Multidisciplinary Output Research For Actual and International Issue (MORFAI Journal) ISSN (e): 2808-6635
Volumes 6 No. 6 (2026)

WORK POSTURE, DOMESTIC WORKLOAD, AND MENTAL HEALTH AMONG FEMALE SEWING OPERATORS: OCCUPATIONAL WORKLOAD AS A MEDIATOR

Windi Tri Jayanti[1]*, Bambang Suhardi[2], Rahmaniyah Dwi Astuti[3]
Universitas Sebelas Maret[123]
Email: winditrijayanti@student.uns.ac.id[1*],bambangsuhardi@staff.uns.ac.id[2], rahmaniyahdwi@staff.uns.ac.id[3]

Received:05/10/2026 | **Revised** : 12/10/2026 | **Accepted:** 30/10/2026 | **Published:** 26/11/2026

Abstract

Occupational and domestic demands may relate to mental health symptoms. This study examined work posture, domestic workload, and mental health symptoms, with occupational workload as mediator, among 80 female sewing operators at PT XYZ. A cross-sectional design assessed posture using RULA, both workloads using NASA-TLX, and depression, anxiety, and stress symptoms using DASS-21. Data were analyzed using SPSS and PROCESS Macro Model 4 with 5,000 bootstrap resamples (95% confidence intervals). All participants scored 5-6 on RULA. Mean domestic workload was 56.60 (moderate) and occupational workload 68.32 (high); 73.8% had high-to-very-high occupational workload, while 55% reported moderate-to-extremely-severe anxiety symptoms. Most scored within normal ranges for depression and stress. For occupational workload, the coefficient was negative for work posture (β=−0.120; p=0.283) and positive for domestic workload (β=0.201; p=0.074). For mental health symptoms, coefficients were negative for occupational workload (β=−0.013; p=0.911) and positive for work posture (β=0.070; p=0.545) and domestic workload (β=0.122; p=0.297). None of these associations was statistically significant. Indirect effects were nonsignificant for work posture (0.0282; 95% CI [−0.5848, 0.8924]) and domestic workload (−0.0015; 95% CI [−0.0318, 0.0349]). Exploratory Spearman correlations linked working hours with DASS-21 scores (r_s=0.258; p=0.021), household size and domestic work duration with domestic workload (r_s=0.239; p=0.033 and r_s=0.242; p=0.030), and household task sharing with shorter domestic duration (r_s=−0.229; p=0.041). Mediation was not supported.

Keywords: Work Posture; Domestic Workload; Occupational Workload; Mental Health; Female Sewing Operators.

INTRODUCTION

Mental health is an important aspect of occupational health because it is associated with workers' ability to manage pressure and remain productive. The World Health Organization and International Labour Organization (2022) emphasized the importance of preventing psychological risk to protect workers' mental health. This issue is particularly relevant to the garment industry, especially sewing operators that require precision, production target achievement, repetitive hand movements, and prolonged sitting postures. Biadgo, Tsegay, Mohammednur, and Gebremeskel (2021) reported that sewing operators' working condition were associated with musculoskeletal complaints. These characteristics highlight the importance of considering both physical and psychological health among sewing operators.

Work posture and domestic responsibilities are two factors that should be considered when examining mental health among female workers. Prolonged working postures may contribute to physical discomfort, while household responsibilities after working hours may increase physical, mental, and temporal demands. Kim (2022) reported an association between working posture and depression among workers, whereas Maeda et al. (2019) found that domestic work stress was associated with women's psychological health. (Molarius & Metsini, 2021, 2023) also emphasized the importance of considering perceived domestic workload rather than merely the duration of household activities. These findings provide a basis for examining the relationships of work posture and domestic workload with occupational workload and mental health symptoms.

