

THE INDIRECT PATH FROM WORKLOAD TO BURNOUT THROUGH WORK STRESS

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Abstract

This study examines whether workload influences burnout directly or primarily through work stress among site-based operational employees. Grounded in Job Demands–Resources theory, the study addresses the possibility that workload may not translate into burnout uniformly across occupational contexts and may instead operate through a more proximal psychological strain mechanism. A quantitative explanatory design was employed involving 80 site-based operational employees of PT Banjarmasin Bangkit in South Kalimantan, Indonesia. Data were collected through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings show that workload was positively and significantly associated with work stress, while work stress was positively and significantly associated with burnout. In contrast, the direct relationship between workload and burnout was not significant. The indirect effect of workload on burnout through work stress was significant, indicating an indirect-only mediation pattern. These findings suggest that workload becomes relevant to burnout primarily when it is translated into sustained psychological strain. The study highlights the importance of managing work stress alongside workload in site-based operational environments.

Keywords: Burnout; Job Demands–Resources Theory; Work Stress; Workload

INTRODUCTION

Burnout represents a prolonged response to chronic workplace stressors rather than a temporary state of fatigue and is commonly reflected in exhaustion, cynicism, and reduced professional efficacy (Maslach et al., 2001). Its development is therefore closely related to the conditions under which employees perform their work. The Job Demands–Resources (JD-R) theory provides a useful framework for explaining this process by proposing that job demands requiring sustained physical or psychological effort are associated with physiological and psychological costs (Bakker & Demerouti, 2017). When such demands remain high over time, they may initiate a *health-impairment process* in which employees' energetic and psychological resources are progressively depleted, increasing their vulnerability to burnout. From this perspective, burnout should not be understood merely as an individual reaction to difficult work, but as an occupational outcome shaped by the demands embedded in the work environment.

Understanding burnout therefore requires identifying not only which job demands employees encounter, but also how those demands are translated into strain over time. Among these demands, workload is particularly relevant because it is encountered across a wide range of occupational settings (Bakker & Demerouti, 2017).

Within JD-R theory, workload represents a job demand because managing a high volume or intensity of work requires employees to continuously invest physical, cognitive, and psychological effort. Job demands are not inherently harmful, but sustained exposure becomes problematic when the effort required to meet them generates persistent physiological or psychological costs and exceeds employees' opportunities for recovery (Bakker & Demerouti, 2017). More recent developments of JD-R theory continue to identify workload as an important situational antecedent of burnout, while emphasizing that sustained physical, emotional, and cognitive demands can have different implications across occupational settings (Bakker et al., 2023). Empirical findings also support the relevance of workload to burnout. In a study of 1,255 direct-care nurses across 34 hospitals in South Korea, Lee et al. (2024) found that workload was positively associated with burnout and remained a significant predictor when workplace incivility was considered simultaneously. These findings support the theoretical expectation that excessive workload can contribute to burnout. Nevertheless, establishing such an association does not necessarily explain the psychological process through which employees exposed to demanding work eventually develop more enduring burnout symptoms.

The distinction between exposure to a job demand and employees' psychological response to that demand is therefore important. Bakker & de Vries (2021) argue that enduring burnout should not be viewed as an immediate consequence of demanding work; rather, consistently high job demands can first generate short-term job strain, which may accumulate over time when recovery and self-regulation are insufficient. Their extension of JD-R theory specifically describes how repeated episodes of acute strain can gradually develop into more severe and enduring burnout. In the present study, this process provides the theoretical basis for positioning work stress as a more proximal psychological response to workload, whereas burnout represents a more enduring adverse occupational state. Workload thus refers to the demands embedded in the job, while work stress reflects employees' psychological experience when those demands become difficult to manage. This distinction also implies that employees exposed to comparable workloads may not necessarily develop burnout to the same degree or at the same rate. Consequently, examining workload only as a direct antecedent of burnout may overlook an important intermediate process through which demanding work is psychologically translated into longer-term occupational impairment (Bakker & de Vries, 2021).

