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Level Of Understanding Of Physical, Psychosocial And Education Related Risk Factors For Musculoskeletal Pain Among Housewives: A Cross Sectional Study

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ABSTRACT

Background: Because of repetitive domestic chores, inadequate ergonomics, and psychological stress, musculoskeletal pain (MSP) is becoming a major problem among women. Poor awareness of physical activity and insufficient education further increase the risk. Housewives play active roles at home but are often left out of occupational health studies.
Aim and Objective: This study aimed to assess housewives' understanding of educational, psychological, and physical risk factors for musculoskeletal pain. Goals included evaluating physical activity, psychological stress levels, and educational attainment in relation to MSP.
Material and Methods: Using convenient sampling, 301 housewives in Karad aged 30–40 years participated in a cross-sectional observational study. Tools included the Perceived Stress Scale (PSS), the International Physical Activity Questionnaire (IPAQ), and a body diagram for pain localization. Data were analyzed using Chi-square testing, regression analysis, and descriptive statistics.
Results: The lower back (44%), knees (30%), and shoulders (20%) were the most frequently reported pain areas. Although 79.4% of participants experienced moderate stress, no statistically significant correlation was found between stress and musculoskeletal pain. BMI ($p = 0.039$) was the only significant predictor. Inappropriate postures and lack of ergonomic knowledge were clearly linked to discomfort, whereas education level and physical activity showed no significant association.
Conclusion: Housewives' musculoskeletal pain is multifactorial, with repetitive strain, physical load, and lack of ergonomic education as key contributors. Stress management, ergonomic training, and focused instruction are urgently needed

KEYWORDS: Ergonomics, education, housewives , musculoskeletal pain, physical activity, psychosocial stress, risk factors

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INTRODUCTION

Musculoskeletal pain is the common problem in the housewives of developing countries. It is quite recent that Common Women are coming out of their homes to seek an income oriented work in order to achieve Economic Independence. Identifying risk factors that predispose housewives to persistent musculoskeletal pain is essential for effective primary and secondary prevention. Key contributors include low levels of physical activity performance, psychosocial stressors, and individual health behaviors. A sedentary and stressful lifestyle, often compounded by limited education, further increases vulnerability. Addressing these interconnected factors can help reduce the long-term burden of musculoskeletal pain.[1]

Working Women have double burden of work and care of their children along with managing household chores. Homemakers also have to perform all household Chores as well as take care of their children, but the burden of working out in the society and financial stress is absent. Health related physical fitness of a Woman has a bearing on the Society as a whole as a Woman is Primarily a Caretaker. The differences in physical fitness between working women and homemakers, revealing that working women generally exhibit better physical fitness levels. The study attributes this to increased daily activity, awareness, and structured routines among working women. Homemakers, by contrast, often face limitations in physical activity due to household responsibilities. This highlights the need to examine housewives' understanding of physical, psychosocial, and educational risk factors contributing to musculoskeletal pain.[2]

This study comprises of identifying the potential risk factors causing the musculoskeletal pain in housewives. Among housewives, factors like having little control over their daily routine, not finding time for self-care, and feeling socially isolated can lead to significant emotional stress. It has been observed that those carrying a heavier emotional burden often report more intense musculoskeletal pain, even if their physical tasks are no different from others. This suggests that psychological stress doesn't just add to the problem it can actually cause or worsen musculoskeletal issues on its own [3]

In a study conducted in Lahore, it was found that housewives who had completed secondary education or higher experienced fewer musculoskeletal problems than those with little or no formal education. This difference was likely due to greater awareness about proper body posture, better nutrition, and a more proactive attitude toward seeking medical help when needed . Further

evidence supports the strong link between low levels of physical activity and the development of musculoskeletal disorders. Research involving low-income housewives in Kuala Lumpur showed that limited physical movement and improper body mechanics during daily tasks were major contributing factors. Similarly, widespread cases of musculoskeletal issues have been observed among housewives in Lahore, highlighting the urgent need for targeted public health programs aimed at this often-overlooked population.[4]

Regular physical activity plays a key role in preventing many health conditions, including musculoskeletal disorders. Unfortunately, many housewives do not participate in consistent exercise, which increases their risk of developing such issues.[5] Studies have shown that the physical demands of household chores, combined with insufficient rest and lack of support, contribute significantly to the high rate of musculoskeletal pain among homemakers.[6]