These concerns are relevant to PT XYZ in Karanganyar, Central Java, Indonesia, where 475 of 602 sewing operators are women. Sewing activities involve repetitive movements, prolonged sitting postures, and production demands requiring precision and target achievement. A preliminary survey involving 10 female sewing operators identified concerns related to work posture, domestic responsibilities, and psychological complaints. These

conditions highlight the need for research that considers not only occupational demands but also domestic responsibilities undertaken by female workers after completing their formal working hours.

Cezar-Vaz et al. (2022) examined occupational and domestic workloads among healthcare workers but did not investigate a mediation model involving work posture among female sewing operators. Therefore, this study aimed to examine the associations of work posture and domestic workload with mental health symptoms through the mediating role of occupational ergonomic factors and domestic workload among 80 female sewing operators at PT XYZ. The study integrates occupational ergonomic factors and domestic demands into a single analytical model. The findings did not provide statistically significant support for the hypothesized direct associations or the mediating role of occupational workload, despite the presence of ergonomics risk and elevated workload requiring attention. These findings contribute to ergonomics and human factors research and provide practical considerations for evaluating working conditions, managing occupational workload, and supporting female workers' mental health.

LITERATURE REVIEW

Previous studies have demonstrated that working posture is an ergonomic factor associated with workers' health. Biadgo et al. (2021) identified associations between occupational characteristics, including repetitive activities and working postures, and neck pain among sewing machine operators. Meanwhile, Kim (2022) reported an association between tiring or painful working postures and depression among workers. Darvishi et al. (2022) also employed path analysis to examine individual factors and the risk of work-related musculoskeletal disorders. These studies provide a basis for understanding the relationships between ergonomic conditions and workers' health. However, research involving sewing operators has primarily emphasized physical complaints, while studies examining working posture and psychological conditions have not specially considered domestic workload and the mediating role of occupational workload.

Domestic workload is another factor associated with women's psychological health. Maeda et al. (2019) identified an association between domestic work stress and women's psychological health. Molarius and Metsini (2021) reported a strong relationship between perceived burdensome domestic work and depression. Their subsequent study found no significant independent association between time spent on domestic activities and depression symptoms after adjusting for other factors, whereas perceived domestic burden showed a stronger association (Molarius & Metsini, 2023). These findings highlight the importance of distinguishing the duration of domestic activities from perceived domestic workload. Nevertheless, these studies have not specifically integrated domestic workload with occupational postural risk among female sewing operators.

Occupational workload is also important for understanding job demands and workers' health. Cezar-Vaz et al. (2022) investigated formal occupational workload and unpaid domestic workload using NASA-TLX among healthcare professionals. Their findings indicated that women experienced higher workload levels in both contexts and greater proportions of anxiety and depression symptoms. Arefian, Laybidi, Vahedi, Melloh, and Mokhtarinia (2025) identified associations between physical and mental workloads and work functioning among employees with musculoskeletal disorders. Meanwhile, Silva, Mendes, Lapa, Carvalho, and Rodrigues (2025) assessed ergonomic and psychological risk among bus drivers using instruments including RULA and DASS-21. Although these studies provide evidence regarding occupational demands and workers' health, they differ in occupational populations, health outcomes, and analytical approaches and did not examine the mediation model proposed in this study.

Based on these findings, this study developed a conceptual framework integrating occupational and domestic demands among female sewing operators. Work posture (X_1) and domestic workload (X_2) were positioned as independent variables, occupational workload (Z) as mediator, and mental health symptoms (Y) as the dependent variable. Work posture was hypothesized to relate to occupational workload through physical demands and effort, while domestic responsibilities mas increase daily demands and limit recovery opportunities. Both factors were also considered potential direct correlates of mental health symptoms. Accordingly, the proposed framework examines direct associations among the variables and indirect associations through occupational workload, as illustrated in Image 1.

