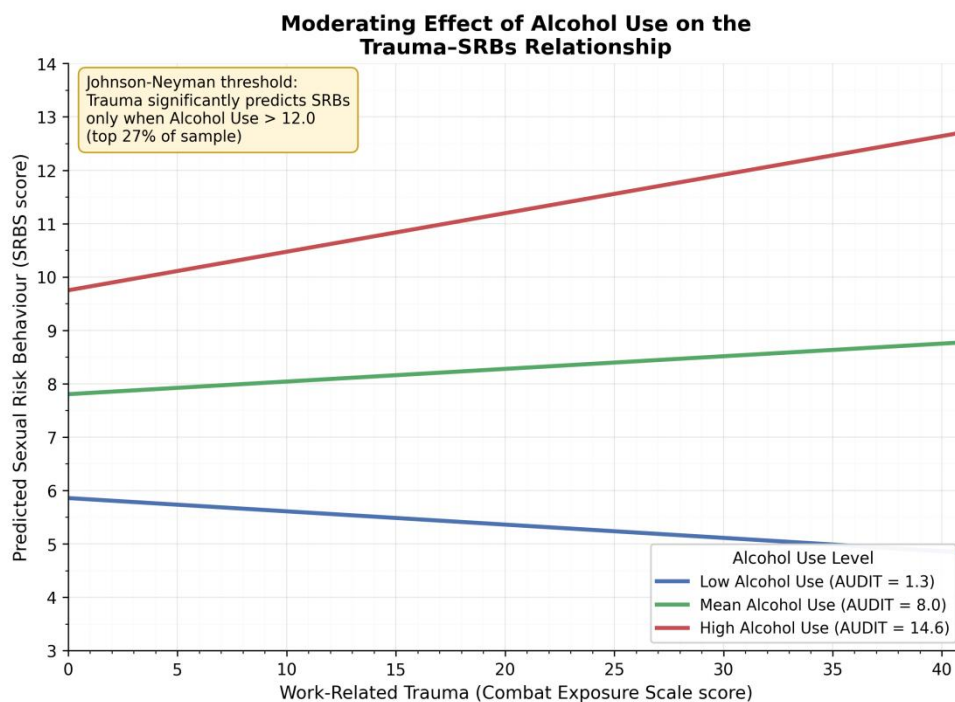


Figure 1: Showing the moderating role of alcohol use in the Trauma-SRBS relationship.

Predicted sexual risk behaviour (SRBs) scores as a function of work-related trauma, plotted separately for low, mean, and high levels of alcohol use (-1 SD, M , $+1$ SD, expressed in AUDIT score units). The shaded annotation reports the Johnson-Neyman threshold: trauma became a significant positive predictor of SRBs only among soldiers with an AUDIT score above 11.98, corresponding to approximately the top 27% of alcohol users in the sample. Below this threshold, the slope of trauma on SRBs did not differ significantly from zero, indicating that trauma exposure alone was not associated with elevated sexual risk in the absence of comparatively heavy alcohol use.

Discussion

This study examined work-related traumatic experiences and alcohol use as predictors of sexual risk behaviours (SRBs) among Nigerian infantry soldiers, and tested whether alcohol use moderates the trauma-SRB relationship. Three findings stand out: work-related trauma predicted SRBs when entered on its own, but this effect was substantially attenuated once alcohol use was added to the model; alcohol use emerged as the single strongest predictor of SRBs in the final model; and alcohol use significantly moderated the trauma-SRB relationship, such that trauma only translated into elevated sexual risk-taking among soldiers reporting comparatively heavy alcohol use.

Consistent with Hypothesis 1 and with the Cognitive-Behavioural Theory of Trauma outlined earlier, work-related trauma was a significant positive predictor of SRBs when it entered the model in Block 2 ($\beta = .53$, $p < .001$), supporting the view that combat-related cognitive distortions, hypervigilance, and impaired self-protective judgement translate into risk-taking behaviour more broadly, including in the sexual domain.

This finding sits comfortably alongside the wider Nigerian evidence base on combat trauma in this population: Nigerian Army combatants deployed against Boko Haram show significant associations between combat exposure and posttraumatic symptoms (Dami et al., 2018), deployment frequency and length of service predict psychological distress among non-commissioned officers (Dagona, 2022), and deployment experiences and moral injury directly predict sexual performance problems among Nigerian Army veterans (Aigboje et al., 2024). Taken together, this literature and the present findings suggest that occupational trauma exposure in the Nigerian military does not stay confined to psychological symptomatology; it appears to spill over into sexual health and behaviour as well.

However, once alcohol use was entered in Block 3, trauma's unique contribution to SRBs became statistically negligible ($B = -.01$, $\beta = -.02$, $p = .786$), while alcohol use absorbed most of the predictive variance previously attributed to trauma. This is not a contradiction of Hypothesis 1 so much as a refinement of it. Trauma and alcohol use were highly correlated in this sample ($r = .76$), and the collinearity diagnostics reported above (Trauma VIF = 5.90, tolerance = .17) confirm that trauma and alcohol use share a large proportion of variance.