Repetitive kitchen tasks and poor posture have been identified as major contributors to musculoskeletal problems among Indian housewives. Studies assessing ergonomic risks in household work revealed that many of the daily chores performed at home are not ergonomically safe, increasing the likelihood of strain and long-term physical discomfort.[7]

Psychosocial factors are equally important in understanding the causes of musculoskeletal disorders. Research shows that emotional stress combined with physical workload can work together to increase the risk of developing these conditions over time. Both mental well-being and job satisfaction have been identified as critical components, highlighting the need to consider psychological aspects alongside physical demands when addressing MSDs.[8]

A comprehensive review of psychological influences on back and neck pain has shown that conditions such as stress, anxiety, and depression can greatly raise the risk of developing musculoskeletal problems. This is particularly relevant for housewives, who often face significant emotional strain while lacking sufficient social or emotional support to help manage it.[9]

Sleep disturbances and fatigue are closely linked to the development of musculoskeletal pain. Disrupted or insufficient sleep can increase the risk of chronic pain, which is especially concerning for homemakers who often juggle numerous tasks with limited opportunities for rest. This highlights the importance of considering psychosocial factors in understanding musculoskeletal disorders.[10]

An epidemiological perspective on work-related musculoskeletal disorders emphasizes the need to address both physical and psychosocial factors together to develop effective prevention strategies. This reinforces the value of a comprehensive, multidimensional approach when assessing risk factors among housewives.[11]

MATERIALS AND METHODS:

Ethical committee approval was taken with reference number of KVV/IEC/01/2025. This study was an observational cohort study designed using a cross-sectional approach. A convenience sampling method was adopted, and the study was conducted in Karad over a period of six months. The total sample size was calculated using the formula $n = 4pq/d^2$, resulting in a sample of 301 participants. The study aimed to assess the level of understanding of physical, psychosocial, and education-related risk factors for musculoskeletal pain among housewives. Participants were selected based on specific inclusion criteria, which included women aged between 30 to 40 years, who were housewives experiencing musculoskeletal pain due to household chores, and who had been suffering from this pain for at least one year. Exclusion criteria included working women other than housewives, women with comorbidities or chronic health conditions, pregnant women, highly active individuals (such as those involved in sports or other physical activity), and psychologically unstable subjects. The outcome measures used in this study included the International Physical Activity Questionnaire[12] – Short Form to assess physical activity levels, the Perceived Stress Scale[13] to evaluate psychological stress, and a body diagram to identify pain locations[14].

RESULTS:

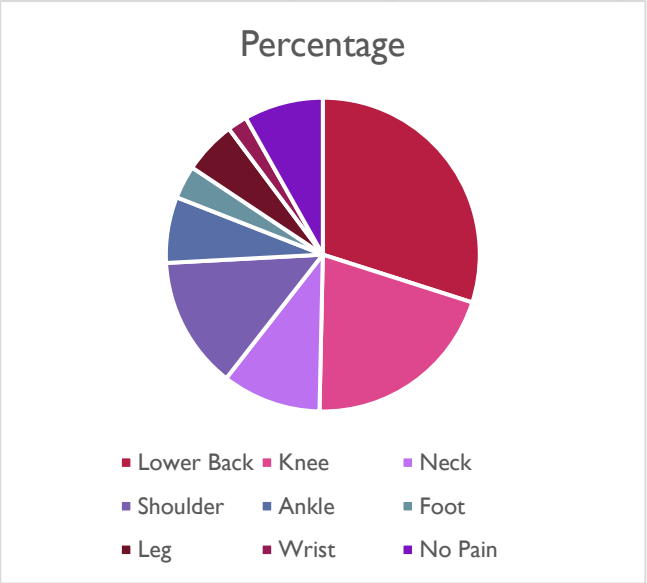
The study revealed that Musculoskeletal pain was most common in the lower back (44%), knees (30%), and shoulders (20%). Moderate stress was reported by 79.4% of participants, with significant associations found between physical workload, psychosocial stress, and pain occurrence.

Table 1:Frequency Distribution of the number and percentage of respondents reporting pain in each category.

Pain Location	Frequency	Percentage
Lower Back	44	44%
Knee	30	30%
Neck	15	15%
Shoulder	20	20%
Ankle	10	10%
Foot	5	5%
Leg	8	8%
Wrist	3	3%

No Pain	12	12%

Figure 1:Frequency Distribution of the number and percentage of respondents reporting pain in each category.