OPEN ACCESS

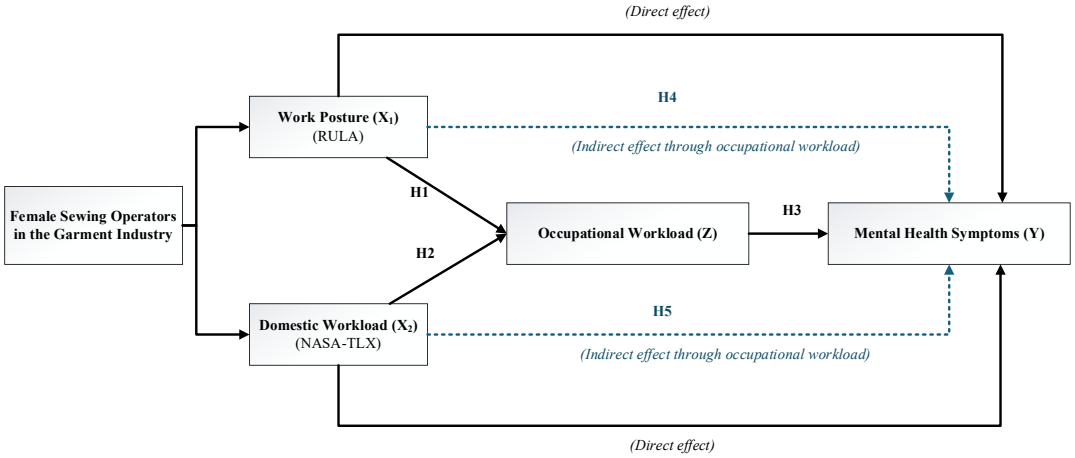


Image 1. Conceptual Framework of the Study

Based on the conceptual framework, the following hypotheses were formulated.
H1: Work posture is associated with occupational workload among female sewing operators.
H2: Domestic workload is associated with occupational workload among female sewing operators.
H3: Occupational workload is associated with mental health symptoms among female sewing operators.
H4: Occupational workload mediates the relationship between work posture and mental health symptoms among female sewing operators.
H5: Occupational workload mediates the relationship between domestic workload and mental health symptoms among female sewing operators.

Overall, previous studies have established a foundation for understanding the relationships among ergonomic factors, domestic responsibilities, occupational workload, and mental health. However, limited research has examined these variables within a single mediation model among female sewing operators. This study addresses this gap by examining direct and indirect associations while considering occupational demands and domestic responsibilities simultaneously.

METHOD

Research Design and Setting

This study employed a quantitative cross-sectional design to examine the associations of work posture and domestic workload with mental health symptoms through the mediating role of occupational workload. The research was conducted from July to September 2026 at PT XYZ, a garment manufacturing company in Karanganyar, Central Java, Indonesia. The study focused on female sewing operators whose production activities involved repetitive movements, relatively static working postures, precision requirements, and production targets.

Population and Sample

According to company records dated April 30, 2026, the sewing department employed 602 operators, including 475 women and 127 men. Among the female operators, 348 were married and constituted the target population. The inclusion criteria were married female sewing operators with at least three months of work experience who agreed to participate and were able to complete the data collection procedures. The study analyzed data from 80 respondents.

Research Instruments and Measurement

Data were collected using the Rapid Upper Limb Assessment (RULA), the National Aeronautics and Space Administration Task Load Index (NASA-TLX), and the Depression Anxiety Stress Scales-21(DASS-21). The research variables and measurement instruments are presented in Table 1.

Table 1. Research Variables and Measurement Instruments

Variable	Instrument	Measurement
Work Posture (X_1)	RULA	Final score (1-7)
Domestic Workload (X_2)	NASA-TLX	Weighted workload score (0-100)
Occupational Workload (Z)	NASA-TLX	Weighted workload score (0-100)
Mental Health Symptoms (Y)	DASS-21	Total raw score (0-63)

Work posture was assessed using RULA by observing upper arm, lower arm, wrist, neck, trunk, and leg positions during sewing activities. Final scores ranged from 1 to 7, with higher scores indicating greater ergonomic risk. When multiple postures were observed, the highest score was used as the respondent's final posture score (McAtamney & Nigel Corlett, 1993).