Rather than treating this as a statistical inconvenience, we interpret it substantively: trauma appears to predict SRBs largely through its association with alcohol use, rather than through an independent pathway. This interpretation is consistent with evidence from other populations showing that trauma symptom severity loses predictive value once alcohol use is accounted for (Tu et al., 2024; Banks et al., 2022). This precisely supports the pattern the Self-Medication Hypothesis (Khantzian, 1985, 1997) would predict that soldiers appear to drink to manage trauma-related distress; and it is the drinking, more than the trauma itself, that is most closely associated with the judgement lapses linked to risky sexual encounters. The moderation results reported above reinforce this interpretation.

Hypothesis 2 was strongly supported: alcohol use was the strongest predictor of SRBs in the final model ($\beta = .74$, $p < .001$), accounting for 22% of variance beyond demographics and trauma. This finding extends two decades of Nigerian military research documenting elevated sexual risk-taking in this population (Nwokoji & Ajuwon, 2004; Okulate et al., 2008; Hussain & Akande, 2009; Essien et al., 2010; Adetoro et al., 2024) by identifying alcohol use as perhaps the most proximal behavioural driver.

This finding is also consistent with the high prevalence of alcohol misuse documented among Nigerian military personnel and its established association with combat exposure (Ijomata & Lasebikan, 2016). Mechanistically, this pattern aligns with Alcohol Myopia Theory (Steele & Josephs, 1990): intoxication narrows attentional capacity to immediately salient cues, such as sexual opportunity, while suppressing awareness of distal consequences such as infection risk or the reputational and disciplinary costs of misconduct within a hierarchical military institution. Given the scale of this effect relative to trauma and demographic factors, alcohol use should be regarded not as one risk factor among several, but as the central behavioural mechanism through which occupational stress in this population becomes sexual risk.

Hypothesis 3 was also supported: alcohol use significantly moderated the relationship between trauma and SRBs ($B = .008$, $p = .005$), and the Johnson-Neyman analysis clarified exactly where this moderation became meaningful. Trauma was unrelated to SRBs among soldiers with low-to-average alcohol use, but became a significant positive predictor once alcohol use scores exceeded approximately 12 on the AUDIT, corresponding to

roughly the top 27% of alcohol users in this sample. In practical terms, trauma exposure alone does not appear to place the average soldier at elevated sexual risk; it is trauma *combined with* hazardous drinking that does.

This is an important qualification of the trauma-SRB literature reviewed in the introduction, much of which treats trauma as a direct driver of sexual risk-taking (Tu et al., 2024; Decker et al., 2020; Lahoti et al., 2024). Our findings position alcohol use as a threshold condition. It is not merely a parallel risk factor, but the condition under which trauma exposure is associated with risky sexual behaviour at all and this is consistent with the dual role of alcohol outlined earlier in our theoretical framework.

The Demographic Block: Deployment Frequency as the Operative Variable

Demographic variables collectively explained a substantial share of variance in SRBs ($R^2 = .35$), yet number of deployments was the only individually significant predictor ($\beta = .51$, $p < .001$); age, gender, years of service, and rank did not independently predict SRBs once deployments were accounted for. This pattern is informative rather than anomalous. Age, years of service, and rank were all strongly intercorrelated with number of deployments ($r_s = .42-.86$) and with each other, reflecting the structural reality that Nigerian infantry soldiers accumulate age, tenure, and rank largely through repeated deployment cycles rather than through time alone. Given this overlapping variance, it is plausible that deployment frequency is the operative variable, and that age, years of service, and rank appear related to SRBs in bivariate analyses (Table 1) only because they are proxies for cumulative deployment exposure.

This interpretation is consistent with Dagona's (2022) finding that deployment frequency, more than age or rank per se, predicts psychological distress among Nigerian military personnel, and it reinforces the broader argument that repeated operational exposure, rather than demographic status, is the key occupational risk factor for this population. Practically, this suggests that risk-based screening and intervention should be triggered by deployment history rather than by age or rank-based assumptions about vulnerability.

Practical Implications

These findings point toward an integrated rather than parallel intervention model. Because alcohol use both independently predicts SRBs and appears to shape whether trauma is behaviourally

consequential, alcohol misuse screening (e.g., routine AUDIT administration) should be embedded within, rather than run alongside, trauma-informed mental health services for returning and actively deployed soldiers. Soldiers with high deployment frequency and elevated AUDIT scores constitute an identifiable high-risk group for targeted combined intervention rather than the entire force being treated as uniformly at risk. This is not a marginal concern: nearly half the sample (48.3%) scored in the hazardous range or above on the AUDIT, indicating that a substantial proportion of this infantry population may benefit from alcohol-focused screening regardless of individual trauma history. Sexual health messaging that assumes trauma alone drives risk-taking is unlikely to be effective for soldiers whose alcohol use is low; conversely, for heavy-drinking, high-exposure soldiers, sexual risk reduction efforts are unlikely to succeed unless they address the underlying trauma driving the drinking.

