

## **Emotional Labor and Mental Health Problems in Working Individuals with Chronic Nonspecific Musculoskeletal Pain: Role of Psychosocial Reactions, Burnout and Relationship Quality**

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Working individuals with chronic nonspecific musculoskeletal pain (CNMP) usually face sustained occupational demands that tend to intensify psychological risks. Emotional labor is a key stressor for working individuals but its role to mental health problems is still insufficiently understood. This study examined a moderated serial mediation model which tested whether psychosocial and emotional reactions to pain and burnout mediate the relationship of emotional labor and mental health problems where quality of relationship act as a moderator. Cross-sectional correlational research design was used to extract data from 210 working adults (Male=72, Female=138;  $M_{age}=32.30$ ,  $SD_{age}=7.34$ ) with CNMP using standardized self-report measures. Correlation analysis provided preliminary support for the proposed model by indicating meaningful associations among emotional labor, psychosocial reactions, burnout, relationship quality and mental health outcomes. Hayes' PROCESS Model 88 with 5,000 bootstrap samples indicated that emotional labor was positively correlated with psychosocial and emotional reactions which in turn predicted mental health problems but this indirect effect was weakened at higher levels of relationship quality. Burnout did not significantly mediate the association while the direct effect of emotional labor remained significant. This research concludes that psychosocial and emotional reactions to chronic pain are a central mechanism linking emotional labor to mental health problems where quality relationships serve a protective role.

**Keywords:** emotional labor, chronic musculoskeletal pain, mental health, psychosocial and emotional reaction, burnout, quality of relationship, working individuals, Pakistan

Chronic musculoskeletal pain is among the most prevalent causes of disability and poor quality of life across the globe, particularly among working individuals (Alhashim et al., 2025). Among these conditions, chronic nonspecific musculoskeletal pain (CNMP) refers to persistent musculoskeletal pain lasting longer than three months without a clearly identifiable pathological cause (O'Sullivan et al., 2011). In CNMP neck, back, shoulders and limbs are commonly effected and are associated with functional limitations, fatigue, reduced work productivity and psychological distress (Durán et al., 2021; Dzakpasu et al., 2021; Zhou et al., 2024). Chronic pain cannot be fully understood solely through biomedical mechanisms because it involves a complex interplay between physical symptoms, psychological responses and social contexts of the individuals (Gatchel et al., 2019). Research has constantly demonstrated that physical and mental health are closely interconnected as deteriorating physical health contribute to psychological distress and poor mental health further exacerbate physical health consequences (Luo et al., 2020; Ohrnberger et al., 2017). Consequently, individuals living with CNMP often face multiple challenges in maintaining physical functioning and psychological well-being within demanding occupational environments.

Despite experiencing persistent pain, many individuals with CNMP continue to remain active in the workforce and must manage both physical discomfort and occupational demands. One occupational demand increasingly recognized as a reason of psychological strain is emotional labor, which refers to the regulation of emotional expressions to fulfill organizational requirements during interpersonal interactions (Hochschild, 1983). Emotional labor requires personnel to suppress or alter their genuine emotional reactions in order to exhibit emotions that are socially or professionally appropriate. While emotional labor is common across service-oriented and professional roles, sustained emotional regulation has been associated with psychological strain, emotional exhaustion and adverse mental health outcomes (Jeung et al., 2018). Research has shown that emotional labor is positively related with emotional exhaustion and poorer physical and mental health outcomes among healthcare professionals and other service workers (Chen et al., 2022).

The psychological impact of emotional labor may be particularly pronounced among workers experiencing chronic pain as individuals with CNMP frequently report heightened emotional reactivity, frustration and pain-related distress, which may make emotional regulation during workplace interactions more challenging (Pérez-Martín et al., 2025). Managing persistent pain while simultaneously fulfilling emotional display requirements may place additional cognitive and emotional demands on individuals, thereby increasing vulnerability to stress and psychological difficulties (Kim & Choo, 2017; Suh & Punnett, 2022). Research has further demonstrated that emotional strains and surface acting are strongly linked with burnout and poor mental well-being across service professions, highlighting emotional demands as significant occupational risk factors for psychological distress (Popucza et al., 2025). Similarly, emotional labor has been linked to occupational burnout, which in turn predicts adverse work-related and psychological outcomes (Lv et al., 2025).