Domestic and occupational workloads were measured using NASA-TLX, comprising six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration. The instrument was administered separately for household activities and sewing task, with instructions adapted to each activity context. Each dimension was rated from 0 to 100 and weighted through 15 pairwise comparisons (Sandra G. Hart & Lowell E. Staveland, 1988).

$$NASA - TLX = \frac{\sum_{j=1}^{6}(w_j \, x \, r_j)}{15}$$

Where:
w_j = weight of dimension j
r_j = rating of dimension j
15 = total weight obtained from pairwise comparisons.
Performance ratings were adjusted when their scale direction differed from the other dimensions. Higher NASA-TLX scores indicate greater perceived workload.

Mental health symptoms were measured using DASS-21, consisting of 21 items assessing depression, anxiety, and stress. Each subscale contained seven items scored from 0 to 3. For descriptive analysis, subscale scores were multiplied by two to determined symptom severity categories. For path analysis, the total raw scores indicated greater depression, anxiety, and stress symptoms (Lovibond & Lovibond, 1995).

Instrument Preparation and Data Collection

Instrument preparation included questionnaire readability assessment, standardization of RULA observations, and adaptation of NASA-TLX instructions for domestic and sewing activities. Respondents' understanding of DASS-21 instructions was also assessed without modifying its items. Work posture data were collected through direct observation during production activities, while domestic workload, occupational workload, and mental health symptoms were assessed using questionnaires complete after work. Respondent characteristics and household activity information were collected as supporting data. The company identify was anonymized as PT XYZ, and respondent confidentiality was maintained throughout the study.

Data Analysis

Data were analyzed using IBM SPSS Statistics through descriptive analysis, regression assumption testing, and path analysis. Descriptive statistics summarized respondent characteristics and research variables. Regression assumptions were examined through residual normality, linearity, multicollinearity, and heteroscedasticity assessments. Exploratory Spearman rank correlations (two-tailed, N = 80) examined formal-work and household characteristics in relation to NASA-TLX scores, domestic work duration, and total DASS-21 scores. These supplementary analyses were separate from H1–H5; p-values were not adjusted for multiple testing.

Path analysis was conducted using two regression equations. The first equation examined the association of work posture and domestic workload with occupational workload.

$$Z_i = \propto_1 + \, a_1 X_1 + \, a_2 X_2 \, + \, e_1$$

The second equation examined the associations of work posture, domestic workload, and occupational workload with mental health symptoms.

$$Y_i = \propto_2 + \, c'_1 X_1 + \, c'_2 X_2 + bZ_i + \, e_2$$

Where:

OPEN ACCESS

X_1 = work posture
X_2 = domestic workload
Z = occupational workload
Y = mental health symptom score
$\propto_1, \beta_1$ = regression intercepts
a_1, a_2, b, c_1', c_2' = regression coefficients
e = residual term
i = respondent index.

Mediation analysis was conducted using PROCESS Macro Model 4 with 5,000 bootstrap resamples and 95% confidence intervals. Separate analyses were performed for work posture and domestic workload, with the other independent variable includes as a covariate. Indirect effects were calculated by multiplying the predictor-to-mediator and mediator-to-outcome coefficients. Direct associations were considered statistically significant at $p < 0.05$, while indirect effects were considered significant when their bootstrap confidence intervals excluded zero.

RESULTS AND DISCUSSION

Respondent Characteristics

This study involved 80 married female sewing operators at PT XYZ, Karanganyar, Central Java, Indonesia. Of the 90 questionnaires distributed, 80 were returned and considered suitable for analysis, resulting in a response rate 88,89%. The respondents had a mean age 34,26 years and an average work experience of 5.21 years. Their average working time was 8.35 hours per day, while their average sleep duration was 6.83 hours. In addition to their occupational responsibilities, respondents spent an average 252.25 minutes, or approximately 4.20 hours, per day performing domestic activities. These characteristics indicate that female sewing operators experienced occupational demands alongside household responsibilities outside their formal working hours.

