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Review Article

Ergonomic awareness and impact of musculoskeletal disorders among housewives: a literature review

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ABSTRACT

Housewives are especially susceptible to musculoskeletal disorders (MSDs) due to inadequate workspaces, uncomfortable postures, prolonged standing, repetitive domestic tasks, and insufficient ergonomic awareness. These factors significantly affect their physical health and overall quality of life. The objective is to examine the research database on ergonomic awareness and its effects on musculoskeletal health among housewives in India. English-language publications from online sources such as Google Scholar and PubMed were used for the literature review. Research on musculoskeletal disorders in housewives, household tasks, and ergonomic awareness was systematically reviewed and evaluated. Musculoskeletal problems, especially those affecting the lower back, neck, shoulders, and knees, are highly common among housewives according to the literature reviewed. Prolonged and awkward postures, repetitive domestic chores, a lack of ergonomic awareness, high body mass index, poor physical fitness, and poorly designed kitchens are all significant factors contributing to the problem. The evidence shows that a higher risk of musculoskeletal illnesses among housewives is closely linked to a lack of ergonomic awareness. The burden of MSDs may be reduced by enhancing ergonomic education, encouraging healthy work habits, and putting physiotherapy-based preventive treatments into practice.

Keywords: Ergonomic, Musculoskeletal disorders (MSDs), Health education, Risk factors, Low back pain, Neck pain, Shoulder pain

INTRODUCTION

Ergonomics is derived from Greek words ergo (work or labor) and nomos (natural laws). Thereby, ergonomics means the laws of work.[1] In essence, it aims to enhance human well-being and overall performance by adapting work conditions to the physical and cognitive needs of people.

To make tasks, jobs, goods, settings and systems compatible with people's requirements, abilities and limits, ergonomics is used in their design and evaluation. Products with ergonomic designs increase worker productivity and comfort. When applied correctly, ergonomics can significantly reduce the risk of musculoskeletal disorders (MSDs), fatigue and injury, while improving comfort, productivity, and quality of life.

"The application of human biological science in conjunction with engineering science to the worker and his working environment to enhance productivity" is how the International Labor Organization described ergonomics in 1989. Studies have demonstrated that the optimal work environment or workstation design uses the least amount of energy and puts the least amount of strain on the muscular and cardiovascular systems.[2]

Housewives have daily responsibilities which consist of physically intensive tasks such as cooking, cleaning, washing, lifting water, taking care of children, and organizing household items. For about 12 to 16 hours every day, household duties require repeated, hard labor.[3] Some tasks (such as rolling chapatis) require repetitive effort in a static position, with individuals often maintaining awkward positions for extended duration. Cooking tasks are often carried out by homemakers in their own comfortable positions. Poor posture raises energy expenditure and the physiological cost of labor.

Due to hormonal changes that take place during the menopausal transition, women typically endure a more complicated and difficult aging process than men. They become susceptible to a wide range of health issues, including osteoporosis and cardiovascular illnesses, after menopause.[4] This further increases the risk of MSDs in women.[5]

One of the most prevalent health issues among working people is musculoskeletal (MS) disorders. These issues may arise as a result of heavy lifting, uncomfortable postures, bending, twisting, or stooping, extended sitting or standing, and repetitive motions at work.[6] According to data from the 2019 Global Burden of Disease, 1.71 billion people worldwide suffer from MSDs. The prevalence of MSD is estimated to be between 11% and 60% in both industrialized and developing nations.[7]

Musculoskeletal problems, including lower back pain, joint stiffness, neck tension, and shoulder strain, are frequently caused by prolonged standing, heavy lifting, squatting, and repetitive motions associated with household tasks.[8] Long-term static muscle exertion and poor posture can result in a variety of health and musculoskeletal issues. Incorporating ergonomics into domestic work has the potential to reduce physical strain and prevent the development of MSDs, which are among the most common health issues reported by housewives.

An ergonomically designed household, such as the appropriate height of kitchen platforms, the use of supportive tools, and training in proper body mechanics, can mitigate the risks of MSDs and enhance the well-being of housewives.[9] While a well-planned kitchen area reduces stress and fatigue, an improperly planned kitchen area that is, work surface, storage space, kitchen platform dimensions, distance between work centers, shape and size of the kitchen can result in discomfort, fatigue, muscular pain, awkward postures, and increased work costs.[10] A well-planned and designed kitchen meets all the needs of the worker, workplace and work area, with particular attention to the layout and size of work areas, storage space and equipment placement in a way that minimizes the homemaker's time and physical strain.