Empirical evidence has begun to support this process by showing that work stress can transmit the effect of workload to burnout. Kusumawati & Dewi (2021), in a

study of hospital nurses, found that higher workload was associated with greater work stress and burnout, while work stress also positively predicted burnout. More importantly, work stress partially mediated the relationship between workload and burnout, indicating that the effect of workload was transmitted in part through employees' psychological stress responses. A comparable pattern was reported by Kresida et al. (2024) , who found significant positive relationships between workload and work stress, work stress and burnout, and workload and burnout, together with a significant indirect effect of workload on burnout through work stress. These findings provide empirical support for conceptualizing work stress as an intermediate mechanism between job demands and burnout. However, in both studies, workload retained a significant direct relationship with burnout even when the mediating role of work stress was considered. The remaining question is therefore not simply whether work stress can mediate the workload–burnout relationship, but whether workload necessarily maintains an independent association with burnout across different occupational contexts.

Recent evidence suggests that such a direct relationship should not be assumed to operate uniformly across work settings. Lee et al. (2024) , for example, reported a strong positive association between workload and burnout among hospital nurses, supporting the conventional expectation that heavier workload is directly associated with greater burnout. Other findings, however, suggest a more complex process. Xiong et al. (2024) found that mental workload was associated with fatigue and burnout among healthcare workers, but mental workload no longer independently predicted burnout in the adjusted model, whereas fatigue remained significantly associated with burnout. Although fatigue is conceptually distinct from work stress, this pattern illustrates how the apparent relationship between workload and burnout may change when a more proximal adverse state is taken into account. Longitudinal evidence further indicates that the effect of job demands on subsequent burnout may depend on the resources available to employees. Gynning et al. (2025) found that job control buffered the relationship between quantitative demands and later burnout complaints, with the effectiveness of this buffering effect also varying across professional groups. Taken together, these findings indicate that the workload–burnout relationship is not necessarily a fixed direct pathway but may depend on intervening strain states, available job resources, and the occupational context in which workload is experienced.

The need to clarify this mechanism is particularly relevant in operational and site-based work, where employees are exposed to combinations of physical, temporal, organizational, and psychosocial demands. Evidence from the construction sector indicates that burnout and occupational stress are both salient in such environments. Hon et al. (2025) , using a person-centered analysis of site-based construction employees in Australia, identified distinct work-design profiles and found that employees exposed to less favorable combinations of job demands and resources

reported higher levels of burnout. Recent evidence from Malaysia also shows the relevance of occupational stress among construction workers. Nata e3t al. (2026) reported that most respondents were general workers or lorry drivers, many worked extended hours and frequent overtime, and nearly half experienced high occupational stress; working days per month emerged as a strong positive predictor of occupational stress. At the broader field level, Guo et al. (2026) mapped 160 empirical studies of psychosocial work exposures in construction and found a substantial but structurally uneven evidence base, dominated by job-demand research, onsite settings, and cross-sectional designs. Together, these studies suggest that the remaining research need is not simply to establish that psychosocial demands matter in site-based work, but to explain more precisely how specific demands are translated into adverse psychological outcomes.

Against this background, the present study examines the relationships among workload, work stress, and burnout among operational-site employees using JD-R theory as its primary explanatory framework. Rather than treating mediation itself as a novel proposition, the study focuses on whether workload retains an independent association with burnout once work stress is considered as a proximal psychological response to demanding work. This focus extends previous evidence in two ways. First, it tests a specific demand–strain–burnout mechanism in an occupational context that differs from the healthcare and administrative settings in which comparable mediation models have commonly been examined. Second, it responds to recent evidence suggesting that direct demand–burnout relationships may vary according to intervening strain states, job resources, and occupational context. Accordingly, the study proposes that workload is positively associated with work stress and burnout, that work stress is positively associated with burnout, and that work stress mediates the relationship between workload and burnout. By testing these relationships simultaneously, the study seeks to clarify whether the effect of workload on burnout is primarily direct or whether it operates through the psychological strain represented by work stress.

RESEARCH METHOD

This study employed a quantitative approach with an explanatory research design to examine the direct and indirect relationships among workload, work stress, and burnout. The study was conducted among operational field employees of PT Banjarmasin Bangkit working at project sites in South Kalimantan, Indonesia. The population was restricted to site-based operational employees because their work characteristics involve relatively similar operational demands, including physical job requirements, project-related pressure, field-based work patterns, and direct exposure to site conditions. Office and administrative employees were excluded because their job

characteristics and work demands differ substantially from those of field-based operational workers.

