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Sex differences, prevalence, and factors associated with burnout among healthcare workers in Nigeria: a systematic review and meta-analysis

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Abstract

Background:

Burnout threatens healthcare workers' wellbeing, care quality and safety, and retention in an already depleted Nigerian health workforce, yet national estimates remain fragmented across cadres, instruments, and case definitions. We estimated burnout prevalence and its dimensions among Nigerian healthcare workers, compared women and men, and examined sources of variation, temporal change, and determinants.

Methods:

We searched multiple databases from inception to 28 August 2026, updated to 24 September 2026, with African Journals Online and citation searching. Observational studies reporting burnout among Nigerian healthcare workers were eligible. Prevalence was pooled with random-effects models on the logit scale, with 95% prediction intervals. Heterogeneity, robustness, and small-study effects were examined by subgroup analyses, meta-regression, leave-one-out and sensitivity analyses, and funnel-based tests. Determinants were frequency-counted and certainty graded with GRADE (PROSPERO CRD420261488318).

Results:

Forty-two studies were included. Pooled burnout prevalence was 42.0% (95% CI 29.9 to 55.1; 26 studies; 6,430 participants). In full MBI-HSS studies, 36.1% (25.0 to 49.0) had high emotional exhaustion, 35.0% (24.6 to 47.1) high depersonalisation, and 45.3% (29.9 to 61.6) low personal accomplishment. Burnout affected 39.6% of men (22.4 to 59.8) and 37.7% of women (20.8 to 58.1) across the 13 studies reporting both, with no difference in the paired within-study comparison (prevalence ratio 0.96, 0.69 to 1.33). Prevalence rose from 22.6% before 2020 to 56.4% during 2020 to 2022 and 62.2% from 2023 onward ($p = 0.003$). Case definition explained 65.5% of between-study variance, and northern and multi-regional samples had higher estimates than southern samples ($p = 0.028$). Adverse work environment, call-duty hours, and psychological distress were the most consistently reported correlates. Certainty was very low for all outcomes.

Conclusions

Burnout affects a substantial, and apparently rising, share of Nigerian healthcare workers, but its measured magnitude depends heavily on how it is defined. Standardised measurement, national surveillance across all zones and levels of care, and organisation-directed interventions targeting workload, staffing, and working conditions are needed to protect the workforce and sustain health service delivery.

INTRODUCTION

Burnout is an occupational syndrome arising from chronic work stress and expressed through exhaustion, mental distance or cynicism, and reduced professional efficacy.[1] Among healthcare workers, burnout is associated with psychological distress, intention to leave, poorer professional functioning, lower patient safety, and worse patient experience.[2–5] These consequences are especially consequential in health systems already constrained by workforce shortages, as loss of engagement, absenteeism, and turnover can further reduce access and continuity of care.

Nigeria combines a great and growing demand for care with persistent shortages, maldistribution, migration, and governance challenges in its health workforce.[6] Yet the national burden of burnout remains uncertain. Nigerian studies have typically sampled a single profession, institution, or state and have used different instruments, thresholds, and person-level definitions. This fragmentation matters because burnout prevalence varies substantially with how the construct is measured, and international syntheses have shown extreme heterogeneity across instruments, specialties, and regions.[7–9] A single pooled percentage without examining these sources of variation may therefore obscure both genuine differences in working conditions and measurement artifacts.

Furthermore, no comprehensive synthesis has quantified burnout across Nigerian healthcare cadres while separately estimating the three Maslach dimensions; tested whether prevalence differs by geography, cadre, setting, pandemic period, instrument, or case definition; examined temporal change; compared men and women within the same studies; and systematically mapped reported determinants. Resolving these gaps is necessary to distinguish a broadly shared workforce problem from setting-specific risk, identify modifiable organizational targets, and establish a defensible baseline for surveillance and intervention.

We therefore conducted a systematic review and meta-analysis of burnout among healthcare workers in Nigeria. We aimed to estimate the prevalence of composite burnout and its dimensions; characterize geographic, demographic, occupational, methodological, and temporal variation; and synthesize reported determinants. These findings may inform measurement standards, workforce policy, and context-responsive prevention.

METHODS

Design and registration

This country-level systematic review and meta-analysis was registered in PROSPERO (CRD420261488318) and was conceptualised and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[10] 2020 statement (**Related File**). We synthesized the prevalence data following established methodological guidance.[11–13]

Search strategy

We searched PubMed, Scopus, Embase, CINAHL, PsycINFO, Web of Science, the WHO African Index Medicus, and Google Scholar from database inception to 28 August 2026, and updated the search to 24 September 2026. In line with the TARCiS statement,[14] we performed forward and backward citation tracking of key publications, and we searched African Journals Online directly, because a substantial share of Nigerian health research is published in regional journals not indexed in the major databases. The search combined Medical Subject Headings and free-text terms for burnout and its three dimensions (emotional exhaustion, depersonalisation and personal accomplishment) with terms for all health worker cadres and for Nigeria and its 36 states and its Federal Capital (Abuja), linked with Boolean operators. The strategy developed for PubMed was adapted for each source (**Appendix Table 1**). Because the northern geopolitical zones were sparsely represented, the database search was supplemented by a targeted search of northern Nigerian journals and institutional repositories.

Eligibility criteria

Eligibility was defined using the CoCoPop (Condition, Concept, and Population) framework.[13] Studies were eligible if they (i) were observational, whether cross-sectional, cohort or baseline data from an intervention study; (ii) reported the prevalence of overall burnout or of any of its dimensions, or factors associated with burnout; (iii) enrolled health workers of any cadre practising in Nigeria, including doctors, nurses and midwives, and allied health professionals (AHFs), whether in training or fully qualified and at any level of care; and (iv) measured burnout with a validated recognised instrument, such as the Maslach Burnout Inventory (MBI) and its variants,[15] the Copenhagen Burnout Inventory (CBI)[16] or the Oldenburg Burnout Inventory (OBI),[17] or any other established burnout measures. Studies had to report at least one analysable quantitative datum. We excluded reviews, qualitative studies, case reports, editorials, post-intervention data, studies of students, and studies conducted wholly outside Nigeria. No date or language restrictions were applied. We used Google Translate to convert studies published in other languages into English.

Study selection

Records were managed in Zotero (version 9.0.6), and duplicates were removed. Three reviewers (ZAY, AA, ADA) independently screened titles and abstracts and then full texts in Rayyan,[18] with disagreements resolved by consensus with senior authors (SKS, FITA, ATB). The selection process is summarised in the PRISMA flow diagram (**Figure 1**).

Outcomes

Four primary outcomes were prespecified: the prevalence of high overall burnout, high emotional exhaustion (EE), high depersonalisation (DP), and low personal accomplishment (PA). Each was classified according to the cut-off applied in the primary study, and for the MBI we additionally recorded whether standard subscale cut-offs had been used. Only case counts and denominators reported by the primary studies were pooled. Where a study reported only the low and moderate categories, the number with high burnout was obtained by subtraction from the analysed sample, and where only percentages were reported, counts were derived only when the categories were internally consistent. Secondary outcomes were burnout prevalence in men and in women, the temporal trend in prevalence, and reported determinants.

Data extraction and quality appraisal

Data were extracted independently by three reviewers (ZAY, SS, and AA) using a standardised, piloted form, with discrepancies resolved by the senior authors (SKS, FITA, ATB). We extracted study identifiers, state and geopolitical zone, facility level, coverage, design, sampling method, mode of administration, fieldwork and publication year, cadre and training status, sample size, the instrument and its case definition, case counts for each outcome, sex-disaggregated counts, and all reported associations with burnout. Two analytical variables were derived. The instrument family classified each study as using the full 22-item MBI-HSS with standard cut-offs, another MBI version or scoring, the OBI or CBI, or another tool. Composite case definition recorded the rule each study used to classify a person as burnt out: high scores on at least one, at least two or all three MBI dimensions, or a tool-specific or total-score rule. Studies were assigned to the period before (fieldwork in 2019 or earlier), during (2020 to 2022) or after (2023 onwards) the COVID-19 public health emergency, which the World Health Organization declared (WHO) on 30 January 2020 and ended on 5 May 2023.[19] The methodological quality was appraised with the Joanna Briggs Institute

checklist for prevalence studies;[20] studies meeting seven or more of its nine criteria were rated as low risk of bias, four to six as moderate, and three or fewer as high (**Related File**).