Despite the clear benefits, ergonomic awareness among housewives remains notably low. Many women are unaware of the risk factors associated with their daily activities and rarely receive any form of education or intervention related to workplace health and safety within the home. Studies have highlighted that most housewives rely on traditional methods and tools, often passed down generationally, without realizing their potential harm. This lack of awareness not only increases their vulnerability to chronic physical pain but also prevents them from seeking timely medical care or making necessary adjustments to their work environment. Promoting ergonomic education at the community level, particularly through local health programs and women self-help groups, is therefore crucial to improving long-term health outcomes for housewives.

Housewives, particularly in developing regions, are routinely exposed to physically demanding household tasks that involve repetitive motions, awkward postures, and a lack of ergonomically designed tools. These daily physical demands significantly contribute to the onset of musculoskeletal disorders (MSDs), which can affect their health, mobility, and quality of life. However, there is limited literature on the ergonomic awareness of housewives, particularly regarding their knowledge of ergonomic principles and their application in daily household activities. Although many studies have reported a high prevalence of musculoskeletal disorders (MSDs) among housewives, the available evidence on how ergonomic awareness influences the prevention of these disorders is limited. Therefore, this literature review aims to compile the existing evidence on ergonomic awareness and its impact on musculoskeletal disorders among housewives. The findings may help identify gaps in the current literature and provide direction for future research and awareness programs.

The objectives are to review the existing literature on ergonomic awareness and its impact on musculoskeletal disorders among housewives.

METHODS

Study design

Cross-sectional studies, observational studies, systematic reviews, meta-analysis related to ergonomic awareness and musculoskeletal disorders among housewives.

Outcome measured

Ergonomic awareness, prevalence of musculoskeletal disorders, pain and discomfort in the neck, shoulder, back, knee and upper limbs, fatigue, and postural risk factors.

Inclusion

Studies published in English within the last 5–10 years. Studies involving housewives/homemakers. Studies assessing ergonomic awareness, ergonomic risk factors, or musculoskeletal disorders. Full-text articles available through PubMed and Google Scholar.

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Exclusion

Studies involving industrial workers, office workers, or other occupational groups. Articles unrelated to ergonomics or musculoskeletal disorders. Studies with insufficient data or unavailable full text.

Data extraction strategy

Study details (author, year and location). Population characteristics (sample size, age, demographics). Ergonomic risk factors and awareness levels. Prevalence and type of musculoskeletal disorders. Key findings, conclusions and recommendations.

Search keywords used

Ergonomics, musculoskeletal disorders (MSDs), health education, occupational health, risk factors, posture, fatigue, low back pain, neck pain, shoulder pain, prevention, control and workload.

Databases

PubMed, Google Scholar [2010 – 2025].

42 studies Retrieved. From that, 38 records were left after duplicates removal. 12 relevant studies assessed for eligibility. 2 studies excluded by title or abstract. 10 studies included in qualitative analysis.

RESULTS

Anjali Krishnan studied 450 rural homemakers in Kerala and reported musculoskeletal pain in 63.3% of participants, particularly in the knees and lower back. Repetitive tasks, awkward postures and prolonged standing were identified as risks.[1]

Chaudhary and Vinay evaluated an ergonomics training module among urban housewives in Uttarakhand. Awareness and posture reportedly improved, with reduced discomfort after training, supporting household ergonomic practices.

Mondal and Bhattacharjee reported MSDs in 61% of 500 rural housewives in Chhattisgarh. The hip, back and knees were affected. Repetitive work, squatting, prolonged standing and poor body mechanics were identified as relevant risks.[2]

Dhone and Khare assessed 100 housewives aged 40–50 years in Nagpur and reported joint, back, shoulder and hand discomfort. Prolonged standing, repetitive tasks and awkward postures were noted; highlighting the need for ergonomic awareness.[3]

Habib, El Zein and Hojeij found musculoskeletal pain in 77% of 435 homemakers from a low-income community. Pain commonly affected the back and limbs and was associated with awkward postures, repetitive hand movements, long working hours, fatigue and housework-related stress.[4]

Bhatt assessed kitchen workstations among homemakers in Ludhiana, including 16 in a field experiment. Inadequate counter height and storage, together with awkward postures, were associated with fatigue, reduced grip and pinch strength, increased physiological demand and postural deviation.[5]

Nayak and Anitha studied 373 rural homemakers in Odisha and reported MSDs in 59.79%; the lower back and knees were most affected. Physiotherapy utilisation was 0.9%, highlighting limited rehabilitation education.[6]

Kaur and colleagues (2024) reported MSDs in 79% of 100 housewives in Punjab, commonly affecting multiple regions and the lower back. Repetitive activities, prolonged standing, awkward postures and higher BMI were identified as risk factors.[7]

Mishra and colleagues found musculoskeletal pain in 40.9% of 296 rural homemakers in Uttar Pradesh, commonly affecting the ankles, knees and lower back. Higher BMI, parity, age, lower income and household ergonomic stress were associated factors.[8]

Debata examined kitchen work among 90 rural women in Odisha and described musculoskeletal discomfort, fatigue and pain in the back, neck and shoulders. Poor kitchen dimensions, high shelves, inadequate storage, awkward postures and prolonged standing were ergonomic concerns.[9]

DISCUSSION

The findings from this literature review indicate a consistently high prevalence of musculoskeletal disorders (MSDs) among housewives, largely associated with prolonged and repetitive domestic activities performed without adequate ergonomic awareness. Across the reviewed studies, common musculoskeletal complaints included low back pain and generalized fatigue.