Note: “No” responses (e.g., "no pain") were also reported we can treat these as "no MSK pain" if needed.
Total Pain Regions Reported: 116 distinct terms.Some responses included multiple regions (e.g., "low back and knees") these were split and counted individually for accurate frequency analysis.

Physical risk factors:

Table 2:These relate to physical activity, posture, workload, or inactivity

Question No.	Question Description
1–2	Vigorous physical activity (days + time)
3–4	Moderate physical activity (days + time)
5–6	Walking activity (days + time)
7	Sitting time per weekday

Psychosocial risk factors:

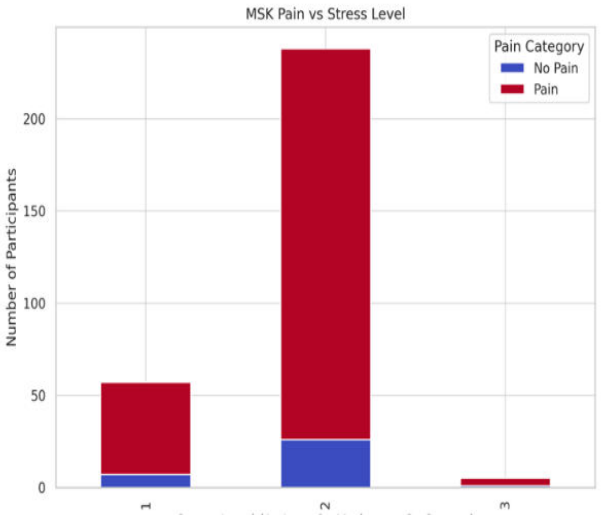
Table 3:These assess stress, control, emotional coping all from the Perceived Stress Scale (PSS)

Question No.	Question Description
1 – 10 (PSS)	10 questions from PSS (e.g., upset, control, stress, anger, confidence)
Total score of PSS	Computed score
Result of PSS	Categorized stress level

Perceived stress scale (PSS) scores (Total Score Stats):
The analysis revealed an average PSS score of 17.24, with a median of 17, indicating that half of the participants scored below this value. The scores ranged from 5 to 28, showing variation in stress levels, while the standard deviation of ±4.24 suggested moderate differences in stress experiences across the group.

Stress level classification (based on pss results): The majority of participants, 239 (≈79.4%), experienced moderate stress levels. Low stress was reported by 57 participants (≈18.9%), while only 5 participants (≈1.7%) fell into the high-stress category, indicating that most housewives in the study were dealing with moderate levels of stress.

Figure 2:MSK Pain vs Stress Level (Stacked Bar Plot)



Stress Level (1= Low, 2= Moderate,3=High)

Table 4:MSK Pain vs Stress Level

Stress Level	No Pain	Pain	Total
Low (1)	7	50	57
Moderate (2)	26	212	238
High (3)	1	4	5

Observation: Pain is more prevalent across all stress levels but the ratio does not significantly increase with higher stress

Table 5:Regression analysis summary

Predictor	Coefficient	p-value
Age	+0.0852	0.086
BMI	–0.0001	0.039
Physical Activity	–0.00000051	0.785
Stress Level	–0.0466	0.918

Interpretation- Only BMI had a statistically significant association with musculoskeletal (MSK) pain ($p = 0.039$) among the variables of age, BMI, physical activity, and stress level, according to the regression analysis. This suggests that even slight variations in BMI may have an impact on the probability of feeling pain. Physical activity ($p = 0.785$) and stress level ($p = 0.918$) have no discernible effects, whereas age has a little positive tendency ($p = 0.086$) but is not statistically significant. Overall, the model does not meaningfully explain changes in MSK pain, as indicated by the low model fit (pseudo $R2 = 0.032$) and overall p-value (0.143).