Data synthesis and statistical analysis

Study-level proportions were transformed to the logit scale and pooled by random-effects meta-analysis, with between-study variance estimated by restricted maximum likelihood. Confidence intervals (CIs) for individual studies were computed by the exact Clopper-Pearson method,[21] and pooled estimates were back-transformed to proportions for reporting. Heterogeneity was summarised by τ^2, I^2,[22] and Cochran's Q, and every pooled estimate is reported with its 95% prediction interval (PIs), which better describes the prevalence to expect in a new setting when heterogeneity is high.[23] One study using an abbreviated nine-item MBI with a modified case definition, which yielded no cases among 235 pharmacists,[24] was excluded a priori because its outcome was not comparable with any other study; it was reinstated in a sensitivity analysis using a generalised linear mixed model, which accommodates zero events without continuity correction.[25] Analyses of the three dimensions were restricted to studies using the full MBI-HSS.

Subgroup analyses were prespecified for geopolitical zone, state, cadre, training status, facility level, pandemic period, sampling approach, coverage, sample size, mode of administration, instrument family, composite case definition and risk of bias, and were interpreted only where a level contained at least three studies. Between-group differences were tested by mixed-effects meta-regression, which was also used to estimate the proportion of between-study heterogeneity explained by each covariate (R^2), singly and in a multivariable model. Temporal trends were assessed by meta-regressing logit prevalence on fieldwork year and, for comparison, on publication year, and by cumulative meta-analysis ordered by fieldwork year.

Men and women were analysed as separate prevalence outcomes, overall and by subgroup. Because both estimates arise from the same studies, the sexes were compared within studies by pooling study-level prevalence ratios, prevalence differences.

Small-study effects were examined by contour-enhanced funnel plots and by the Egger,[26] Begg[27] and Peters[28] tests, with Peters' test prioritised because Egger's test is prone to spurious results in meta-analyses of proportions with high heterogeneity. The trim-and-fill method was used to estimate the number and influence of potentially missing studies.[29] Influential studies were identified from studentised residuals and Cook's distance[30] and from Baujat plots,[31] and stability was assessed by leave-one-out analysis. Twelve sensitivity analyses repeated the primary analysis using the Freeman-Tukey double arcsine transformation,[32] reported for completeness only given its instability when study sizes vary widely;[33] a generalised linear mixed model; the Hartung-Knapp adjustment;[34] and restriction to full MBI-HSS studies, low risk of bias, probability or census sampling, single-zone studies, multicentre studies, samples of at least 200, and fieldwork from 2015 onwards.

Reported determinants were synthesised as a structured count, recording for each factor the number of studies and participants and the number of significant positive, significant negative and non-significant associations. Adjusted effect sizes were not pooled, because contrasts and reference categories differed too widely between studies. Certainty of evidence was rated using GRADE (**Appendix Table 2**).[35] Analyses were performed in R version 4.4.1[36] using the meta[37] and metafor[38] packages, with maps produced using sf[39] and ggplot2[40]. All tests were two-sided at a significance level of $p < 0.05$.

RESULTS

Characteristics of included studies

Of the 1,198 studies, 42 were included (**Figure 1**). Twenty-six, comprising 6,430 participants, reported a person-level composite burnout estimate and contributed to the primary analysis. Studies were published between 2011 and 2026, with data collection spanning 2008 to 2025. The evidence base was geographically uneven: seventeen of Nigeria's thirty-six states and the Federal Capital Territory contributed at least one study, leaving twenty unrepresented, and eleven of the seventeen contributed a single study. Twenty-two of the twenty-six studies in the primary analysis were conducted in tertiary facilities. Twenty studies used the full 22-item MBI-HSS, nine another MBI version or scoring, four each the Oldenburg and Copenhagen inventories, and five other instruments. Sampling was probability-based in twenty-five studies, by complete enumeration in nine, and non-probability in eight (**Table 1**).

Risk of bias

Twenty-eight of the forty-two studies were rated low risk of bias and fourteen moderate; none was rated high. Within the primary analysis set, seventeen were low and nine moderate (**Appendix Tables 2 and 3**).

Pooled prevalence of burnout and its dimensions

The pooled prevalence of burnout was 42.0% (95% CI 29.9 to 55.1), with substantial heterogeneity (I^2 98.3%, τ^2 1.851) and a 95% prediction interval of 4.0% to 92.7%. Among studies using the full MBI-HSS, the pooled prevalence of high emotional exhaustion was 36.1% (25.0 to 49.0; 19 studies, 4,877 participants; I^2 97.0%), of high depersonalisation 35.0% (24.6 to 47.1; I^2 97.4%), and of low personal accomplishment 45.3% (29.9 to 61.6; I^2 97.1%). Low personal accomplishment was the most frequently affected dimension in almost every subgroup and sensitivity analysis (**Table 2; Figure 2**).

Subgroup analyses

Burnout prevalence was higher in the northern zones (46.1%, 24.9 to 68.8; 8 studies) than in the southern zones (35.3%, 20.8 to 53.2; 15 studies), with the three multi-regional studies highest at 65.6% ($p = 0.028$). At state level, estimates ranged from 4.7% in Rivers to 85.0% in the Federal Capital Territory, although most states contributed a single study and these differences are descriptive (**Figure 3**). Significant between-group differences were also observed for cadre ($p = 0.004$), instrument family ($p < 0.001$) and composite case definition ($p < 0.001$), but not for sample size ($p = 0.97$), training status ($p = 0.82$), mode of administration ($p = 0.71$), coverage ($p = 0.34$), sampling approach ($p = 0.07$) or risk of bias ($p = 0.10$). Within the three dimensions, neither mode of administration nor instrument family was associated with prevalence, in contrast to their strong association with the composite outcome (**Table 3**).

Temporal trend

Studies with fieldwork before the pandemic reported a pooled prevalence of 22.6% (11.8 to 38.9; 11 studies), compared with 56.4% (39.9 to 71.6; 10 studies) during the pandemic and 62.2% (44.0 to 77.5; 5 studies) afterwards ($p = 0.003$). Meta-regression on fieldwork year confirmed the trend, with a coefficient of 0.171 on the logit scale (95% CI 0.043 to 0.298, $p = 0.009$), corresponding to an odds ratio of 1.19 per calendar year and explaining 19.6% of between-study heterogeneity.

Sources of heterogeneity

Composite case definition was the strongest single explanatory covariate, accounting for 65.5% of between-study heterogeneity, followed by pandemic period (28.7%) and instrument family (21.0%); cadre, coverage, sample size and training status explained none. A multivariable model containing instrument family, case definition and zone explained 77.9%. Studies defining a case as high scores on all three dimensions reported substantially lower prevalence than others ($p = 0.003$) (**Table 4**).

Burnout by sex

Thirteen studies reported burnout separately by sex, covering 1,635 men and 1,848 women. The pooled prevalence was 39.6% (22.4 to 59.8; I^2 97.1%) in men and 37.7% (20.8 to 58.1; I^2 97.5%) in women (Table 4; Figure 4). The paired within-study comparison showed no difference, with a prevalence ratio of 0.96 (0.69 to 1.33), a prevalence difference of 1.1 percentage points lower in women (95% CI −9.3 to +7.1) and an odds ratio of 0.92 (0.59 to 1.44), and no subgroup or sensitivity analysis altered this conclusion (**Table 3 and Figure 4**).