Present study is grounded in the Job Demands–Resources Theory (Bakker et al., 2023) supporting that work demands require sustained effort which lead to stress and health impairments in the absence of adequate resources. Emotional labor represents a key job demand because it requires employees to regulate emotional expressions continuously in social interactions. According to this model the effect of job-demands on health outcomes is transmitted through intermediate psychological responses that reflect reactions to stressors by the individuals. The study also draws on Conservation of Resources Theory (Hobfoll, 2011) which suggests that people strive to obtain, remember and guard valued personal and social resources including emotional energy, physical health and supportive relationships. Tension occurs when these capitals are challenged or depleted. For individuals living with CNMP, chronic pain itself may already reduce available physical and psychological resources. Consequently, the additional emotional demands associated with emotional labor may accelerate resource depletion, increasing susceptibility to psychological strain and mental health problems.

Within these theoretical frameworks, psychosocial and emotional reactions to pain represent a key mechanism through which emotional labor may influence mental health outcomes. Chronic pain seems to evoke emotional responses such as frustration, worry, helplessness and perceived loss of control, which may intensify when individuals face demanding interpersonal interactions at work. Stress–strain perspectives within occupational stress research suggest that such emotional reactions represent immediate responses to stressors and may contribute to subsequent psychological difficulties (Seidler et al., 2022; Pérez-Martín et al., 2025). These reactions may be particularly salient for individuals with chronic pain, as pain-related emotional responses often fluctuate in response to workplace stressors and interpersonal demands (Goubert & Bernardes, 2025; Wainwright et al., 2022).

In addition to these immediate emotional responses, prolonged exposure to occupational stressors may contribute to burnout, a psychological condition of emotional fatigue, depersonalization and poor personal achievement (Demerouti, 2024; Nadon et al., 2022; Sim et al., 2023). Burnout is widely understood as a long-term effect of sustained occupational stress and has been repeatedly linked to emotional labor across various occupational settings (Amellah et al., 2025; Che Mat et al., 2025). However, it remains unclear whether burnout represents the primary mechanism connecting emotional labor to mental health problems among individuals with CNMP or whether more immediate pain-related emotional reactions play a more prominent role. It is important to address this distinction to refine theoretical models and identify effective intervention targets for individuals managing chronic pain in occupational settings.

Importantly, occupational stress processes do not arise in isolation but are formed by interpersonal and contextual resources of the individuals (Dipboye, 2018). Quality of relations in terms of perceived emotional support, understanding and responsiveness from coworkers, family members and significant others represents a key protective factor in stress processes (Huo et al., 2025; Oliveros et al., 2022; Valenti et al., 2021). Supportive relationships mitigate stress reactivity, promote adaptive coping and protect psychological well-being among working populations and individuals living with chronic pain (Jolly et al., 2021; Liu et al., 2023; Brown, 2024). Within the framework of Conservation of Resources theory, supportive relationships represent valuable social resources that can buffer the effects of resource depletion (Hobfoll, 2011). For the individuals with CNMP high-quality relationships reduce the psychological impact of pain-related emotional reactions by fostering emotional validation, shared coping and a sense of support (Martinez-Calderon et al., 2022). However, limited empirical research examined the moderating role of relational resources within conditional process models involving emotional labor and chronic pain.

To address these gaps, this study examined a moderated serial mediation model among working individuals with chronic nonspecific musculoskeletal pain (CNMP). Specifically, emotional labor is hypothesized to influence mental health problems both directly and indirectly through psychosocial and emotional reactions to pain and burnout. In addition, the study investigated whether quality of relations moderates the effects of these mediating processes on mental health outcomes. By integrating occupational stress theories with perspectives from chronic pain and relational research, this study aimed to advance understanding of how workplace emotional demands contribute to psychological vulnerability among individuals living with CNMP.

This study aims to (a) examine the direct association of emotional labor and mental health problems in working individuals with CNMP, (b) test the mediating roles of psychosocial and emotional reactions to pain and burnout and (c) investigate whether quality of relations moderates these mediation pathways.