A non-probability sampling approach with purposive sampling was applied to identify respondents whose work characteristics were directly relevant to the research model. Eligible respondents were required to be operational field employees of PT Banjarmasin Bangkit in South Kalimantan, work as drivers, operators, or helpers, and be actively assigned to project sites at the time of data collection. Based on these criteria, the final sample consisted of 80 operational field employees. The purposive restriction was intended to maintain relative homogeneity in work setting and job demands while ensuring that respondents had direct experience with the conditions represented by workload, work stress, and burnout. The sample size was considered appropriate for Partial Least Squares Structural Equation Modeling (PLS-SEM), which is suitable for estimating relationships among latent constructs and testing mediation models with relatively moderate sample sizes (Hair et al., 2021).

Primary data were collected using a structured self-administered questionnaire distributed online through Google Forms. The questionnaire contained statements measuring the three latent constructs in the proposed model. All responses were recorded using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Workload was operationalized through indicators representing work quantity, time pressure, mental demand, physical demand, and role overload, drawing on the conceptualization of job demands and previous workload research (Ahmadi et al., 2022; Bakker & Demerouti, 2017). Work stress was measured using five items capturing employees' psychological and physiological responses to job pressure and role-related stressors, drawing on prior empirical studies of occupational stress (Anggraeny et al., 2021; Fitri & Budiyanto, 2023; Kusumawati & Dewi, 2021). Burnout was measured through emotional exhaustion, depersonalization, and reduced personal accomplishment following the multidimensional conceptualization developed by Maslach et al. (2001). All constructs were specified as reflective measurement models because the observed indicators were treated as manifestations of their respective latent variables.

In addition to the primary questionnaire data, secondary information from organizational documents, internal reports, and relevant scientific literature was used to provide contextual support for the study. The empirical hypothesis testing, however, was based on the primary survey responses. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was selected because the research model simultaneously examines multiple relationships among latent variables and includes work stress as a mediating construct. Following the general PLS-SEM assessment procedure described by Hair et al. (2021), the analysis was conducted in two main stages: evaluation of the measurement model and evaluation of the structural model.

The reflective measurement model was assessed to establish the validity and reliability of the constructs before examining the hypothesized relationships. Convergent validity was evaluated using indicator loadings and Average Variance Extracted (AVE), while internal consistency reliability was assessed using Cronbach's alpha and composite reliability. Discriminant validity was examined to ensure that workload, work stress, and burnout represented empirically distinct constructs. After satisfactory measurement quality had been established, the structural model was evaluated using collinearity diagnostics, coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and path coefficients in accordance with PLS-SEM assessment principles Hair et al. (2021).

Hypothesis testing was performed using the bootstrapping procedure in SmartPLS 4 to estimate the significance of both direct and indirect relationships. The structural analysis examined the effects of workload on burnout, workload on work stress, and work stress on burnout. The mediating role of work stress was assessed through the specific indirect effect of workload on burnout through work stress. Statistical significance was determined from the resulting path coefficients, *t*-statistics, and *p*-values. This procedure enabled the study to determine whether workload was associated with burnout independently, indirectly through work stress, or through both pathways simultaneously.

RESULT AND DISCUSSION

Findings

Respondent Characteristics

The study involved 80 operational-site employees of PT Banjarmasin Bangkit working in project environments in South Kalimantan. The respondent profile reflects a predominantly productive-age workforce engaged directly in site-based operational activities. Employees aged 25–30 years represented the largest group, accounting for 43.8% of respondents, followed by those aged 31–40 years at 36.3%. Respondents younger than 25 years accounted for 11.3%, while employees older than 40 years represented 8.8% of the sample. In terms of education, 46.3% had completed senior high school or vocational high school, 35.0% held a bachelor's degree, and 18.8% had a diploma qualification. More than half of the respondents had worked for the company for between one and three years (53.8%), while 25.0% had four to five years of work experience.

Table 1. Characteristics of Respondents

Characteristic	Category	Frequency	Percentage
Age	< 25 years	9	11.3%
	25–30 years	35	43.8%
	31–40 years	29	36.3%
	> 40 years	7	8.8%

Education	Senior/Vocational High School	37	46.3%
	Diploma	15	18.8%
	Bachelor's Degree	28	35.0%
Length of employment	< 1 year	9	11.3%
	1–3 years	43	53.8%
	4–5 years	20	25.0%
	> 5 years	8	10.0%
Job position	Driver	14	17.5%
	Operator	41	51.2%
	Helper	25	31.3%
Average daily working hours	≤ 8 hours	5	6.3%
	9–10 hours	27	33.8%
	11–12 hours	37	46.3%
	> 12 hours	11	13.7%

Source: Primary data processed, 2026.