Reported determinants

Sex was the most frequently examined determinant, reported in twenty-four studies, but the most inconsistent: eight reported higher burnout in women, three in men, and thirteen no association. Of fifteen studies examining years of experience, eight found shorter experience associated with higher burnout. All fourteen estimates relating to the work environment, all six relating to depression or psychological distress, and all three relating to call duty hours were significant in the direction of higher burnout (**Figure 5**).

Small-study effects, influence and sensitivity

The funnel plot was broadly symmetrical, and Peters' test showed no evidence of small-study effects ($p = 0.891$), and Egger's test was not significant ($p = 0.090$). No study was flagged as influential, the largest Cook's distance being 0.157, and leave-one-out estimates ranged from 39.8% to 44.6%. Across the twelve sensitivity analyses, the pooled estimate ranged from 30.7%, when restricted to full MBI-HSS studies with standard cut-offs, to 47.9% when restricted to multicentre studies; restriction to low risk of bias gave 34.9%, and reinstating the excluded study gave 37.6%. The dimension estimates were considerably more stable, ranging from 33.8% to 37.3% for emotional exhaustion and from 33.2% to 35.8% for depersonalisation (**Table 4**).

Certainty of evidence

Certainty was rated very low for all outcomes, rated down two levels for inconsistency and one for indirectness, reflecting the extreme heterogeneity and the concentration of evidence in tertiary facilities (**Appendix Table 2**).

DISCUSSION

This systematic review of 42 Nigerian studies found that burnout is common but highly variable. Among 26 studies (6,430 participants), the pooled prevalence of person-level burnout was 42.0%, while 36.1% had high emotional exhaustion, 35.0% high depersonalization, and 45.3% low personal accomplishment in full MBI-HSS studies. Prevalence increased from 22.6% before 2020 to 56.4% during 2020 to 2022, coinciding with the peak of the COVID-19 pandemic, and to 62.2% from 2023 onward. However, the wide prediction interval (4.0% to 92.7%), high heterogeneity (I^2 = 98.3%), and very-low-certainty rating indicate limited reliability of the pooled estimate and warrant cautious interpretation. Doctors and northern or multi-regional samples had higher estimates in subgroup analyses, but evidence for several subgroups was sparse. Men and women did not differ in paired within-study analyses. Work environment, psychological distress, and call-duty hours were the most consistently reported correlates, although heterogeneous reporting precluded pooling.

The overall burden is comparable to the wider literature showing substantial burnout among health professionals. A global meta-analysis of nurses reported 11.2% composite burnout and identified sub-Saharan Africa as the highest-prevalence region, while a review restricted to nurses in sub-Saharan Africa estimated 66% emotional exhaustion, 60% depersonalisation, and 49% low personal achievement.[8,9] Our MBI-HSS estimates were lower for exhaustion (36.1%) and depersonalisation (35.0%) but similar for low personal accomplishment. Variations in cadres, countries, cut-offs, and sampling may partially explain these differences. During COVID-19, a global nursing meta-analysis estimated emotional exhaustion at 34.1%, close to our 36.1%, but reported substantially lower depersonalisation and low personal accomplishment.[41] More broadly, a physician review found prevalence estimates ranging from 0% to 80.5% and concluded that heterogeneity in instruments and definitions prevented a single defensible global prevalence estimate.[7] Nigeria therefore appears to share both a high burden and the measurement variability seen internationally.

The strongest explanatory finding was the effect of case definition. Requiring abnormal scores on all three MBI-HSS dimensions identifies a smaller but more severely affected group, whereas defining burnout by one or two dimensions captures a broader and less severe population. Pooling these definitions as if they represent the same outcome substantially increases conceptual heterogeneity. The stability of the dimension-specific estimates across sensitivity analyses, compared with the wider movement of the composite estimate, reinforces this interpretation. Burnout prevalence is therefore partly a property of the population and partly a property of the operational rule. Future Nigerian studies should report continuous scores and each dimension separately, specify item version, language, cut-offs, and composite algorithm, and, where possible, apply an agreed core outcome definition. Until such harmonization occurs, prediction intervals and definition-stratified estimates are more informative for planning than a pooled point estimate alone.[1,7]

The higher prevalence during the pandemic accords with evidence that infection risk, workload, inadequate material and human resources, and reduced social support intensified burnout among health workers.[41] Studies from 2023 onward suggest the problem may not have returned to its earlier baseline. Possible explanations include accumulated fatigue, unresolved staffing and resource constraints, inflationary and employment pressures, and continuing migration of trained personnel, all of which can increase demands on those who remain.[6] Nonetheless, this meta-regression is ecological: later studies may differ in cadre, location, instrument, or case definition, and only five studies represented the post-pandemic period. The observed trend should, therefore, prompt prospective surveillance.

Studies consistently reported that work environment, call-duty hours, or psychological distress were associated with greater burnout. This pattern aligns with the job demands-resources model, in which sustained workload and emotional demands produce exhaustion when staffing, autonomy, supervisory support, equipment, rewards, and development opportunities are insufficient.[17] The prominence of low personal accomplishment may signal erosion of professional efficacy in environments where workers cannot consistently deliver the care they value. The association with depression or distress is also credible, although burnout, depression, and anxiety are related but non-equivalent constructs and their temporal ordering remains uncertain.[42] Because most included studies were cross-sectional, and determinants were summarized by vote counting, these results identify priorities for causal testing rather than effect sizes for policy calculation.

Subgroup differences require similarly restrained interpretation. The higher pooled estimate among doctors may reflect long hours, call intensity, and decision burden, but the composite analysis contained only one nurse-only study, so it cannot establish a profession-wide hierarchy of risk. Northern and state-level differences may reflect real variation in staffing, insecurity, infrastructure, and referral burden, but most states contributed only one study and 20 states contributed none. The highest estimate in multi-regional studies could also reflect study design or measurement. These results justify broader sampling across zones and facility levels. The paired analysis found no difference in burnout between women and men. Because it compares women and men within the same studies, this finding is more informative than separate prevalence estimates. Sex alone may therefore be a poor basis for targeting interventions. However, gender-related factors such as caregiving responsibilities, discrimination, specialty, seniority, and work schedules may still influence burnout.

From a theoretical perspective, our findings favor models that locate burnout in the interaction between job demands and resources rather than in individual resilience alone.[17] Policy-wise, our findings indicate that Nigeria should incorporate workforce well-being into its health-workforce planning and quality agenda, with repeated confidential measurement using common definitions across public and private, primary, secondary, and tertiary settings. Facility-level action should prioritize safe staffing and rosters, limits and recovery time after call duty, reliable

supplies, supportive supervision, fair recognition and career development, team communication, and accessible confidential mental-health care. Individual support can help, but systematic reviews show that organization-directed and combined interventions are necessary and can reduce burnout.[43,44] Leadership accountability and local co-design are important so that well-being programs do not become substitutes for correcting unsafe work.[45,46]

This review has several strengths, including broad inclusion across healthcare cadres and instruments; separate MBI-HSS dimension analyses; use of prediction intervals; paired sex comparisons; and extensive subgroup, influence, and sensitivity analyses. However, several limitations must be noted. Extreme residual heterogeneity limits the precision of the pooled composite estimate for specific workplaces. Geographic and sectoral coverage was incomplete and concentrated in tertiary facilities, limiting national representativeness. Most primary studies were cross-sectional and self-reported, so prevalence may be affected by nonresponse and common-method bias, and determinants cannot establish direction or causality. Subgroup analyses were study-level, vulnerable to confounding and ecological bias, and some levels contained one study. The structured vote count ignored effect magnitude and may overemphasize statistically significant or selectively reported associations. Differences in instruments and thresholds remained, and sparse post-pandemic evidence limited temporal conclusions. Finally, the absence of funnel-plot asymmetry does not exclude publication bias when heterogeneity is extreme.