Descriptive Analysis of Research Variables

Descriptive analysis was conducted to examine work posture, domestic workload, occupational workload, and mental health symptoms. The results are presented in Table 2.

Table 2. Descriptive Statistics of Research Variables

Variable	Mean	SD	Minimum	Maximum
Work Posture (RULA)	5,21	0,41	5	6
Domestic Workload (NASA-TLX)	56,60	12,64	28,67	82,67
Occupational Workload (NASA-TLX)	68,32	12,70	36,67	99,33
Mental Health Symptoms (DASS-21)	13,78	7,41	2	40

Note: N=80; mental health symptoms were measured using the total raw DASS-21 score.

RULA assessment indicate that all respondents obtained scores of 5 or 6, with 78,8% scoring 5 and 21,3% scoring 6. Both scores correspond to Action Level 3, indicating that further investigation and ergonomic improvements are requires in the near future. These findings reflect the characteristics of sewing activities, which involve prolonged sitting, repetitive hand movements, and forward-leaning head and trunk postures. (Biadgo et al., 2021) similarly identified occupational factors associated with musculoskeletal complaints among sewing operators. However, the narrow distribution of RULA scores also indicated limited variability in postural risk among respondents.

NASA-TLX assessments showed that the mean domestic workload score was 56.60, indicating a moderate workload, whereas the mean occupational workload score was 68,32, indicating a high workload. Approximately 37,5% of respondents reported high to very high domestic workload, while 73,8% experienced high to very high occupational workload. These findings suggest that sewing activities were perceived as more demanding than domestic workload at the descriptive level. Nevertheless, both occupational and domestic responsibilities remained important components of respondents' daily activities.

DASS-21 assessments revealed mean depression, anxiety, and stress scores of 6.60, 9.60, and 11.35, respectively. Most respondents were classified within the normal category for depression (70.0%) and stress (76.3%). However, 55.0% experienced moderate to extremely severe anxiety symptoms. These findings indicate that anxiety symptoms were more prominent than depression and stress among respondents. Nevertheless, the coexistence of elevated occupational workload and anxiety symptoms does not necessarily indicate a statistically significant association between these conditions.

Regression Diagnostics and Sensitivity Analysis

Regression diagnostics were conducted to assess the assumptions underlying the path analysis models. The results are summarized in Table 3.

Table 3. Regression Diagnostics and Sensitivity Analysis

Diagnostics Test	Statistical Results	Interpretation
Residual Normality	Model 1: p = 0.593; Model 2: p = 0.007	Non-normal residuals in Model 2
Multicollinearity and Heteroscedasticity	VIF = 1.000–1.058; Glejser p > 0.05	No significant indications
Linearity	Deviation p = 0.023; Quadratic term p = 0.380	Potential nonlinearity; quadratic term not significant
Influential Observation and Sensitivity	Cook's D = 0.105; R^2 = 0.019 (N = 80) and 0.032 (N = 79)	Coefficient directions and significance decisions unchanged

Note: Model 1 predicts occupational workload; Model 2 predict mental health symptoms. VIF = variance inflation factor.

The result indicated no substantial multicollinearity or significant evidence of heteroscedasticity. However, deviations from residual normality and potential nonlinearity were indicated in mental health model. One observation had a standardized residual of 3.580 and a maximum Cook's Distance of 0.105. sensitivity analysis showed that temporarily excluding this observation increased R^2 from 0.019 to 0.032 without changing coefficient directions or significance decisions. Therefore, all 80 observations were retained in the primary analysis.

An additional analysis incorporating a quadratic domestic workload term showed a non-significant coefficient (β = -0.101; p = 0.380). the linear model was therefore retained, although the identified assumption limitations were considered when interpreting the result.