## Method

### Participants

In this study a correlational research design was used. Purposive sampling technique was used to collect information from 210 working individuals (Male=72, Female=138) from age range of 25 to 50 years ( $M=32.30$ ,  $SD=7.34$ ) experiencing chronic nonspecific musculoskeletal pain (CNMP) from clinical/hospital, workplace and online settings. The participants were full time working individuals with minimum 16 years of education and serving desk jobs for more than 1 year. The sample size of 210 fell within the recommended range for multivariate and conditional process analyses (Green, 1991; Harris, 2001; Memon et al., 2020). CNMP was defined as persisting musculoskeletal pain without a specific identifiable medical pathology for more than three months. Those working individuals who possessed sufficient language proficiency in English or Urdu and were experiencing CNMP without any specific medical condition (e.g., fracture, inflammatory or neurological disorders), were currently employed or had no history of severe psychiatric or neurological illness were recruited in the sample. Eligibility was assessed using screening questions embedded at the beginning of the survey questionnaire for both online and in-person participants. In order to limit multiple representation by single participant, the option of one-time participation was activated in the google form. In addition to self-report screening, a substantial proportion of participants were recruited via referrals from general physicians, orthopedic specialists and physiotherapists which increased confidence in the appropriateness of CNMP classification despite the absence of formal medical record verification.

### Measures

Prior to the data collection, all measures to be used in this study were reviewed by the research team and tested on a small sample in pilot phase to ensure the conceptual relevance, linguistic clarity and cultural appropriateness for the use with working individuals experiencing chronic pain.

#### *Demographic and clinical information form*

This form was used to access age, gender, marital status, education, nature of job, job tenure, pain duration, pain severity, pain location, cause of pain and history of medical assessment in order to confirm relevance of sample in accordance to the inclusion and exclusion criterion.

***CNMP screening checklist***

A screening checklist developed based on the literature and validated by the health professionals was used to identify the individuals with CNMP before recruiting to participate in research.

***Dutch questionnaire on emotional labor (D-QEL; Briët et al., 2005)***

This scale was used to measure emotional labor through emotional consonance, deep acting, suppression and surface acting. The scale comprised of 13 items to be rated on a 5-point Likert scale ( $1=never$  to  $5=always$ ) and higher scores indicated more emotional labor demands. In the current study, D-QEL demonstrated acceptable internal consistency (Cronh's  $\alpha=.92$ ).

***Psychosocial and emotional reactions scale (PSERS; Zafar et al., unpublished doctoral work)***

This scale was used to measure psychosocial and emotional reactions to chronic nonspecific musculoskeletal pain (CNMP) in terms of helplessness, social strain, emotional strain and physical strain. This scale consisted of 38 items to be rated on a 4-point Likert scale ( $1=never$  to  $4=always$ ) and higher scores reflect stronger reactions in response to CNMP. The scale demonstrated satisfactory internal consistency in the present sample (Cronh's  $\alpha=.98$ ).

***Oldenburg Burnout Inventory (OLBI; Demerouti & Nachreiner, 1998)***

The 16-item scale was used to measure burnout through two subscales of exhaustion and disengagement using a 4-point Likert scale (*strongly agree* to *strongly disagree*), with higher scores indicating greater burnout. OLBI demonstrated satisfactory internal consistency in the present sample (Cronh's  $\alpha=.84$ ).

***Relationship Assessment Scale (RAS; Hendrick, 1988)***

This scale was used to access quality of relations through 7 items rated on a 5-point Likert scale ( $1=low$  satisfaction to  $5=high$  satisfaction), with higher scores reflecting better perceived relationship quality. RAS demonstrated satisfactory internal consistency in the present sample (Cronh's  $\alpha=.88$ ).

***Depression Anxiety Stress Scales–21 (DASS-21; Lovibond & Lovibond, 1995)***

This 21 items scale was used to measure mental health problems in the participants using a 4-point Likert scale ( $0=did$  not apply to me at all to  $3=applied$  to me very much or most of the time) and a total score was used to index overall mental health problems in terms of depression, anxiety and stress. DASS-21 demonstrated satisfactory internal consistency in the present sample (Cronh's  $\alpha=.92$ ).