Future research should establish a nationally coordinated, longitudinal surveillance program using a prespecified core measure and case definition, while retaining continuous dimension scores. Sampling should deliberately include all geopolitical zones, rural areas, private facilities, and primary and secondary care, with cadre-specific estimates and adequately powered within-study analyses of sex and gender. Prospective studies should test whether staffing, workload, call patterns, leadership, resources, and psychological distress predict change in burnout, and whether burnout predicts absenteeism, turnover, patient safety, and quality. Pragmatic cluster trials should evaluate multilevel interventions designed with workers and report implementation, costs, and equity. Individual-participant-data meta-analysis could then separate contextual from compositional effects more reliably than aggregate subgroups.

CONCLUSION

Burnout among healthcare workers in Nigeria is widespread, has increased over time, and is closely entangled with how it is defined. The clearest actionable signal is the convergence of high burden, depleted professional accomplishment, and consistently adverse working conditions. Nigeria now needs standardized measurement paired with accountable work redesign that emphasizes protecting the workforce, not as an optional wellness initiative, but as a prerequisite for safe, resilient, and sustainable healthcare.

Declarations

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Author Contributions

Conceptualization, SKS, ZAY; Data extraction, ZYA, MSM, MMH; Methodology, ZAY, FITA, SS, ADA, AKS, MMH, MSM, AA, AYA ATB, SKS; Formal analysis, SKS, ZAY, ATB; Data curation, SKS, ZYA,, ATB, MSM, AKS; Writing—original draft preparation, ZAY; Writing—review and editing, SKS, ATB, MSM, ADA, FIT, AKS, SS, MMH, AA, AYA, ATB; Supervision, SKS, FITA, ATB; Visualization, AA, MMH, MSM, AYA, ATB; Project administration, SKS, ZAY. All authors have read and approved the present version of the manuscript.

Ethics Approval

Not applicable

Competing Interests Declaration

The authors have no competing interests.

AI Declaration

We used Claude AI to improve the language reporting in the manuscript.

Data Availability

All data are contained in the manuscript and the supporting files.

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Tables

Table 1. Pooled prevalence of every burnout outcome

Outcome	Studies	Participants	Pooled prevalence, % (95% CI)	95% prediction interval	I^2 (%)	τ^2
Overall burnout (any instrument)	26	6,430	42.0 (29.9–55.1)	4.0–92.7	98.3	1.851
High emotional exhaustion (MBI-HSS)	19	4,877	36.1 (25–49)	4.4–87.4	97	1.357
High depersonalisation (MBI-HSS)	19	4,877	35 (24.6–47.1)	4.8–85.3	97.4	1.214
Low personal accomplishment (MBI-HSS)	19	4,877	45.3 (29.9–61.6)	3.4–95.1	97.1	2.137
Burnout in men	13	1,635	39.6 (22.4–59.8)	—	97.1	—
Burnout in women	13	1,848	37.7 (20.8–58.1)	—	97.5	—

The composite outcome pools all instruments. The three dimensions are restricted to the full 22-item MBI-HSS with standard cut-offs. The two sex-specific rows come from the 13 studies reporting cases separately by sex, and because they share those studies, they are not independent of one another: the paired comparison is the pooled odds ratio for women versus men, 0.92 (0.59 to 1.44), I^2 = 80.4%, which indicates no difference.

Table 2. Subgroup analyses across the three MBI-HSS dimensions

Subgroup	Level	Studies (Sample size)	Overall burnout, % (95% CI)	Studies (Sample size)	High EE, % (95% CI)	Studies (Sample size)	High DA, % (95% CI)	Studies (Sample size)	Low PA, % (95% CI)	p between
Zone	North	8 (1597)	46.1 (24.9–68.8)	4 (831)	38.3 (9.8–78)	4 (831)	25.9 (14.3-42.2)	4 (831)	34.6 (19.3–54.1)	0.0284
	South	15 (4213)	35.3 (20.8–53.2)	15 (4,046)	35.7 (24.7–48.4)	15 (4,046)	37.7 (24.9–52.5)	15 (4046)	48.5 (29.2–68.3)	
	Multi-regional	3 (772)	65.6 (51.4–77.5)	—	—	—	—	—	—	
State	Oyo	3 (713)	33.4 (18.2–53.1)	1 (270)	20.4 (16.0–25.6)	1 (270)	15.9 (12.0–20.8)	1 (270)	23.3 (18.7–28.7)	<0.001
	Enugu	2 (575)	77.7 (58.3–89.7)	2 (474)	21.6 (3.6–67.2)	2 (474)	43.4 (33.5–53.8)	2 (474)	36.4 (12.2–70.3)	
	Kano	2 (524)	42.2 (11.3–80.7)	1 (300)	89.3 (85.3–92.4)	1 (300)	48.3 (42.7–54.0)	1 (300)	47.7 (42.1–53.3)	
	Lagos	2 (507)	68.4 (18.6–95.3)	1 (204)	45.6 (38.9–52.5)	1 (204)	57.8 (51.0–64.4)	1 (204)	61.8 (54.9–68.2)	
	Plateau	2 (267)	19.8 (4.6–55.8)	1 (155)	13.5 (9.0–19.9)	1 (155)	21.3 (15.6–28.4)	1 (155)	14.8 (10.1–21.3)	
	Abia	1 (253)	20.6 (16.0–26.0)	—	—	—	—	—	—	
	Adamawa	1 (200)	70.0 (63.3–75.9)	1 (200)	29.0 (23.1–35.7)	1 (200)	26.0 (20.4–32.5)	1 (200)	51.5 (44.6–58.4)	
	Akwa Ibom	1 (553)	7.6 (5.7–10.1)	1 (553)	44.7 (40.6–48.8)	1 (553)	12.7 (10.1–15.7)	1 (553)	61.8 (57.7–65.8)	
	Bayelsa	1 (409)	7.6 (5.4–10.6)	1 (409)	45.2 (40.5–50.1)	1 (409)	32.5 (28.2–37.2)	1 (409)	18.8 (15.3–22.9)	
	Borno	1 (186)	21.5 (16.2–28.0)	—	—	—	—	—	—	
	Delta	1 (114)	40.4 (31.8–49.6)	2 (254)	42.9 (26.6–60.8)	2 (254)	25.5 (6.3–63.6)	2 (254)	34.9 (26.7–44.2)	
	Edo	1 (448)	41.7 (37.3–46.4)	1 (448)	59.6 (55.0–64.0)	1 (448)	47.1 (42.5–51.7)	1 (448)	34.2 (29.9–38.7)	
	FCT Abuja	1 (100)	85.0 (76.6–90.8)	—	—	—	—	—	—	
	Kwara	1 (320)	70.9 (65.7–75.7)	1 (176)	21.6 (16.1–28.3)	1 (176)	13.6 (9.3–19.5)	1 (176)	30.7 (24.3–37.9)	
	Ogun	1 (211)	54.5 (47.7–61.1)	2 (361)	55.7 (44.6–66.3)	2 (361)	85.3 (79.1–89.8)	2 (361)	73.7 (3.5–99.5)	
	Osun	1 (110)	23.6 (16.6–32.5)	—	—	—	—	—	—	