Path Analysis and Direct Associations

Path analysis examined the direct associations among the research variables. The first regression model explained 5.5% of the variance in occupational workload (R^2 = 0.055; p = 0.112), while the second explained 1.9% of the variance in mental health symptoms (R^2 = 0.019; p = 0.658). Neither overall model was statistically significant. The direct associations are presented in Table 4.

Table 4. Direct Associations Between Research Variables

Relationship	B	β	p-value
Work Posture → Occupational Workload	-3.693	-0.120	0.283
Domestic Workload → Occupational Workload	0.202	0.201	0.074
Occupational Workload → Mental Health Symptoms	-0.008	-0.013	0.911
Work Posture → Mental Health Symptoms	1.253	0.070	0.545
Domestic Workload → Mental Health Symptoms	0.071	0.122	0.297

Note: B = unstandardized regression coefficient; β = standardized regression coefficient; significant level = 0.05.

Work Posture and Occupational Workload (H1)

Work posture showed a negative but non-significant association with occupational workload (β = -0.120; p = 0.283). the negative coefficient indicates an inverse estimated relationship, although the available evidence does not support a statistically significant association. This finding should be considered alongside the limited variability of RULA scores, as all respondents score either 5 or 6. Furthermore, RULA primarily assesses postural risk, whereas NASA-TLX measures broader occupational demands, including mental, physical, and temporal demands. Consequently, workers with similar postural risks may experience different perceived workloads. Nevertheless, the restricted RULA score distribution cannot be established as the cause of the non-significant finding.

Domestic Workload and Occupational Workload (H2)

Domestic workload showed a positive coefficient in relation to occupational workload (β = 0.201; p = 0.074). Although statistically non-significant, the estimated direction was consistent with hypothesis that greater domestic demands may be associated with greater perceived occupational workload. This finding can be compared with Haupt and Gelbgiser (2024), who reported as association between cognitive household responsibilities and fatigue upon arriving at paid work. However, their study assessed fatigue rather than NASA-TLX occupational workload. Therefore, the present finding provides preliminary information about the estimated direction of the relationship, but insufficient statistical evidence to support H2.

Occupational Workload and Mental Health Symptoms (H3)

Occupational workload showed a very small negative coefficient in relation to mental health symptoms (β = -0.013; p = 0.911), indicating little evidence of a linear association after accounting for work posture and domestic workload. Despite the high occupational workload reported by most respondents, no significant association with total DASS-21 scores was identified. Similar findings were reported by Samsudin et al. (2021), who found no significant correlations between overall NASA-TLX workload and depression, anxiety, or stress among firefighters. These findings suggest that elevated perceives workload does not necessarily correspond to a detectable linear association with mental health symptoms. However, the negative coefficient should not be interpreted as evidence that higher workload improves mental health.

Direct Associations with Mental Health Symptoms

Work posture and domestic workload showed positive but non-significant associations with mental health symptoms, with β = 0.070 (p = 0.545) and β = 0.122 (p = 0.297), respectively. These positive estimates indicate that higher postural risk and domestic workload scores corresponded to higher predicted DASS-21 in the fitted model, although the statistical evidence was insufficient to establish these relationships.

The estimated directions were consistent with previous findings by Kim (2022), who reported an association between working posture and depression, and (Maeda et al., 2019), who identified an association between domestic work stress and women's psychological health. Difference in populations, measurement instruments, and analytical approaches may contribute to the variation in findings across studies.

Overall, none of the five direct associations reached statistical significance. Therefore, H1, H2, and H3 were not statistically supported, although the estimated coefficient directions provide information for further investigation.

Mediation Analysis

Mediation analysis was performed using PROCESS Macro Model 4 with 5,000 bootstrap resamples and 95% confidence intervals. The direct effects are presented in Table 5.