The occupational composition further confirms the operational nature of the sample. Operators constituted 51.2% of respondents, followed by helpers at 31.3% and drivers at 17.5%. All three groups were directly involved in project-site operations and worked within interconnected operational processes. Working duration was also relatively high. Only 6.3% of employees reported working eight hours or less per day, whereas 46.3% worked between 11 and 12 hours and a further 13.7% worked more than 12 hours per day. Thus, 60.0% of respondents reported working more than ten hours per day. These characteristics provide an important empirical context for examining workload because prolonged working periods are common within the operational environment represented in the sample.

Descriptive Results

Descriptive analysis was conducted to identify the general tendency of respondents' evaluations of workload, work stress, and burnout. The average workload score was 3.25, which was higher than the corresponding means for work stress and burnout. The highest workload item mean was 3.39, whereas the lowest was 3.19, indicating that perceived workload was relatively consistent across the measured aspects. In contrast, work stress recorded an overall mean of 2.31, with item means ranging from 2.21 to 2.38. Burnout also showed a relatively low overall mean of 2.39, with individual item means ranging from 2.23 to 2.50.

Table 2. Descriptive Statistics of the Main Constructs

Construct	Number of Indicators	Overall Mean	Lowest Item Mean	Highest Item Mean
Workload	5	3.25	3.19	3.39
Work Stress	5	2.31	2.21	2.38

Burnout	6	2.39	2.23	2.50
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Source: Primary data processed, 2026.

The descriptive pattern is noteworthy because perceived workload was comparatively higher than the reported levels of work stress and burnout. However, descriptive scores alone do not establish whether higher workload is statistically associated with either psychological outcome. The relationships among the three constructs were therefore assessed through PLS-SEM.

Measurement Model Assessment

Before testing the structural relationships, the reflective measurement model was evaluated for convergent validity, internal consistency reliability, and discriminant validity. All constructs produced Average Variance Extracted (AVE) values above the recommended threshold of 0.50. Workload recorded the highest AVE at 0.764, followed by work stress at 0.688 and burnout at 0.596. Internal consistency was also satisfactory across all constructs. Cronbach's alpha ranged from 0.865 to 0.923, while composite reliability (ρ_c) ranged from 0.898 to 0.942. These values indicate that the indicators consistently represented their respective latent constructs.

Table 3. Reliability and Convergent Validity

Construct	Cronbach's Alpha	ρ_c	Composite Reliability	AVE
Burnout	0.865	0.880	0.898	0.596
Workload	0.923	0.924	0.942	0.764
Work Stress	0.886	0.889	0.917	0.688

Source: Primary data processed using SmartPLS 4, 2026.

The reliability and validity statistics confirm that all three constructs met the commonly accepted PLS-SEM measurement criteria. Discriminant validity was further supported by the Heterotrait–Monotrait Ratio (HTMT). The HTMT value was 0.214 between workload and burnout, 0.548 between work stress and burnout, and 0.632 between workload and work stress. All values remained below the 0.90 threshold, indicating that workload, work stress, and burnout represented empirically distinct constructs rather than overlapping measures.

Indicator reliability further supported the adequacy of the measurement model. All outer loading values exceeded 0.70, indicating that each observed indicator adequately represented its respective latent construct. The workload indicators produced loadings ranging from 0.841 to 0.893, while the work stress indicators ranged from 0.792 to 0.880. The burnout indicators also met the required criterion, with loadings ranging from 0.727 to 0.817. These results indicate that none of the indicators required elimination from the measurement model. The relatively strong indicator loadings for workload and work stress are particularly relevant to the present study because they show that the two constructs were empirically distinguishable despite their theoretical relationship as job demand and psychological strain. Burnout indicators similarly demonstrated acceptable representation of the more enduring occupational

outcome examined in the model. Taken together with the AVE and internal consistency results, the outer loading values provide additional support for the reliability and convergent validity of the three reflective constructs.

This distinction is particularly important for the present model because workload is treated as the occupational demand, work stress as the psychological response, and burnout as the more enduring adverse outcome. The measurement results therefore provide adequate empirical separation among the three constructs before their structural relationships are evaluated.

Structural Model Assessment

The structural model was evaluated using the coefficient of determination (R^2), predictive relevance (Q^2), and collinearity statistics. Work stress produced an R^2 value of 0.331 and an adjusted R^2 of 0.323, indicating that workload explained 33.1% of the variance in work stress. Burnout produced an R^2 value of 0.259 and an adjusted R^2 of 0.239, indicating that workload and work stress jointly explained 25.9% of the variance in burnout.