Subgroup	Level	Studies (Sample size)	Overall burnout, % (95% CI)	Studies (Sample size)	High EE, % (95% CI)	Studies (Sample size)	High DA, % (95% CI)	Studies (Sample size)	Low PA, % (95% CI)	p between
	Rivers	1 (320)	4.7 (2.8–7.6)	1 (320)	23.8 (19.4–28.7)	1 (320)	14.7 (11.2–19.0)	1 (320)	30.0 (25.2–35.2)	
Cadre	Mixed	13 (3486)	36.3 (18.7–58.6)	7 (2,116)	30.4 (14.7–52.4)	7 (2,116)	25.8 (16.3–38.4)	7 (2,116)	37.6 (24.9–52.3)	0.00436
	Doctors	12 (2986)	50.2 (36.8–63.7)	7 (1,608)	46.5 (24.9–69.4)	7 (1,608)	39.3 (19.5–63.3)	7 (1,608)	48.5 (22.9–74.9)	
	Nurses/midwives	1 (110)	23.6 (16.6–32.5)	5 (1,153)	30.6 (15.8–51)	5 (1,153)	43.6 (20.9–69.4)	5 (1,153)	53.8 (12.7–90.3)	
Training status	Mixed	14 (3807)	39.8 (23.2–59.2)	—	—	—	—	—	—	0.818
	Not training	6 (1210)	39.7 (18.7–65.3)	—	—	—	—	—	—	
	Training	6 (1565)	49.5 (25.6–73.7)	—	—	—	—	—	—	
Setting	Tertiary	22 (5790)	39.0 (27.0–52.5)	16 (4,312)	38.2 (25.4–52.9)	16 (4,312)	37 (24.9–51.1)	16 (4,312)	49.9 (31.9–68)	<0.001
	Mixed	2 (411)	65.5 (13.4–95.9)	2 (295)	28.8 (6–71.9)	2 (295)	31.2 (14.3–55.1)	2 (295)	24.2 (9–50.6)	
	Private facility	1 (100)	85.0 (76.6–90.8)	—	—	—	—	—	—	
	Secondary	1 (281)	18.5 (14.4–23.5)	1 (270)	20.4 (16–25.6)	1 (270)	15.9 (12–20.8)	1 (270)	23.3 (18.7–28.7)	
Pandemic period	Before	11 (3334)	22.6 (11.7–39.1)	11 (3,258)	39.1 (30.2–48.9)	11 (3,258)	36 (22.9–51.6)	11 (3,258)	46 (25–68.6)	0.00327
	During	10 (1896)	56.4 (39.7–71.8)	6 (1,119)	22.8 (8.1–49.8)	6 (1,119)	32.6 (13.3–60.3)	6 (1,119)	42.9 (16–74.8)	
	After	5 (1352)	62.2 (43.7–77.7)	2 (500)	64.9 (8.7–97.3)	2 (500)	36.6 (18.1–60.1)	2 (500)	49.2 (44.8–53.6)	
Sampling	Probability/census	22 (5789)	38.0 (25.6–52.1)	16 (4,212)	33.8 (23.7–45.7)	16 (4,212)	34.4 (22.6–48.5)	16 (4,212)	47.1 (29.1–65.9)	0.0719
	Non-probability	4 (793)	64.5 (39.2–83.7)	3 (665)	49.9 (9.4–90.6)	3 (665)	38.3 (22–57.7)	3 (665)	36.6 (15.4–64.7)	
Coverage	Multicentre	14 (3773)	47.9 (32.6–63.7)	7 (1,825)	48.9 (28.5–69.6)	7 (1,825)	32.9 (23.4–44.1)	7 (1,825)	46.1 (16.4–78.8)	0.34
	Single-centre	12 (2809)	35.2 (18.6–56.4)	12 (3,052)	29.4 (18.2–43.8)	12 (3,052)	36.5 (21.2–55.1)	12 (3,052)	45.2 (28.8–62.6)	
Sample size	< 200	9 (1169)	43.5 (25.7–63.1)	5 (735)	32.6 (19–50)	5 (735)	32.7 (11.5–64.4)	5 (735)	27.3 (20.1–36)	0.97

Subgroup	Level	Studies (Sample size)	Overall burnout, % (95% CI)	Studies (Sample size)	High EE, % (95% CI)	Studies (Sample size)	High DA, % (95% CI)	Studies (Sample size)	Low PA, % (95% CI)	p between
	200-399	12 (3048)	42.7 (26.0–61.1)	11 (2,732)	33.9 (17.7–55)	11 (2,732)	38 (24.7–53.5)	11 (2,732)	57.3 (31.7–79.6)	
	>= 400	5 (2365)	37.7 (9.7–77.3)	3 (1,410)	49.8 (40.3–59.4)	3 (1,410)	28.4 (12.3–53)	3 (1,410)	36.8 (16.1–63.7)	
Administration mode	Onsite	15 (3866)	38.9 (25.3–54.5)	8 (2,009)	35.7 (23.2–50.5)	8 (2,009)	34.3 (18.9–54.0)	8 (2,009)	39.9 (18.6–65.9)	0.711
	Not specified	5 (1530)	37.9 (8.7–79.7)	9 (2,454)	29.9 (15.8–49.2)	9 (2,454)	37.3 (21.5–56.4)	9 (2,454)	51.7 (25.9–76.6)	
	Online	5 (935)	55.7 (31.3–77.7)	2 (414)	68.0 (12.4–97.0)	2 (414)	27.7 (5.8–70.5)	2 (414)	40.7 (26.1–57.1)	
	Mixed	1 (251)	41.0 (35.1–47.2)	—	—	—	—	—	—	
Instrument family	MBI-HSS	10 (2913)	30.7 (15.9–50.8)	19 (4,877)	36.1 (24.8–49.1)	19 (4,877)	35.0 (24.5–47.2)	19 (4,877)	45.3 (29.7–61.8)	<0.001
	MBI-other	6 (1187)	26.9 (15.1–43.2)	6 (1,771)	40.9 (14.1–74.4)	5 (1,585)	25.0 (5.7–64.8)	5 (1,585)	34.5 (14.6–61.9)	
	OLBI	4 (1430)	75.6 (67.2–82.3)	—	—	—	—	—	—	
	CBI	3 (617)	53.2 (15.5–87.5)	—	—	—	—	—	—	
	Other	3 (435)	57.4 (18.3–89.0)	—	—	—	—	—	—	
Risk of bias	Low	17 (4982)	34.9 (21.8–50.8)	15 (3,941)	33.9 (23.6–45.9)	15 (3,941)	33.2 (22.9–45.4)	15 (3,941)	43.7 (28.7–60)	0.0996
	Moderate	9 (1600)	56.1 (36.5–74.0)	4 (936)	45.7 (12.5–83.2)	4 (936)	42.3 (13.7–77.1)	4 (936)	50.9 (10.6–90)	

Table 3. Pooled prevalence of burnout in men and in women, overall and by subgroup

Subgroup	Level	Studies (Sample size)	Men, % (95% CI)	Studies (Sample size)	Women, % (95% CI)	p between (men)	p between (women)
Overall	All studies	13 (1,635)	39.5 (22.0–60.2)	13 (1,848)	37.7 (20.6–58.4)		
Zone	North	2 (160)	47.3 (3.5–95.6)	2 (126)	64.3 (12.2–95.9)	0.263	0.0021
	South	9 (1,050)	32.8 (14.9–57.7)	9 (1,530)	25.9 (12.0–47.1)		
	Multi-regional	2 (425)	64.8 (35.3–86.2)	2 (192)	71.8 (58.3–82.2)		
State	Oyo	3 (292)	44.6 (34.0–55.6)	3 (421)	26.6 (8.9–57.1)	<0.001	<0.001
	Abia	1 (78)	10.3 (5.2–19.2)	1 (175)	25.1 (19.3–32.1)		
	Akwa Ibom	1 (201)	9.0 (5.7–13.8)	1 (352)	6.8 (4.6–10.0)		
	Borno	1 (127)	15.7 (10.4–23.2)	1 (59)	33.9 (23.0–46.8)		
	Enugu	1 (248)	88.3 (83.7–91.8)	1 (172)	78.5 (71.7–84.0)		
	FCT Abuja	1 (33)	81.8 (65.0–91.6)	1 (67)	86.6 (76.2–92.9)		
	Ogun	1 (128)	53.9 (45.2–62.3)	1 (83)	55.4 (44.6–65.7)		
	Osun	1 (19)	31.6 (14.9–54.8)	1 (91)	22.0 (14.6–31.6)		
	Rivers	1 (84)	4.8 (1.8–12.0)	1 (236)	4.7 (2.6–8.2)		
Cadre	Mixed	7 (684)	24.7 (9.0–52.0)	7 (1,238)	23.7 (8.2–52.0)	0.0414	<0.001
	Doctors	5 (932)	64.2 (42.1–81.6)	5 (519)	64.2 (48.0–77.7)		
	Nurses/midwives	1 (19)	31.6 (14.9–54.8)	1 (91)	22.0 (14.6–31.6)		
Setting	Tertiary	11 (1,522)	35.3 (17.8–58.0)	11 (1,580)	36.6 (20.0–57.2)	<0.001	<0.001
	Private facility	1 (33)	81.8 (65.0–91.6)	1 (67)	86.6 (76.2–92.9)		
	Secondary	1 (80)	42.5 (32.2–53.5)	1 (201)	9.0 (5.7–13.8)		
Pandemic period	Before	7 (995)	23.8 (9.2–49.3)	7 (1,215)	24.5 (8.8–52.3)	0.119	0.242