**Procedure**

Ethical approval was obtained from the Institutional Review Board of the parent institute prior to data collection and it was also verified after the completion of the research that all the ethical standards were followed during the process of data collection, analysis and reporting. To approach participants, formal permissions were secured from clinics and workplaces before recruitment. Participants were recruited through outpatient clinics, workplaces and online platforms, using referral-based and self-selection approaches. Advertisement flyers comprising detailed description of the study and a QR code of online survey were presented in the waiting areas of clinics, workplaces and public locations to enhance accessibility and geographic diversity in the sample. After receiving detailed information about the purpose of the study, information about voluntary nature of participation, confidentiality, right to withdraw and estimated completion time of 25-30 minutes, the participants electronically provided their consent to participate in the research process. Data was collected using self-report questionnaires administered and recorded using online survey form. A screening checklist to screen CNMP from other musculoskeletal conditions was embedded in the questionnaire. Those who did not match the inclusion criterion were not allowed to proceed to the main questionnaire for data collection. To protect the mental health of the participants, information about mental health services, including contact details for local counseling centers and helplines, was provided at the end of the survey form.

## Results

**Table 1**

*Means, Standard Deviations and Pearson Correlations Among Emotional Labor, Mental Health Problems, Psychosocial and Emotional Reactions, Burnout and Quality of Relations (N=210)*

Variable	EL	MHP	PSER	BO	QR
EL	—				
MHP	.35***	—			
PSER	.17*	.62***	—		
BO	.10	.34***	.32***	—	
QR	.15*	-.22**	-.20**	-.30***	—
<i>M</i>	33.51	22.90	55.73	34.33	18.98
<i>SD</i>	11.48	15.16	32.66	7.42	7.15

*Note.* EL=Emotional Labor, MHP=Mental Health Problems, PSER=Psychosocial and Emotional Reactions, BO=Burnout, QR=Quality of Relations; M=Mean, SD=Standard Deviation

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Pearson correlation was used to examine associations among emotional labor, psychosocial reactions, burnout, relationship quality and mental health problems in working individuals with chronic musculoskeletal pain ( $N = 210$ ). Results shown in Table 1 indicate that emotional labor has a moderate positive association with mental health problems and a small but significant association with psychosocial reactions. Emotional labor was also positively related to perceived relationship quality, while its association with overall burnout was not statistically significant. Mental health problems were strongly associated with psychosocial reactions and moderately correlated with burnout. In contrast, mental health problems were negatively related to relationship quality which indicated poorer perceived relational functioning among individuals reporting greater psychological distress. Psychosocial reactions were positively correlated with burnout and negatively correlated with relationship quality. Burnout also demonstrated a significant negative correlation with relationship quality.

### Conditional Process Analysis

Based on the preliminary support provided by the correlational patterns, a conditional process analysis using PROCESS macro for SPSS (Model 88; Hayes, 2022) was used to study the direct and indirect effects of emotional labor on mental health problems via psychosocial and emotional reactions to pain and burnout, while testing the moderating role of quality of relations. All regression coefficients are reported as unstandardized estimates with 95% confidence intervals.

#### Direct Effect

Table 2 shows that the direct effect of emotional labor on mental health problems was significant indicating that high level of emotional labor was associated with more mental health problems in working individuals with chronic nonspecific musculoskeletal pain. This finding suggests that emotional labor independently contributes to psychological distress beyond the mediating mechanisms included in the model.

**Table 2**

*Conditional Process Analysis (PROCESS Model 88) Predicting Mental Health Problems Among Working Individuals with Chronic Nonspecific Musculoskeletal Pain (N=210)*