Predictive assessment produced a Q^2 value of 0.307 for work stress, indicating meaningful predictive relevance for this endogenous construct. The Q^2 value for burnout was substantially lower at 0.002, although it remained above zero. This pattern shows that the model had considerably stronger predictive capability for work stress than for burnout.

Predictive assessment using Q^2_{predict} further indicated differences in the model's predictive performance across the endogenous constructs. Work stress produced a Q^2_{predict} value of 0.307, indicating that the model demonstrated meaningful out-of-sample predictive capability for employees' work stress. In contrast, burnout produced a Q^2_{predict} value of only 0.002. Although this value remained marginally above zero, it indicates that the model had considerably weaker predictive performance for burnout than for work stress. The contrast between the two endogenous constructs is consistent with the broader structural results: workload was considerably more informative for explaining and predicting work stress, whereas burnout appeared to depend on a wider range of factors beyond workload and work stress. This result should therefore be interpreted cautiously as evidence of limited predictive capability for burnout rather than as evidence that the model comprehensively predicts burnout outcomes.

The model also showed no problematic multicollinearity. The Variance Inflation Factor (VIF) was 1.000 for workload predicting work stress and 1.496 for both workload and work stress when predicting burnout. All values were well below the threshold of 5, indicating that the structural estimates were not distorted by excessive collinearity among the predictors.

Direct and Indirect Effects

Bootstrapping results revealed different patterns across the direct relationships in the model. Contrary to the proposed direct-effect hypothesis, workload did not significantly predict burnout. The path coefficient was negative but nonsignificant ($\beta = -0.149$, $t = 1.072$, $p = .284$). Thus, the hypothesis proposing a positive direct association between workload and burnout was not supported.

In contrast, workload showed a positive and statistically significant relationship with work stress ($\beta = 0.576$, $t = 7.735$, $p < .001$). This was one of the strongest relationships observed in the structural model and indicates that employees who reported greater workload also tended to report greater work stress. Work stress subsequently showed a significant positive association with burnout ($\beta = 0.580$, $t = 5.266$, $p < .001$). Therefore, the hypotheses concerning workload–work stress and work stress–burnout relationships were supported.

Table 4. Hypothesis Testing and Mediation Results

Hypothesis	Relationship	β	t-Statistic	p-Value	Result
H1	Workload → Burnout	−0.149	1.072	0.284	Not supported
H2	Workload → Work Stress	0.576	7.735	< .001	Supported
H3	Work Stress → Burnout	0.580	5.266	< .001	Supported
H4	Workload → Work Stress → Burnout	0.334	3.767	< .001	Supported

Source: Primary data processed using SmartPLS 4, 2026.

The mediation analysis provides the central empirical finding of the study. The specific indirect effect of workload on burnout through work stress was positive and statistically significant ($\beta = 0.334$, $t = 3.767$, $p < .001$). Therefore, the mediation hypothesis was supported.

When the direct and indirect effects are considered simultaneously, a distinctive pattern emerges. Workload had no significant independent direct association with burnout, while its indirect association through work stress was significant. In empirical terms, this pattern is consistent with an indirect-only mediation mechanism: workload was related to burnout primarily through its association with work stress rather than through a statistically detectable direct pathway. The results therefore suggest that the psychological response represented by work stress occupies a central position in the workload–burnout relationship among the operational-site employees examined in this study.

ANALYSIS/DISCUSSION

The findings reveal a distinctive pattern in the relationship between workload, work stress, and burnout among operational-site employees. Workload was positively associated with work stress, and work stress was positively associated with burnout, whereas the direct relationship between workload and burnout was not statistically significant. At the same time, the indirect effect of workload on burnout through work stress was significant. Taken together, these results indicate an indirect-only mediation pattern, in which workload becomes relevant to burnout primarily through its association with psychological strain. This pattern is theoretically consistent with the health-impairment process proposed in Job Demands–Resources (JD-R) theory. Job demands require sustained physical and psychological effort and may generate physiological or psychological costs when employees are repeatedly exposed to them (Bakker & Demerouti, 2017). However, the longer-term consequences of these demands depend on the process through which employees experience and respond to the resulting strain. Bakker and de Vries (2021) further explain that repeated job strain can accumulate and develop into more enduring burnout when recovery and effective self-regulation are insufficient. Therefore, the nonsignificant direct effect found in this study should not be interpreted as evidence that workload is irrelevant to burnout, but rather as an indication that workload alone may be insufficient to explain why employees eventually experience burnout.