Subgroup	Level	Studies (Sample size)	Men, % (95% CI)	Studies (Sample size)	Women, % (95% CI)	p between (men)	p between (women)
	During	3 (180)	57.4 (25.9–83.9)	3 (241)	56.4 (17.6–88.7)		
	After	3 (460)	63.8 (28.3–88.7)	3 (392)	54.6 (28.0–78.8)		
Sampling	Probability/census	12 (1,605)	38.7 (20.3–61.0)	12 (1,796)	35.3 (18.3–57.1)	0.435	0.0143
	Non-probability	1 (30)	50.0 (32.8–67.2)	1 (52)	67.3 (53.6–78.6)		
Coverage	Multi-centre	7 (1,092)	53.2 (31.6–73.7)	7 (844)	47.9 (26.2–70.3)	0.15	0.307
	Single-centre	6 (543)	25.1 (7.6–57.6)	6 (1,004)	27.1 (8.0–61.4)		
Sample size	< 200	4 (209)	43.6 (16.0–75.8)	4 (269)	53.7 (22.0–82.7)	0.62	0.308
	200-399	6 (582)	29.2 (12.6–54.0)	6 (915)	24.1 (10.3–46.7)		
	>= 400	3 (844)	57.1 (9.0–94.7)	3 (664)	48.2 (7.1–91.9)		
Administration mode	Onsite	8 (1,053)	44.8 (25.3–65.9)	8 (945)	44.6 (24.6–66.5)	0.671	0.134
	Not specified	4 (563)	30.9 (4.4–81.5)	4 (812)	28.9 (4.3–78.6)		
	Online	1 (19)	31.6 (14.9–54.8)	1 (91)	22.0 (14.6–31.6)		
Instrument family	MBI-HSS	4 (544)	20.4 (5.5–53.2)	4 (743)	18.8 (4.5–53.0)	0.00127	<0.001
	MBI-other	3 (288)	35.1 (15.1–62.1)	3 (408)	25.2 (8.7–54.3)		
	OLBI	2 (643)	82.7 (65.6–92.3)	2 (312)	76.8 (68.5–83.5)		
	CBI	1 (19)	31.6 (14.9–54.8)	1 (91)	22.0 (14.6–31.6)		
	Other	3 (141)	44.2 (8.4–87.3)	3 (294)	61.7 (22.1–90.2)		
Risk of bias	Low	9 (1,363)	30.8 (12.9–57.3)	9 (1,498)	26.9 (11.8–50.3)	0.0713	0.0238
	Moderate	4 (272)	59.6 (42.5–74.6)	4 (350)	64.4 (41.4–82.2)		

Table 4. Sensitivity analyses across all outcomes

Analysis	Overall burnout	High emotional exhaustion	High depersonalisation	Low personal accomplishment	Men	Women
Primary analysis	42 (30–55) [26]	36.1 (25–49) [19]	35 (24.6–47.1) [19]	45.3 (29.9–61.6) [19]	39.6 [13]	37.7 [13]
Freeman-Tukey transformation	67.3 (64.7–69.7) [26]	66 (63.5–68.4) [19]	65.6 (63–68.1) [19]	67.3 (64.4–70.1) [19]	—	—
Random-intercept logistic (GLMM)	41.9 (30.1–54.7) [26]	35.9 (24.9–48.6) [19]	34.9 (24.7–46.7) [19]	45.6 (30.1–61.9) [19]	—	—
Hartung-Knapp adjustment	42 (29.4–55.7) [26]	—	—	—	—	—
Restricted to full MBI-HSS	30.7 (16–50.7) [10]	—	—	—	20.4 [4]	18.8 [4]
All instruments pooled	—	37.2 (26.2–49.8) [25]	33.7 (24.1–44.8) [24]	42.9 (29.9–56.9) [24]	—	—
Low risk of bias only	34.9 (21.8–50.7) [17]	33.9 (23.6–45.9) [15]	33.2 (22.9–45.4) [15]	43.7 (28.7–60) [15]	30.8 [9]	27 [9]
Probability or census sampling	38 (25.7–52) [22]	33.8 (23.7–45.7) [16]	34.4 (22.6–48.5) [16]	47.1 (29.1–65.9) [16]	38.7 [12]	35.3 [12]
Sample size ≥ 200	41.2 (25.8–58.5) [17]	37.3 (23–54.2) [14]	35.8 (24.7–48.7) [14]	52.7 (32–72.5) [14]	37.7 [9]	31.2 [9]
Fieldwork 2015 onwards	46.5 (33.5–59.9) [23]	34.5 (20.5–51.8) [14]	33.4 (20.8–48.8) [14]	47 (26.8–68.3) [14]	—	—
Multicentre studies only	47.9 (32.7–63.5) [14]	—	—	—	—	—
Single-zone studies only	39 (26.5–53) [23]	—	—	—	—	—
Re-including the zero-case study	37.6 (24.6–52.6) [27]	—	—	—	—	—

Figures

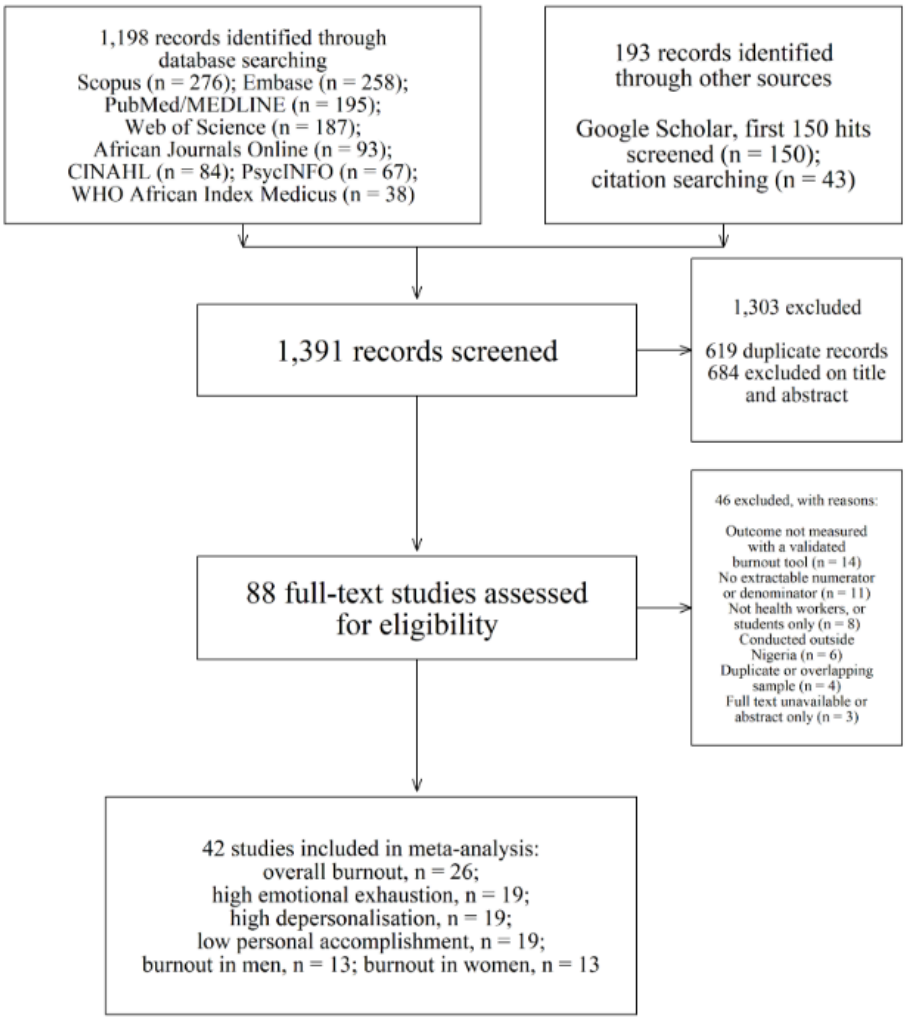


Figure 1: Study selection
Numbers of records at each stage of study identification, screening, and inclusion.