A significant observation emerging from this review is the low level of ergonomic awareness among housewives. Most women continue to use traditional methods and tools while performing household tasks such as cooking, cleaning, washing, and lifting, often adopting awkward postures and sustained static positions. Prolonged standing, squatting, bending, repetitive hand movements, and improper body mechanics were identified as major ergonomic risk factors contributing to MSDs. These findings emphasized that domestic work, though often unrecognized, poses occupational health risks comparable to formal employment.

Another key concern highlighted in the reviewed literature is the limited focus on preventive and interventional strategies, particularly from a physiotherapy perspective. While the prevalence of MSDs is well documented, very few studies have explored or implemented physiotherapy-based interventions such as posture correction training, ergonomic education, exercise therapy or movement re-education programs for housewives.

Prolonged household work without adequate rest has been identified as an important factor contributing to the development of musculoskeletal disorders among housewives. Continuous performance of domestic tasks increases physical workload and musculoskeletal strain. The reviewed studies also reported that awkward postures adopted during household activities such as bending, squatting, prolonged standing, and repetitive movements increase stress on the musculoskeletal system and contribute to pain and discomfort.

Limited ergonomic awareness remains a major concern, as many housewives are unaware of proper body mechanics and ergonomic principles that could help reduce physical strain during routine household work. In addition, poor physical fitness may reduce muscular endurance and make daily household activities more physically demanding, thereby increasing the risk of musculoskeletal disorders.[11]

Some studies have also reported that postpartum women and those with a higher body mass index (BMI) are at greater risk of developing musculoskeletal disorders because of increased physical demands and additional mechanical stress on weight-bearing joints.[8] Furthermore, the household environment influences musculoskeletal health. Traditional kitchen designs often require repeated bending and prolonged standing, whereas modern ergonomic kitchen designs with appropriate workstation heights may help improve posture and reduce physical strain during household activities. This represents a significant gap, as physiotherapy has the potential to play a vital role in reducing pain, improving functional capacity and preventing long-term disability in this population.[12]

Only English-language publications were included in the review, which might have excluded relevant studies written in other languages. Some relevant publications might have been missed since the literature search was restricted to specific databases. Determining a causal association between ergonomic awareness and musculoskeletal illnesses is challenging because the majority of the research was cross-sectional or observational.

The review's primary focus on research on Indian housewives may have limited the research's relevance to other countries and populations. Direct comparison of the results was made difficult by variations in study design, sample size and review tools. Several studies had comparatively small sample sizes, which could have limited the results' consistency and representativeness. Studies did not always control for variables such as age, BMI, socioeconomic position, physical activity, parity (postpartum) and pre-existing medical issues.

The prevalence of musculoskeletal illnesses may have been impacted by differences between traditional and modern kitchen designs, household appliances, and work situations.[13] Comparisons between various living environments are limited because the majority of investigations were carried out in rural and urban settings independently.[14]

CONCLUSION

The literature review highlights that housewives are at a high risk of developing musculoskeletal disorders due to prolonged engagement in domestic activities performed under poor ergonomic conditions. Common findings across the reviewed studies include a high prevalence of low back pain, neck pain, shoulder pain, knee pain, and generalized musculoskeletal discomfort, largely attributed to repetitive movements, sustained awkward postures, and inadequate rest periods.

Despite the clear association between poor ergonomic practices and musculoskeletal disorders, the reviewed literature reveals a low level of ergonomic awareness among housewives. Most domestic tasks continue to be carried out using traditional methods without consideration of posture, body mechanics, or ergonomic principles, increasing the risk of chronic pain and functional limitations.

Future research should focus on interventional and longitudinal studies, particularly those incorporating physiotherapy -based ergonomic training and exercise programs. Additionally, community -level awareness programs and simple ergonomic modifications in the household environment should be promoted to reduce the burden of musculoskeletal disorders and improve the overall quality of life of housewives.

Future recommendations

Based on the findings, future research should prioritize disorders (MSDs), which can affect their health, mobility, and quality of life. However, there remains a noticeable gap in ergonomic awareness within this population, which limits their ability to recognize harmful practices and adopt preventive measures. Despite the high prevalence of MSDs, little attention has been given to educating housewives about ergonomic principles and how to apply them in daily activities. This highlights a critical need for research to explore the level of ergonomic awareness among housewives and it’s the impact of MSDs on their daily lives.

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