Implementing this integrated approach faces real constraints. The Nigerian military has relatively few clinical psychologists relative to troop strength, so alcohol screening would likely need to be handled by combat stress control teams and peer educators, similar to the peer-educator model the Army already uses for HIV risk reduction (Okulate et al., 2008), rather than by specialists alone. Military culture also makes disclosure risky: soldiers may hide hazardous drinking or trauma symptoms for fear that it reaches commanding officers or affects deployment eligibility, regardless of confidentiality assurances. Building screening into mandatory checkpoints, such as pre- and post-deployment medical exams, would likely work better than a standalone programme, since it would not single anyone out. Command buy-in is also essential, since unit commanders control soldiers' time and can make or break participation in anything non-mandatory.

Limitations and Directions for Future Research

Several limitations qualify these findings. First, the purposive sampling technique, while operationally necessary given the security and access constraints of recruiting active-duty infantry soldiers, has implications that go beyond simply limiting random selection. The inclusion criteria required deployment in high-risk operations within the preceding two years, which means the sample was deliberately weighted toward soldiers with recent and substantial combat exposure. While this was appropriate for testing the study's hypotheses, it also means the observed prevalence and strength of

the trauma-alcohol-SRB relationship may not generalise to infantry soldiers with less recent or less intensive deployment histories, and likely overstates the association relative to the wider infantry population.

Second, the sample was drawn exclusively from infantry soldiers at a single cantonment (Jaji, Kaduna State). Infantry personnel were selected deliberately because of their disproportionate frontline exposure (Keane et al., 1989; Adler et al., 2011), but this design choice means the findings cannot be assumed to generalise to naval, air force, or non-combat Army personnel, whose trauma exposure and occupational context differ substantially. Future research should extend this model across service branches and cantonments to establish whether the trauma-alcohol-SRB pathway identified here is specific to combat-arms infantry or reflects a broader military pattern.

Third, the cross-sectional design precludes causal inference. It is also important to note that alcohol use was tested and confirmed here as a moderator, not a mediator: PROCESS Model 1 establishes that the strength of the trauma-SRB association depends on level of alcohol use, but this study did not test, and cannot claim, a sequential pathway in which trauma causes increased alcohol use, which in turn causes SRBs. That sequential account, while broadly consistent with the Self-Medication Hypothesis, remains a plausible interpretation rather than a demonstrated one, and would require formal mediation analysis with longitudinal data to establish. Reverse or reciprocal pathways, such as pre-existing alcohol use shaping trauma appraisal or exposure to risk, also cannot be ruled out with the current design.

Fourth, all variables were measured via self-report, which carries particular risks for a topic like sexual behaviour. Within a hierarchical, masculine-coded military culture, this bias could plausibly run in either direction: some soldiers may underreport risky sexual behaviour or hazardous drinking for fear that disclosure, even anonymously, could reflect poorly on their discipline or character, while others may overreport sexual activity in a context where it signals virility or status among peers. Both patterns would distort the true prevalence and strength of association reported here, though not necessarily in a predictable direction. The anonymity procedures described earlier were intended to reduce this risk, but cannot eliminate it entirely, particularly given that data were collected on-site at the cantonment rather than in a fully independent setting.

Finally, although collinearity diagnostics indicated no severe multicollinearity (all VIFs < 10), the moderate-to-high correlations among trauma, alcohol use, and deployment frequency mean that the independent contributions of these variables should be interpreted with some caution, and the demographic findings in particular should be treated as suggestive of a deployment-driven pattern rather than definitive proof of it. Longitudinal and mixed-methods designs, incorporating qualitative accounts of how soldiers themselves understand the trauma-alcohol-sex pathway, would help clarify the directionality and lived mechanisms underlying these associations.

Conclusion

Work-related trauma and alcohol use are both implicated in sexual risk-taking among Nigerian infantry soldiers, but not as two independent, additive risk factors. Alcohol use is the more proximal and dominant predictor, and it is specifically among heavy-drinking soldiers that trauma exposure is associated with elevated sexual risk. Deployment frequency, rather than age or rank, appears to be the demographic factor most closely tied to this risk. These findings support integrated trauma-informed, alcohol-focused intervention models, targeted by deployment history and drinking severity, as a more precise approach to reducing sexual risk behaviour within the Nigerian Armed Forces than generalized trauma or sexual health programming alone.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Data Availability Statement

The datasets generated and analysed during the current study are not publicly available because they contain information obtained from active-duty military personnel and are subject to ethical and institutional restrictions. De-identified data may be made available by the corresponding author upon reasonable request and with permission from the relevant military authorities.

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