Table 5. Indirect Effects Through Occupational Workload

Mediation Path	Indirect Effect	BootSE	95% CI
Work Posture → Occupational Workload → Mental Health Symptoms	0.0282	0.3366	[-0.5848, 0.8924]
Domestic Workload → Occupational Workload → Mental Health Symptoms	-0.0015	0,0154	[-0.0318, 0.0349]

Note: BootSE = bootstrap standard error; CI = confidence interval; bootstrap resamples = 5,000.

The indirect association between work posture and mental health symptoms through occupational workload produced a positive estimate of 0.0282, with a 95% confidence interval ranging from -0.5848 to 0.8924. the positive estimate resulted from multiplying the negative work posture-to-workload coefficient by the negative workload-to-mental-health coefficient. However, the confidence interval included zero, indicating that the indirect effect was not statistically significant. Therefore, H4 was not supported.

Similarly, the indirect association between domestic workload and mental health symptoms produced a negative estimate of -0.0015, with a 95% confidence interval ranging from -0.0318 to 0.0349. the negative direction resulted from the positive domestic-to-occupational-workload coefficient and the very small negative workload-to-mental-health coefficient. However, the confidence interval also included zero, indicating that H5 was not statistically supported.

Overall, the results provide useful information about the relationships among work posture, domestic workload, occupational workload, and mental health symptoms, even though the mediation hypotheses were not statistically supported. Domestic workload showed a positive estimated relationship with occupational workload,

while occupational workload had a very weak relationship with mental health symptoms. These findings help explain why occupational workload did not show a significant mediating role in the proposed model. They also suggest that other factors beyond the variables examined may be important for understanding worker's mental health. Further research with a larger and more diverse sample could help clarify these relationships.

Additional Findings, Practical Implications, and Limitations

Exploratory Spearman analysis showed a positive correlation between daily working hours and total DASS-21 scores ($r_s = 0.258$; $p = 0.021$), whereas daily working hours were not significantly correlated with occupational NASA-TLX scores ($p = 0.787$). Mean DASS-21 scores were 13.09 among respondents working eight hours and 17.00 among those working ten hours per day. Sewing tenure, overtime hours, and sleep duration showed no significant correlations with occupational NASA-TLX or total DASS-21 scores.

Household size ($r_s = 0.239$; $p = 0.033$) and domestic work duration ($r_s = 0.242$; $p = 0.030$) were positively correlated with domestic NASA-TLX scores. Greater sharing of household tasks was weakly correlated with shorter domestic work duration ($r_s = -0.229$; $p = 0.041$), but not significantly correlated with perceived domestic workload ($p = 0.508$). None of the examined household characteristics was significantly correlated with total DASS-21 scores. The distinction between time spent on domestic work and perceived burden also appears in Molarius and Metsini (2023) . These exploratory findings were not adjusted for multiple testing and do not establish causality

These findings highlight the importance of considering both occupational conditions and household responsibilities when evaluating female sewing operators' well-being. The observed associations between working hours and mental health symptoms, along with the relationships between household characteristics and domestic workload, provide useful insights for improving working conditions and supporting female workers. Further research involving more diverse workplaces is recommended to strengthen and expand these exploratory findings.

CONCLUSION

This study found that all female sewing operators had RULA scores requiring ergonomic improvements; 73.8% experienced high to very high occupational workload, and 55.0% reported moderate to extremely severe anxiety symptoms. The proposed direct and mediating associations were not statistically supported, although domestic workload showed a positive estimated association with occupational workload. Exploratory analyses identified weak positive correlations of working hours with total DASS-21 scores and of household size and domestic work duration with perceived domestic workload. Greater household task sharing was weakly associated with shorter domestic work duration. These unadjusted findings emphasize the relevance of workplace conditions, working time, and household responsibilities.