Figure 1

PRISMA flow diagram of included studies

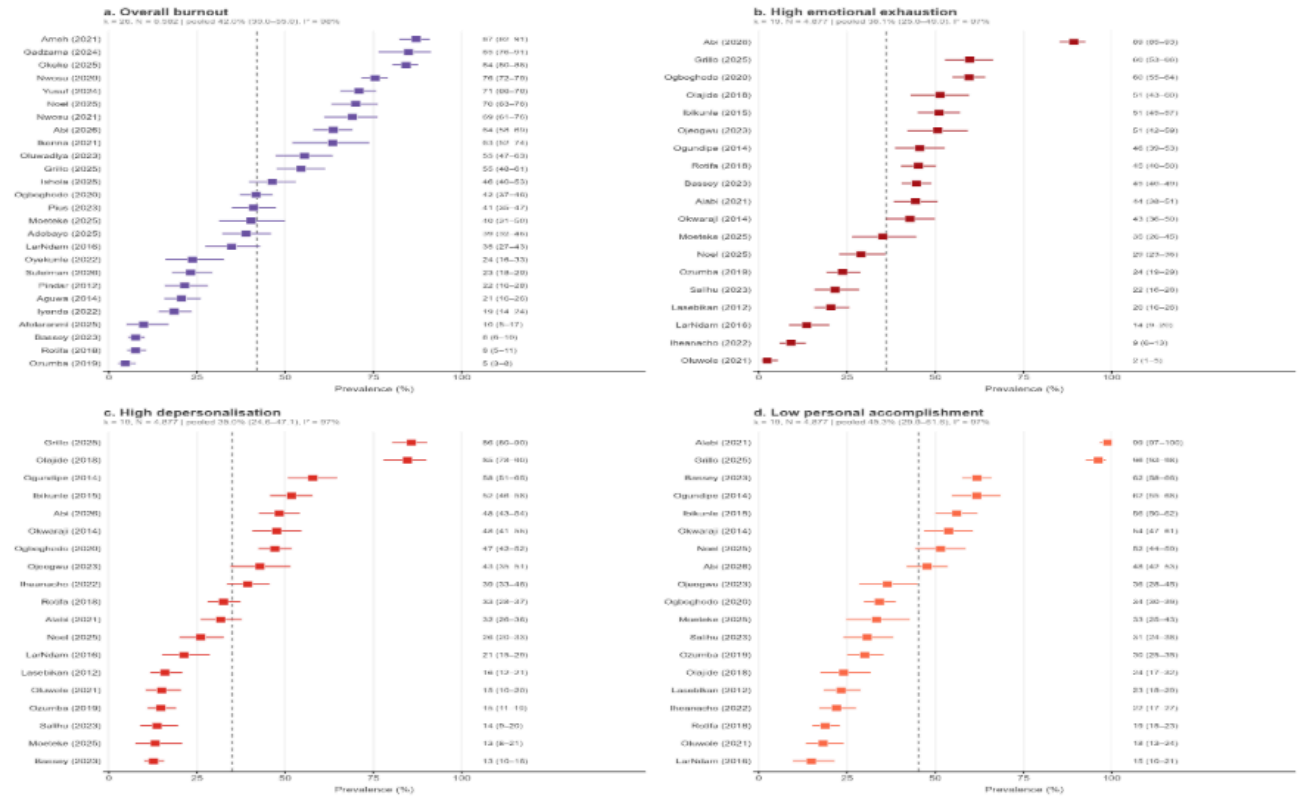


Figure 2

Pooled prevalence of: a. high overall burnout, b. high overall EE, c. high overall DP, d. high overall PA

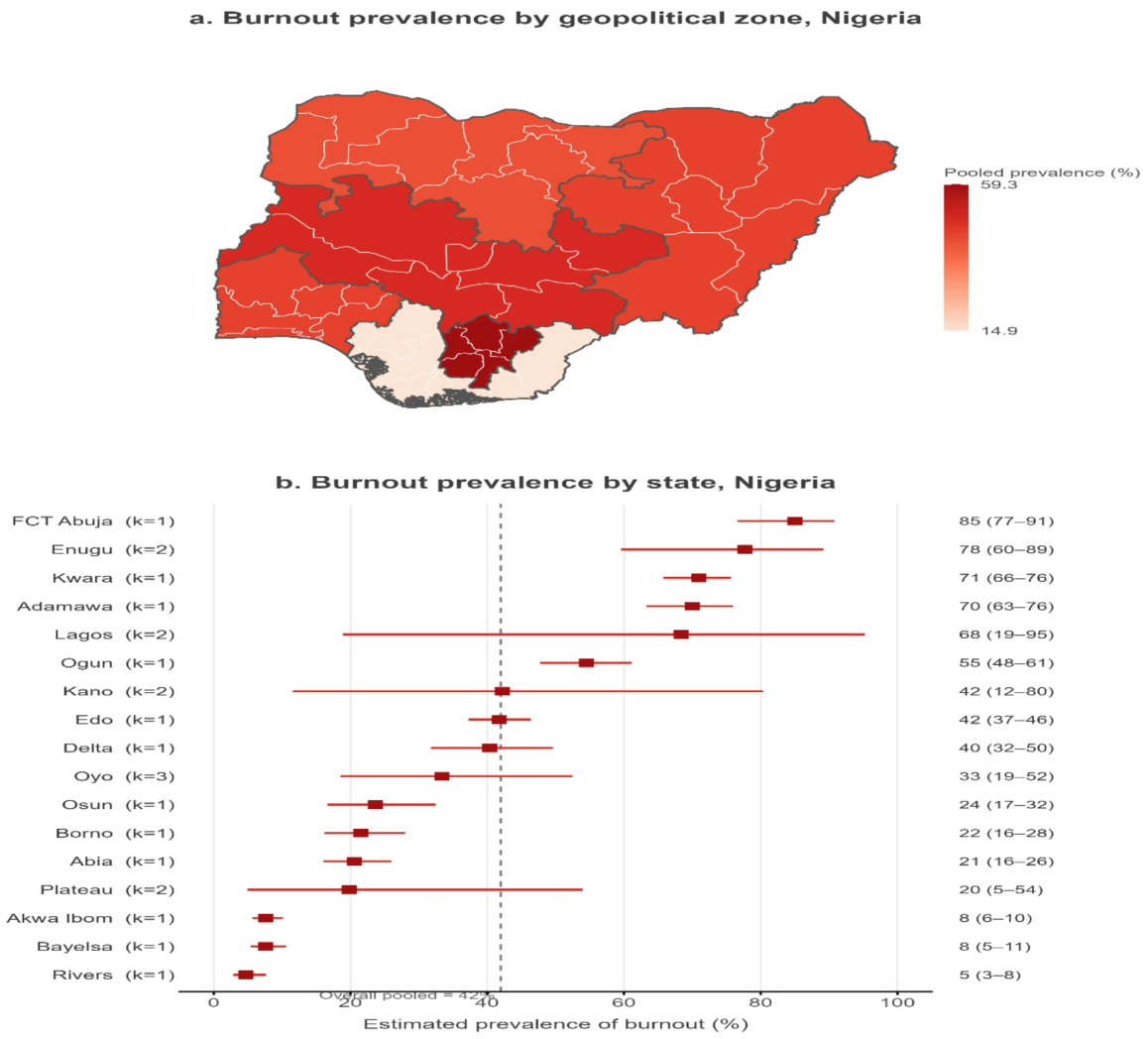


Figure 3

a. Burnout prevalence among the six geopolitical zones of Nigeria. b. Forest plot of burnout prevalence by state