Predictors	Outcome Variables								
	PSER (M1)			BO (M2)			MHP (Y)		
	<i>B</i>	<i>SE</i>	95% CI [LL, UL]	<i>B</i>	<i>SE</i>	95% CI [LL, UL]	<i>B</i>	<i>SE</i>	95% CI [LL, UL]
EL (X)	0.48**	0.18	[0.12, 0.83]	-0.01	0.02	[-0.05, 0.02]	0.15***	0.03	[0.09, 0.21]
PSER (M1)				0.03***	0.01	[0.01, 0.04]	0.18***	0.04	[0.10, 0.26]
BO (M2)							0.39	0.49	[-0.57, 1.36]
QR (W)							0.08	0.36	[-0.63, 0.79]
PSER x QR							-0.003*	0.002	[-0.02, -0.01]
BO x QR							-0.002	0.02	[-0.04, 0.04]
Model Fit	$R^2 = .03$ , $F(1, 208) = 6.88$ , $p = .009$			$R^2 = .08$ , $F(2, 207) = 8.67$ , $p < .001$			$R^2 = .49$ , $F(6, 203) = 32.33$ , $p < .001$		

Note. EL=Emotional Labor, MHP=Mental Health Problems, PSER=Psychosocial and Emotional Reactions, BO=Burnout, QR=Quality of Relations; X=Independent variable, Y=Dependent variable, M1=Mediator 1, M2=Mediator 2, W=Moderator; CI=Confidence Interval, LL=Lower limit, UL=Upper limit

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

### Mediation Effect

Emotional labor significantly predicted psychosocial and emotional reactions to pain indicating that individuals who reported higher emotional labor also experienced greater psychosocial and emotional responses to their pain condition. In turn, psychosocial and emotional reactions to pain significantly predicted mental health problems. These results indicate that psychosocial and emotional reactions to pain functioned as a significant mediator in the relationship of emotional labor and mental health problems.

Emotional labor did not significantly predict burnout, suggesting that emotional labor was not directly related to higher levels of burnout in this sample. However, burnout was significantly associated with mental health problems which indicated that individuals experiencing greater burnout reported higher levels of psychological distress. Despite this significant association with the outcome variable, the absence of a significant relationship between emotional labor and burnout indicates that burnout did not serve as a primary mediator linking emotional labor to mental health problems within the present model.

Overall, these findings suggest that pain-related psychosocial and emotional reactions represent a more immediate psychological pathway linking emotional labor to mental health problems than longer-term occupational exhaustion.

**Table 3**

*Conditional Indirect Effects of Emotional Labor on Mental Health Problems at Levels of Quality of Relations (N=210)*

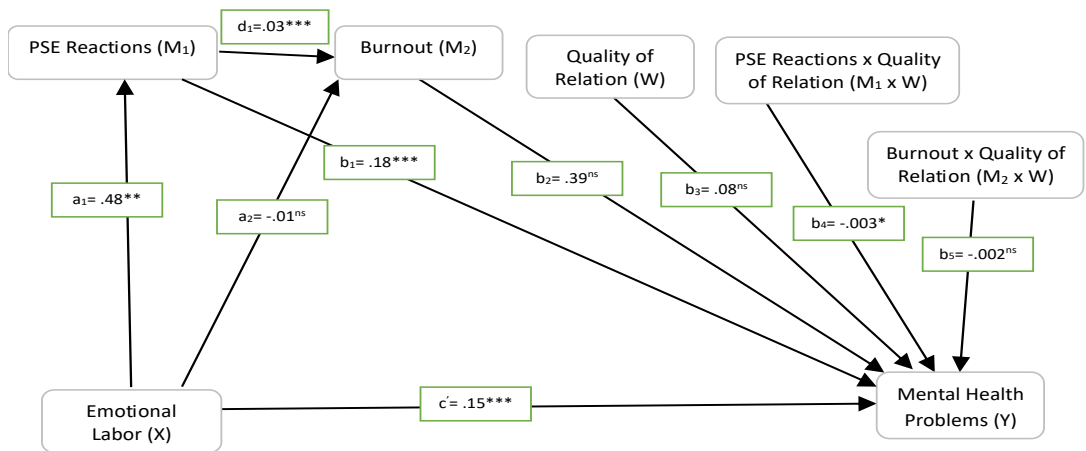
Indirect Pathway	Quality Relations	of Effect	Boot SE	Boot 95% CI	
				LL	UL
EL → PSER → MHP	Low	0.06	0.02	0.02	0.11
	Medium	0.05	0.02	0.01	0.10
	High	0.04	0.02	0.01	0.08
EL → BO → MHP	Low	-0.01	0.01	-0.02	0.01
	Medium	-0.01	0.01	-0.02	0.01
	High	-0.01	0.01	-0.02	0.01
EL → PSER → BO → MHP	Low	0.01	0.01	-0.00	0.01
	Medium	0.01	0.00	0.00	0.01
	High	0.01	0.00	0.00	0.01

Note. PSER=Psychosocial and Emotional Reactions, EL=Emotional Labor, MHP=Mental Health Problems, BO=Burnout.