REFERENCES

Arefian, S., Laybidi, M. I., Vahedi, M., Melloh, M., & Mokhtarinia, H. R. (2025). Impact of mental and physical workload on work function in office workers with musculoskeletal disorders. *BMC Musculoskeletal Disorders*, *26*(1). doi:10.1186/s12891-025-09147-0

Biadgo, G. H., Tsegay, G. S., Mohammednur, S. A., & Gebremeskel, B. F. (2021). Burden of Neck Pain and Associated Factors Among Sewing Machine Operators of Garment Factories in Mekelle City, Northern Part of Ethiopia, 2018, A Cross-Sectional Study. *Safety and Health at Work*, *12*(1), 51–56. doi:10.1016/j.shaw.2020.10.002

Cezar-Vaz, M. R., Xavier, D. M., Bonow, C. A., Vaz, J. C., Cardoso, L. S., Sant'Anna, C. F., & da Costa, V. Z. (2022). Domains of Physical and Mental Workload in Health Work and Unpaid Domestic Work by Gender Division: A Study with Primary Health Care Workers in Brazil. *International Journal of Environmental Research and Public Health*, *19*(16). doi:10.3390/ijerph19169816

Darvishi, E., Ghasemi, F., Sadeghi, F., Abedi, K., Rahmati, S., & Sadeghzade, G. (2022). Risk assessment of the work-related musculoskeletal disorders based on individual characteristics using path analysis models. *BMC Musculoskeletal Disorders*, *23*(1). doi:10.1186/s12891-022-05573-6

Haupt, A., & Gelbgiser, D. (2024). The gendered division of cognitive household labor, mental load, and family–work conflict in European countries. *European Societies*, *26*(3), 828–854. doi:10.1080/14616696.2023.2271963

Kim, K. Y. (2022). The Association between Working Posture and Workers' Depression. *Healthcare (Switzerland)*, *10*(3). doi:10.3390/healthcare10030477

OPEN ACCESS

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. doi:10.1016/0005-7967(94)00075-U

Maeda, E., Nomura, K., Hiraike, O., Sugimori, H., Kinoshita, A., & Osuga, Y. (2019). Domestic work stress and self-rated psychological health among women: A cross-sectional study in Japan. *Environmental Health and Preventive Medicine*, *24*(1). doi:10.1186/s12199-019-0833-5

McAtamney, L., & Nigel Corlett, E. (1993). RULA: a survey method for the investigation of work-related upper limb disorders. *Applied Ergonomics*, *24*(2), 91–99. doi:10.1016/0003-6870(93)90080-S

Molarius, A., & Metsini, A. (2021). Domestic work, self-reported diagnosed depression and related costs among women and men—results from a population-based study in Sweden. *International Journal of Environmental Research and Public Health*, *18*(18). doi:10.3390/ijerph18189778

Molarius, A., & Metsini, A. (2023). The Association between Time Spent in Domestic Work and Mental Health among Women and Men. *International Journal of Environmental Research and Public Health*, *20*(6). doi:10.3390/ijerph20064948

Samsudin, K., Fahmi Hussin, M., Fatin, N., Ghazali, N., Hannani, N., Ghani, A., … Hussein, K. (2021). Association Between Workload and Psychological Well-Being in Malaysia Elite Firefighter. *Malaysian Journal of Public Health Medicine*, *21*(2), 374–381.

Sandra G. Hart, & Lowell E. Staveland. (1988). Development of NASA-TLX (Task Load Index): Results of Empirical and Theoretical Research. In *Development of NASA-TLX (Task Load Index)* (pp. 139–183). Advances in Psychology. doi:10.1016/S0166-4115(08)62386-9

Silva, T. T., Mendes, T. R., Lapa, I., Carvalho, P., & Rodrigues, M. A. (2025). Assessing work-related musculoskeletal disorders and psychosocial risks in bus drivers: insights from a municipal company case study in Portugal. *Frontiers in Public Health*, *13*. doi:10.3389/fpubh.2025.1529023

World Health Organization, & International Labour Organization. (2022). *Mental health at work: Policy brief*.

OPEN ACCESS