The absence of a significant direct workload–burnout relationship is particularly important because it differs from several previous empirical findings. Lee et al. (2024), in a study involving 1,255 nurses across 34 hospitals in South Korea, found a strong positive relationship between workload and burnout. Their findings support the conventional expectation that sustained workload can directly contribute to burnout in highly demanding occupational environments. Similarly, Kusumawati & Dewi (2021) and Kresida et al. (2024) reported significant direct relationships between workload and burnout while also identifying work stress as a mediating variable. In these studies, mediation occurred while the direct effect of workload on burnout remained significant. The present findings therefore extend rather than simply replicate these earlier results. They suggest that the direct workload–burnout relationship may not operate uniformly across occupational settings and that the form of the relationship can vary depending on the context in which job demands are experienced.

This interpretation is consistent with more recent developments in JD-R research. Gynning et al. (2025), using a one-year cohort of healthcare professionals, showed that the relationship between quantitative demands and subsequent burnout complaints could be buffered by job control and that the effectiveness of this buffering mechanism differed across professional groups. Their findings suggest that the consequences of job demands may depend on the resources available to employees and on the characteristics of the occupation itself. The current study did not measure job

resources such as job control, social support, or autonomy. Consequently, these resources cannot be claimed as the reason why workload did not directly predict burnout in the present sample. Nevertheless, the evidence from Gynning et al. (2025) supports the broader interpretation that the demand–burnout relationship is conditional rather than universal. The nonsignificant direct pathway observed here may therefore reflect characteristics of operational-site work that are not captured by workload alone.

The positive and significant relationship between workload and work stress provides clearer evidence regarding the more immediate psychological implications of demanding operational work. The respondents were directly involved in site-based activities as operators, helpers, and drivers, and a substantial proportion reported working more than ten hours per day. These descriptive characteristics do not establish that long working hours caused work stress, but they illustrate the demanding occupational environment in which the relationship was observed. Comparable evidence has been reported among construction workers in Malaysia. Nata et al. (2026) found that a greater number of working days was positively associated with occupational stress, whereas longer break duration was associated with lower stress. Although their operationalization of work exposure differs from the workload construct used in the present study, the findings indicate that demanding work schedules and limited recovery opportunities are relevant to psychological strain in site-based environments. In this context, workload may be more appropriately understood as an occupational demand that first manifests through employees' psychological stress responses rather than as an immediate predictor of burnout.

The significant association between work stress and burnout further clarifies this process. Work stress remained positively related to burnout when workload was simultaneously included in the structural model, indicating that psychological strain was more proximally associated with burnout than workload itself. This pattern is consistent with Bakker & de Vries (2021), who distinguish between more immediate job strain and the development of enduring burnout. According to their extension of JD-R theory, repeated exposure to high job demands can generate recurring episodes of strain, while insufficient recovery and maladaptive self-regulation may allow these experiences to accumulate into persistent burnout. The present findings are compatible with this theoretical sequence. Employees may experience demanding workloads without necessarily developing burnout directly, but when these demands are accompanied by sustained work stress, the likelihood of burnout appears to increase. Because the present study employed a cross-sectional design, however, this interpretation should remain associative rather than causal. The data support a mechanism consistent with JD-R theory, but they do not establish the temporal progression from workload to work stress and subsequently to burnout.

The mediation result therefore represents the central empirical contribution of the study. The significant indirect pathway from workload to burnout through work stress, combined with the nonsignificant direct workload–burnout relationship, differs from the partial mediation patterns reported by Kusumawati & Dewi (2021) and Kresida et al. (2024). In the present study, the statistical relevance of workload to burnout was concentrated in the mediated pathway through work stress. A conceptually comparable pattern was reported by Xiong et al. (2024). Their study found that mental workload was related to fatigue and burnout, but mental workload no longer independently predicted burnout in the adjusted model, whereas fatigue remained significantly associated with burnout. Fatigue should not be treated as equivalent to work stress, and Xiong et al. (2024) did not test the same mediation model used in the present research. Nevertheless, their findings provide useful comparative evidence showing that the direct relationship between workload and burnout may weaken when a more proximal adverse psychological or physiological state is incorporated into the analysis.