The moderating role of quality of relations was examined in the associations between the mediators and mental health problems (Table 3). The interaction between psychosocial and emotional reactions to pain and quality of relations was significant. This interaction indicates that the relationship between psychosocial and emotional reactions to pain and mental health problems varied depending on the level of relationship quality. Conditional effects suggested a buffering pattern: psychosocial and emotional reactions were more strongly associated with mental health problems when quality of relations was low, whereas this association weakened as relationship quality increased. These results suggest that supportive relationships may mitigate the psychological impact of pain-related emotional distress among individuals with chronic pain.

In contrast, the interaction between burnout and quality of relations was not significant which indicated that quality of relations did not significantly moderate the association between burnout and mental health problems. This suggests that relational resources may be particularly relevant in buffering immediate emotional responses to pain rather than longer-term occupational exhaustion.

## Summary of Results



**Figure 1:** Statistical model diagram of conditional effect on mental health problems in working individuals with CNMP

Summarized results (Figure 1) indicated that emotional labor was significantly associated with mental health problems among working individuals with CNMP. Importantly, the findings demonstrated that this relationship was primarily explained through psychosocial and emotional reactions to pain which significantly mediated the association between emotional labor and mental health problems. In contrast, burnout did not emerge as a significant mediating mechanism which suggested that psychological distress in individuals with CNMP is less likely to be explained by the long-term occupational exhaustion and is more strongly influenced by immediate emotional and psychosocial responses to pain. Furthermore, quality of relations moderated the relationship between psychosocial and emotional reactions to pain and mental health problems in a way that the adverse effects of these reactions were weaker when individuals reported higher-quality relationships. Overall, the findings highlight that pain-related emotional and psychosocial responses, rather than burnout, represent the key pathway through which emotional labor contributes to mental health problems while supportive relationships serve as an important buffering resource.

## Discussion

This study examined a conditional process model linking emotional labor to mental health problems among working individuals with chronic nonspecific musculoskeletal pain (CNMP) with psychosocial and emotional reactions to pain and burnout as mediators and quality of relations as a moderator. Overall, the findings supported the hypotheses partially. Emotional labor was directly associated with mental health problems and psychosocial and emotional reactions to pain mediated this relationship significantly. However, burnout did not emerge as a significant mediator. Additionally, quality of relations moderated the association between psychosocial and emotional reactions to pain and mental health problems indicating a buffering pattern.

Consistent with the hypothesis, emotional labor indicated significant direct association with mental health problems which supports occupational stress research suggesting that sustained emotional regulation in professional roles can drain psychological resources and increase distress (Chen et al., 2022; Suh & Punnett, 2022). From the perspective of the Job Demands–Resources (JD-R) theory, emotional labor represents a demanding aspect of work that requires continuous psychological effort (Bakker et al., 2023). Individuals with CNMP already experience reduced physical and emotional resources due to persistent pain and these additional demands of regulating emotions during workplace interactions may intensify psychological strain and contribute to poor mental health outcomes.

A key contribution of this study is the finding that psychosocial and emotional reactions to pain serve as the primary mechanism which link emotional labor to mental health problems as emotional labor was associated with strong pain-related emotional responses which in turn predicted more psychological distress.

This pattern aligns with Conservation of Resources (COR) theory suggesting that stress emerges when individuals perceive a loss or depletion of their valued resources (Hobfoll, 2011). In the context of CNMP, emotional labor may intensify the emotional burden of pain by increasing cognitive and emotional demands despite the fact that individuals are already coping with chronic physical discomfort. These findings extend research on CNMP by indicating that workplace emotional demands can shape how individuals psychologically experience and respond to chronic pain conditions.