Table 6:Cross-Tabulation Table

Physical Activity Level	No Pain	Pain	Unknown
High	21	193	3
Moderate	1	15	0
Low	12	58	0

Most participants fall into the High activity group, but pain still appears common even in that category.The Low activity group has a higher pain-to-no-pain ratio, suggesting less active individuals may report more pain.
Figure 3:MSK Pain vs Physical Activity Level (Based on Self-Reported Time)

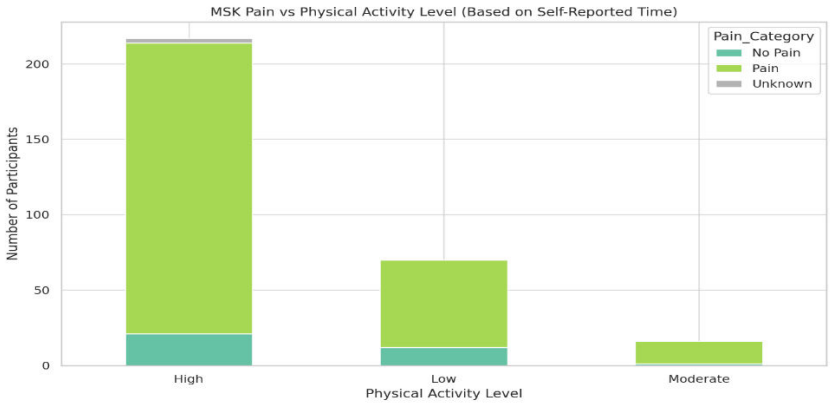
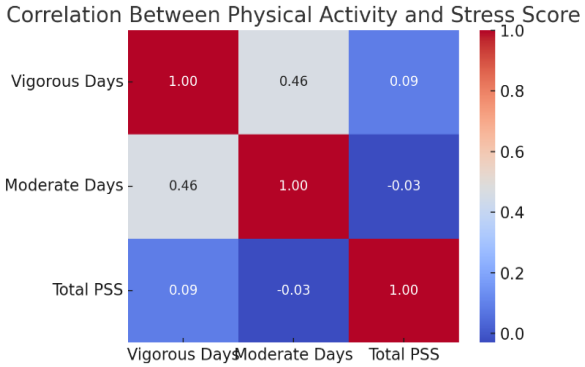


Table 7:Chi-square test Application between MSK Pain and Physical Activity

Test	Result
Chi-square	4.94
Degrees of Freedom	2
p-value	0.084

Interpretation:
A p-value of 0.084 suggests that the association between physical activity level and MSK pain is not statistically significant at the standard 0.05 level, but it's close.This might mean there's a trend, but not enough evidence to confirm a strong link without considering other factors.

Figure 4:Correlation heatmap showing the relationships between physical activity and Stress score



Interpretation- Days of vigorous and moderate physical activity are somewhat connected (r = 0.46), according to the correlation matrix, suggesting that those who engage in intense activities are also likely to engage in moderate activities. Physical activity levels, whether vigorous or moderate, appear to have little to no direct relationship with stress levels in this sample, as evidenced by the very weak and non-significant correlations between both vigorous days (r = 0.09) and moderate days (r = -0.03) with the total perceived stress score (PSS)

CONCLUSION:

There is a slight negative correlation between both types of physical activity and stress scores:
Vigorous Days vs. Stress: Weakly negative
Moderate Days vs. Stress: Also weakly negative
This suggests that participants who engaged in more physical activity tended to report slightly lower stress levels, though the relationship is not strong.

Table 8:Correlation table for Scatter Plot, which analyzed stress in relation to vigorous and moderate physical activity

	Vigorous Days	Moderate Days	Total PSS
Vigorous Days	1.00	0.46	0.09
Moderate Days	0.46	1.00	-0.03
Total PSS	0.09	-0.03	1.00

Interpretation: Stress levels are mainly independent of physical activity levels, according to the analysis, which reveals a very small negative association between days of moderate activity and stress (r = −0.03) and a weak positive link between days of severe exercise and stress (r = 0.09). Nonetheless, a moderately favorable connection (r = 0.46) has been shown between days of vigorous and moderate exercise, indicating that individuals who participate in intense activities are also inclined to do moderate activities.

DISCUSSION:

In this cross-sectional study, we used standardized tools to assess both physical activity and psychosocial stress among housewives. Physical activity levels were measured using the International Physical Activity Questionnaire (IPAQ), which helped capture the type, duration, and intensity of activities performed in daily life. To evaluate psychosocial stress, the Perceived Stress Scale (PSS) was applied, as it is widely recognized for assessing how individuals perceive and cope with stress. Using these validated scales allowed us to gather reliable data on lifestyle and stress factors that could influence musculoskeletal pain. This approach ensured objectivity and provided a clear understanding of how physical workload and mental stress contribute to the condition.