The indirect-only pattern is especially meaningful in operational and site-based work. Hon et al. (2025) demonstrated that site-based construction employees exposed to less favorable combinations of work characteristics, including higher demands and weaker resources, reported greater burnout than workers experiencing more favorable work-design profiles. Their findings suggest that burnout in field-based occupational environments cannot be adequately explained by a single demand in isolation. Similarly, Guo et al. (2026), in an evidence-gap map covering 160 empirical studies of psychosocial work exposures in construction, found that demand-related exposures were prominent but that the literature remained fragmented across terminology, levels of analysis, and outcome domains. This broader evidence supports the importance of examining specific mechanisms rather than merely documenting whether psychosocial demands exist. The contribution of the present study therefore lies not in claiming that workload, work stress, or mediation have never been studied, but in showing that their structural configuration may differ among operational-site employees. In this context, workload did not retain an independent association with burnout once work stress was considered.

These findings also carry practical implications for psychosocial risk management. If workload is primarily associated with burnout through work stress, organizational interventions focused exclusively on reducing the amount of work may be insufficient. Greater attention should be given to preventing demanding work from developing into sustained psychological strain. This may involve more manageable scheduling, adequate opportunities for recovery, clearer task allocation, and stronger supervisory or organizational support. Evidence from Nata et al. (2026) regarding break duration and occupational stress, together with the buffering effects identified by Gynning et al. (2025), supports the broader relevance of recovery opportunities and job resources. However, these factors were not measured directly in the present study and

should therefore be considered theoretically informed implications rather than empirically demonstrated mechanisms. The most defensible managerial implication is that monitoring workload should be accompanied by monitoring signs of sustained work stress, particularly among employees exposed to prolonged and intensive site-based working patterns.

Finally, the relatively modest explanatory and predictive performance of the model for burnout reinforces the conclusion that burnout cannot be reduced to workload and work stress alone. Workload and work stress explained 25.9% of the variance in burnout, whereas the predictive relevance for burnout was only marginally above zero. This indicates that a substantial proportion of burnout is associated with factors not included in the present model. JD-R theory suggests that job resources, other job demands, and personal resources can shape how employees respond to demanding work conditions (Bakker & Demerouti, 2017; Bakker et al., 2023). Construction research similarly indicates substantial heterogeneity in psychosocial exposures and work characteristics (Guo et al., 2026; Hon et al., 2025). Future studies should therefore examine workload together with resources such as job control, supervisory support, recovery opportunities, and role clarity, while also considering whether different dimensions of workload produce different psychological consequences. Longitudinal research would also be valuable for determining whether increases in workload precede changes in work stress and whether sustained work stress subsequently develops into burnout. Overall, the findings support a more process-oriented interpretation of occupational burnout: among the operational-site employees examined in this study, the critical issue was not simply how much workload employees experienced, but whether that workload was accompanied by sustained work stress.

CONCLUSION

This study examined the relationship between workload and burnout through work stress among operational-site employees. The findings show that workload was positively and significantly associated with work stress, while work stress was positively and significantly associated with burnout. In contrast, workload did not have a significant direct relationship with burnout. The significant indirect effect of workload on burnout through work stress indicates an indirect-only mediation pattern, suggesting that workload becomes relevant to burnout primarily when it is translated into sustained psychological strain. Thus, the findings highlight work stress as the more proximal mechanism linking demanding work conditions to burnout in the operational-site context.

The study contributes to the development of Job Demands–Resources research by showing that the relationship between job demands and burnout should not always be interpreted as a simple direct pathway. In operational-site work, the consequences

of workload may depend more strongly on how employees psychologically experience and respond to those demands. This finding also extends previous mediation studies by demonstrating a different structural configuration in which the direct workload–burnout relationship is not statistically significant once work stress is considered.

From a practical perspective, organizations should therefore avoid relying solely on workload reduction as a strategy for preventing burnout. Workload management should be accompanied by efforts to prevent demanding work from developing into sustained work stress through appropriate scheduling, adequate recovery opportunities, clear task allocation, and effective supervisory support. Regular monitoring of psychological strain may also help organizations identify employees at greater risk before stress develops into more persistent burnout. Future research should employ longitudinal designs and incorporate job resources, different dimensions of workload, and other occupational demands to clarify when workload directly contributes to burnout and when its effects operate primarily through intermediate psychological processes.

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