Contrary to hypothesis, burnout did not significantly mediate the relationship of emotional labor and mental health problems. Although psychosocial and emotional reactions were associated with burnout but burnout did not uniquely predict mental health problems when emotional reactions were considered simultaneously which suggested that immediate emotional responses to pain was more influential in explaining psychological distress than longer-term occupational exhaustion. In chronic pain population, psychological strain may arise directly from ongoing emotional reactions to pain (Kovačević et al., 2024; Landmark et al., 2024) rather than through the gradual development of burnout which highlight the importance of distinguishing between proximal and distal stress processes.

The results also indicated that quality of relations moderated the association between psychosocial and emotional reactions to pain and mental health problems (Philpot et al., 2020) and the association between these reactions and psychological distress was strong when relationship quality was low and weak when relationship quality was high. This finding is consistent with COR theory and emphasize on the protective role of social resources in buffering stress and resource loss (Hobfoll, 2011). Supportive relationships may provide emotional validation, understanding and practical support which reduce the psychological impact of pain-related emotional distress in individuals. However, quality of relations did not moderate the burnout pathway which suggest that relational resources may primarily buffer immediate emotional distress rather than broader occupational exhaustion.

Overall, the findings offer several conceptual insights as they highlight pain-related emotional processes as a central pathway through which emotional labor affects mental health among individuals with CNMP and suggest that burnout play a less direct role in this relationship. These findings advance the understanding that how workplace emotional demands interact with pain-related psychological processes to influence well-being by integrating occupational stress theory with chronic pain perspectives. These findings also have practical implications as interventions aimed to improve the well-being of employees with CNMP should address emotional labor demands and strengthen capacity of the individuals to manage pain-related emotional reactions. Workplace programs that promote adaptive emotion regulation, encourage supportive communication and reduce excessive emotional display requirements can help in mitigating psychological strain. Additionally, to foster supportive relationships within workplaces and families may serve as an important protective resource for individuals who manage chronic pain while remaining engaged in their job.

To summarize, the present study demonstrates that emotional labor contributes to mental health problems among working individuals with CNMP primarily through heigh psychosocial and emotional reactions to pain while supportive relationships can help to buffer these effects. These findings emphasize on the significance of considering both occupational demands and relational resources when addressing psychological well-being in individuals living with chronic pain.

### **Limitations and future directions**

This study has some limitations which need to be considered. Firstly, the cross-sectional correlational design used in the study limits causal inference and prevents conclusions about temporal ordering among emotional labor, psychosocial and emotional reactions, burnout and mental health problems. Longitudinal or experimental designs are needed to confirm the proposed mechanisms. Secondly, reliance on self-report tools may have led to common method bias and subjective reporting effects, although established instruments with adequate reliability were used. Thirdly, mixed recruitment strategies (clinics, workplaces and online self-selection) may limit sample representativeness and generalizability to all working individuals with chronic

nonspecific musculoskeletal pain. Fourthly, despite prior checks for measurement equivalence and cultural appropriateness, the exclusive use of English-language measures may have excluded individuals with lower language proficiency. Mental health outcomes were assessed via self-report rather than clinical diagnosis and no follow-up assessment was conducted, despite providing referral information for distressed participants. Most importantly, future research should explore other factors which have limited the role of burnout as a mediator in the present study. For example, occupational context, stage of chronic pain experience or variations in job demands may influence whether burnout emerges as a central mechanism that link emotional labor to mental health outcomes. Examining other contextual and psychological moderators such as workplace support, coping strategies and organizational climate can further clarify the conditions under which emotional labor contributes to psychological distress in individuals living with chronic pain.

### Conclusion

This study demonstrates emotional labor as a significant occupational stressor associated with mental health problems among working individuals with chronic nonspecific musculoskeletal pain. Psychosocial and emotional reactions to pain emerged as the primary mechanism to link emotional labor with mental health problems, while burnout played a limited role. Quality of relations showed a modest buffering effect, underscoring the importance of relational resources in chronic pain contexts. These findings highlight the value of emotion-focused and relational approaches in supporting the mental health of workers living with chronic pain.

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