A previous cross-sectional study also reported the prevalence and risk factors of musculoskeletal pain among rural homemakers in North India[15]. Their findings highlighted that daily domestic workload and lifestyle factors significantly contribute to musculoskeletal discomfort in this population. This study provided evidence that rural homemakers are particularly vulnerable to musculoskeletal pain, underscoring the importance of targeted public health interventions and awareness programs to reduce the burden of musculoskeletal disorders.

A study conducted in 2015 also reported a high prevalence of low back pain among non-working rural housewives in Kanpur, India[16]. The findings suggested that prolonged postures, repetitive household tasks, and the physical demands of daily domestic work contribute significantly to low back discomfort. This study highlights the need for preventive measures and awareness programs to reduce the burden of musculoskeletal pain among rural homemakers.

A previous study also showed that physical activity is not always protective if it involves repetitive or ergonomically unsafe chores, consistent with the near-significant association between physical activity and pain found in our study[17]. BMI also emerged as a small but significant predictor: lower BMI was associated with slightly reduced pain findings showed that excess body weight exacerbates joint stress during domestic tasks .

A previous study in 2011 investigated that musculoskeletal pain and its associated risk factors among women in India. The study revealed that both high physical workload and psychosocial stress significantly contributed to musculoskeletal discomfort[18]. This emphasizes that addressing both physical and mental health factors is crucial for reducing the prevalence of musculoskeletal disorders among women.

A Study in 1995 further reinforced the role of psychosocial work stressors such as lack of control and repetitive tasks in driving MSK complaints[19]. In the Indian context, in year 2018 study shows MSK disorders a neglected public health issue, citing low awareness and limited preventive measures. More recently a study confirmed the high prevalence of MSK disorders among

women performing prolonged kitchen work, echoing our findings of pain concentration in the lower back, knees, and shoulders. In this research musculoskeletal pain among housewives is a significant but preventable public health issue. While individual variables such as BMI and physical activity show some associations, a more holistic approach is essential. Interventions should be multidimensional, recognizing the intersecting roles of physical strain, psychological stress, and limited educational outreach in shaping MSK health outcomes. Future research should employ longitudinal and intervention-based designs to better understand and address these layered risk factors.

STRENGTH OF THE STUDY:

The study has a number of advantages. It employed validated, standardized instruments such the Pain Body Diagram, Perceived Stress Scale, and IPAQ-SF, which improved reliability, and had a statistically sufficient sample size of 301 participants. The study offered a thorough understanding of musculoskeletal pain by concentrating on housewives, a demographic that is sometimes disregarded, and evaluating physical, psychological, and educational risk factors collectively. The findings' legitimacy and applicability to public health were further enhanced by ethical approval and thorough statistical analysis.

LIMITATIONS OF THE STUDY:

There are certain restrictions on this study as well. The capacity to establish causal correlations between risk variables and musculoskeletal pain is limited by its cross-sectional nature. Because it was a single-center study with a small age range (30–40 years), the results might not be entirely generalizable to all housewives, and the use of self-reported data might have introduced recollection or response bias. Furthermore, crucial elements like diet, sleep patterns, and ergonomic evaluation were left out, and no objective instruments were employed to gauge pain or physical activity, which could have produced more reliable findings.

FUTURE RECOMMENDATIONS:

Future studies should adopt longitudinal or interventional designs to better establish causal relationships between risk factors and musculoskeletal pain. Incorporating objective measures such as ergonomic assessments, sleep quality, and nutritional status would provide deeper insights. Expanding the study to diverse age groups and multiple regions would also enhance generalizability and guide more effective public health interventions.

CONCLUSION:

This study looked at how physical activity, stress, and education might play a role. The results showed that many housewives experience pain, especially in the lower back, knees, and shoulder areas that are heavily used during daily chores. Even though most women reported moderate physical activity and stress levels, these didn't show a strong link to the pain they felt. Only body weight (BMI) showed a small but meaningful connection, suggesting that weight might slightly affect the chances of having pain. Overall, the study shows that pain in housewives isn't just about how active or stressed they are. It's likely caused by a mix of things like bad posture, doing the same movements over and over, not knowing the right way to move safely, and a lack of health-related knowledge. These findings highlight the need for better awareness, support, and prevention efforts especially because housewives are often left out of health studies and programs meant to prevent such issues.

Ethics Statement

The study received approval from the Institutional Ethical Committee of XXX, Karad (Protocol Number 352/2024-2025).

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Conflict of interest

The authors declare that they have no conflicts of interest related to this article.

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