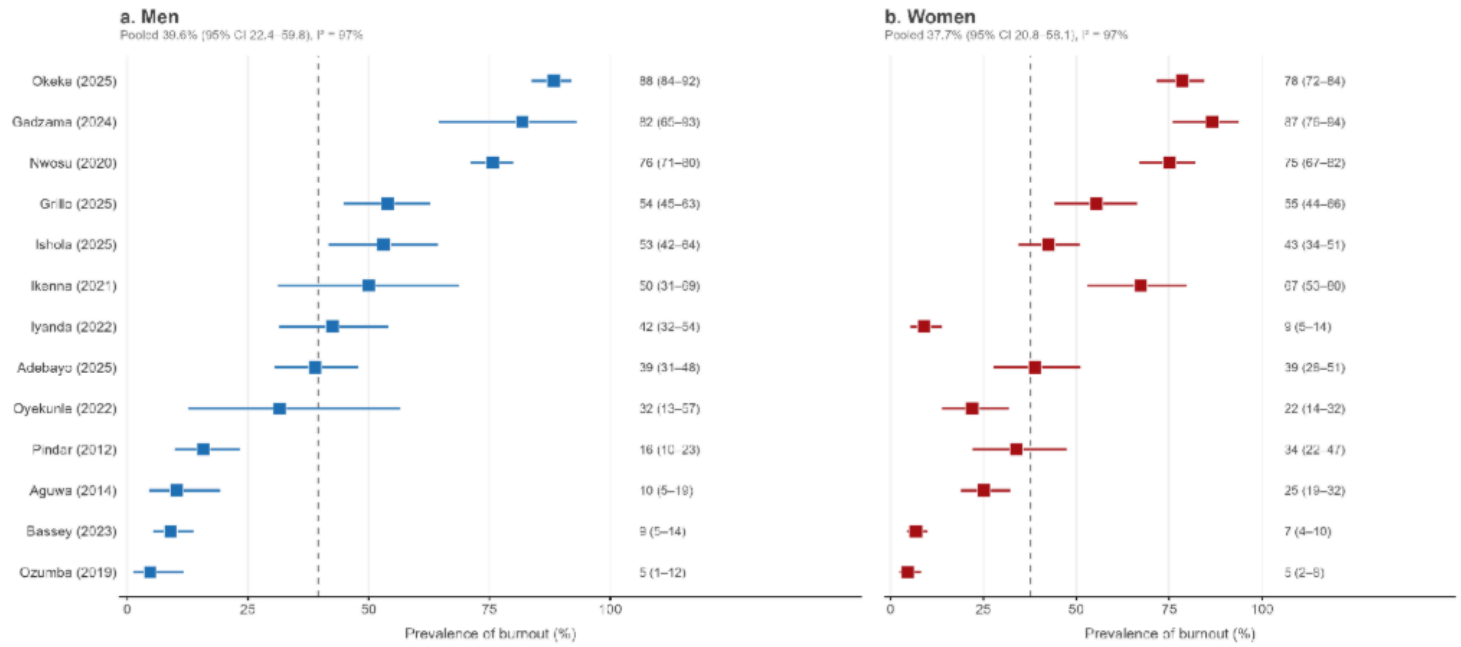


Figure 4

Pooled prevalence of burnout in: a. Men, b. Women

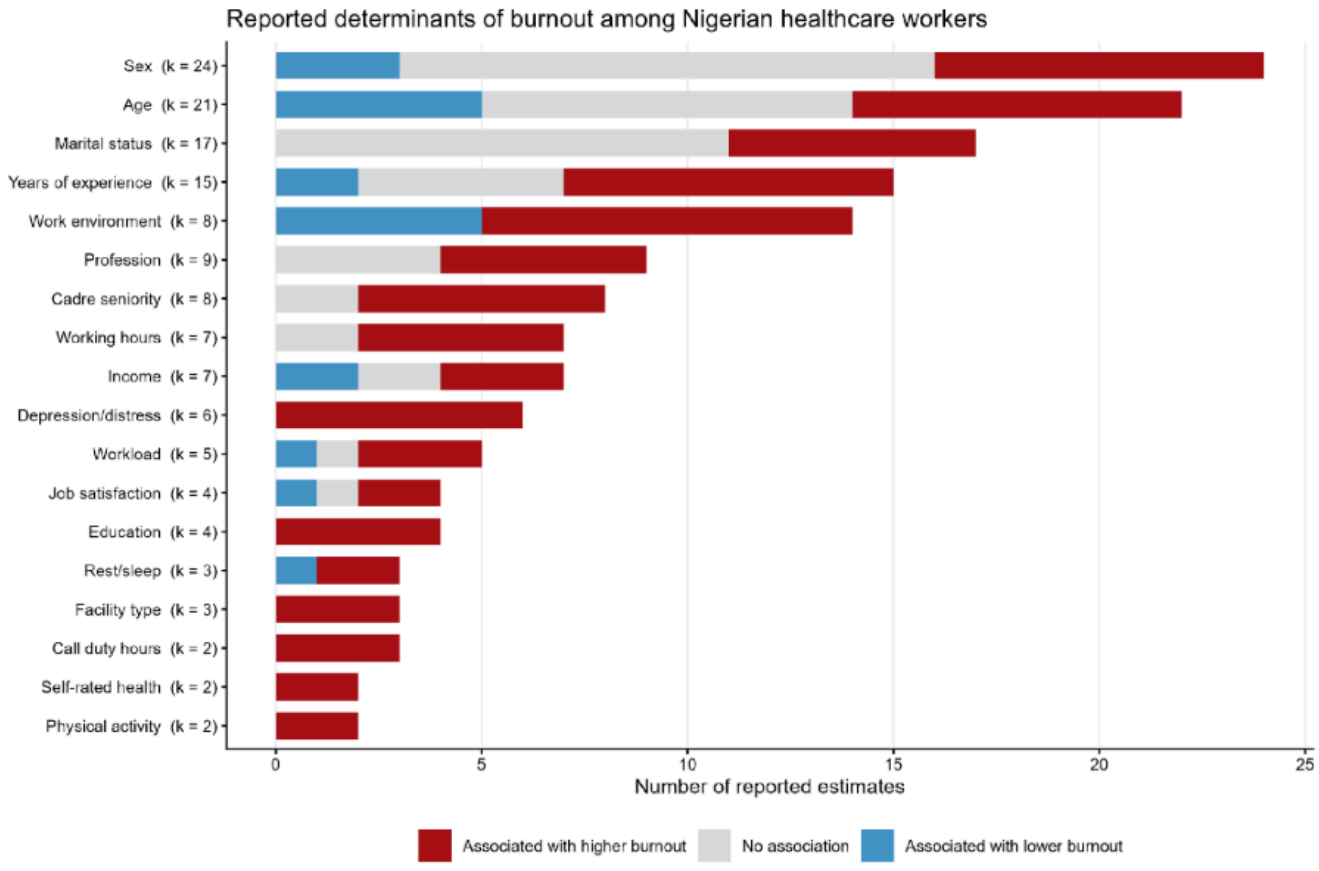


Figure 5

Reported determinants of burnout from individual studies included

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryFile.pdf