Current Research Bulletin
Volume 03 Issue 04 April 2026, Page no: 139-143
Available Url: http://crbjour.org/
Article DOI: 10.55677/CRB/I4-06-CRB2026
e-ISSN: 3050-5933
p-ISSN: 3050-5925
Open Access

Musculoskeletal Pain Prevalence and Work Presenteeism Among Public Market Vendors in Tagbilaran City, Bohol

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Published Online:
27 April 2026

Article DOI:
https://doi.org/10.55677/CRB/I4-06-CRB2026

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ABSTRACT: A frequent health issue in the population of the public market vendors has been work-related musculoskeletal pain that is a result of the nature of their employment, which requires them to stand long hours, repetitive, heavy lifting, and poor ergonomics. This research was conducted to determine the prevalence of musculoskeletal pain and presenteeism among vendors in Tagbilaran City Central Public Market. This paper considers the impact of musculoskeletal pain on everyday functioning and general productivity, with reference to the International Classification of Functioning, Disability and Health (ICF) and the Job Demand-Control-Support model. A quantitative descriptive-correlational design was used to collect and analyze them using the Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) and the Stanford Presenteeism Scale (SPS-6). The results indicate that pain prevents vendors from going about their business as usual or that there are no coping strategies. Musculoskeletal pain was common, with the highest prevalence in the right shoulder (38.9%), followed by the neck and lower back (11.1%). Musculoskeletal pain was common among 36 out of 39 respondents. Such working conditions put vendors under significant risk of developing a work-related musculoskeletal disorder (WRMD), which can not only lead to discomfort, but also poor productivity, elevated absenteeism, and presenteeism with resulting manifestations of health effects. The findings suggest the application of practical interventions, such as ergonomic fixation, health promotion, and policy support. The absence of these measures will allow WRMDs to persist, jeopardizing the personal and operational efficiency of supply chains.

KEY WORDS: musculoskeletal pain, work-related musculoskeletal disorders, market vendors, presenteeism, Tagbilaran City.

Cite the Article:. *Salise, K.R. S., Akiatan, L.G.A., Babera, L.P.J., Eroy, John Michael O., Gabines, J.V.C., Tesoro, A.B.M., Villaflores, M.T. (2026). Musculoskeletal Pain Prevalence and Work Presenteeismamong Public Market Vendors in Tagbilaran City, Bohol. Current Research Bulletin, 3(4), 139-143. https://doi.org/10.55677/CRB/I4-06-CRB2026*

INTRODUCTION

We live in a world where our needs drive us, and the only way to meet those demands is to work all the time, even if it harms our health. One of the most common reasons people undertake various tasks is to ensure they and their family have sufficient resources to live on and obtain the essentials they need (Ogundipe, 2023). Standing for long periods, repeating the same task, and lifting heavy objects can increase a worker's risk of injury. Pain is one of the most frequent discomforts that our bodies must deal with as we work. The most prevalent type of pain is musculoskeletal pain. The nature of labor or a workplace environment often causes

musculoskeletal disorders, making it a significant category of pain. MSK diseases involve the body's muscles, joints, tendons, ligaments, nerves, bones, and blood circulation in the affected area. These are work-related musculoskeletal disorders (WRMDs) (Dagne, D. et al., 2020). WRMDs are currently among the leading and significant risk factors for the development of some diseases, including osteoporosis, osteoarthritis, and sarcopenia, and disorders that can also affect several body locations and systems. The ICF framework provided by the WHO categorizes health and disability into body functions, activities, participation, and contextual factors (personal and environmental), enabling a comprehensive evaluation of how WRMDs affect daily tasks and vendor productivity and providing biopsychosocial interventions. One of the main causes of chronic sickness and disability is musculoskeletal disorders (MSDs), which are closely associated with functional disability and, consequently, with substantial consumption of social and medical resources. (Weyh, C., et al., 2020). As mentioned, work-related musculoskeletal pain is common among workers, especially in the supply chain industry.

Often, the pillars within this industry are the market vendors, who deliver goods to the final customer by selling items or services to other companies or consumers. Street vendors in the informal sector are a diverse group that offers a variety of goods and services. Some vendors develop enduring ties with their clients by going back to the same location every day, whether they are migratory or permanent (Peimani & Kamalipour, 2022). Another similarity among these illnesses is work-related discomfort affecting several body parts, commonly in occupations that require persistent motion and prolonged holding of specific positions. Without a doubt, the most affected place is the hand (AlKhodier, H. et al., 2022). Musculoskeletal discomfort is highly prevalent among street vendors; over the past year, ankle joints (27%), knees (22%), and lower backs (15%) were among the most commonly affected body parts, indicating crucial health concerns in this sector (Vora & Contractor, 2024).

Productivity among employees may be significantly afflicted by pain, likely narrowing the overall effectiveness of supply chain operations by increasing absenteeism and turnover (Tanaka et al., 2022). Missed work, major economic effects, and decreased productivity are all serious repercussions of WRMDs. These illnesses significantly affect workers' health and the sectors in which they work, underscoring the need for effective management and preventive measures (Mishra et al., 2024). The degree and extent of employees' discomfort are important factors that can significantly affect their effectiveness at work (Varni et al., 2022). Reports of high rates of presenteeism (33.3%) and absenteeism (9.5%) among employees indicate that pain affects performance at work beyond missed workdays (Smith et al., 2023). According to other studies, more than 30% of workers experience musculoskeletal pain at some point in their careers. It is a serious issue in many firms that raises absenteeism and healthcare expenditures (Iyer et al., 2022).

This study is grounded in the United Nations' third Sustainable Development Goal (SDG 3) "Good Health and Well-Being," a core pillar of the 2030 Agenda for Sustainable Development that promotes universal health coverage, access to quality and affordable essential healthcare services, safe vaccines, and medicines for all to enhance global well-being. This study is motivated by the researchers' curiosity about how musculoskeletal discomfort affects the productivity of market sellers. To describe respondents' current health circumstances and best interests, the researchers are committed to using a comprehensive methodology. Therefore, the researchers set out to evaluate the impact of musculoskeletal discomfort on the productivity of market vendors operating in a public market. Research from all across the world has shown these impacts. The purpose of this study is to understand how musculoskeletal pain impacts the work people do in several public markets in Tagbilaran City, and to observe which daily tasks are most affected by this pain and which body parts are affected. The key findings of this study will also be used to describe the crucial link between respondents' musculoskeletal discomfort and job productivity. This study will provide further information on the relationship between musculoskeletal discomfort and job interference, along with recommendations.

MATERIALS AND METHODS

Design

This research paper studied the correlation between musculoskeletal pain and work productivity in vendors operating in the public market through a quantitative, descriptive-correlational survey. Data were collected using structured questionnaires that were based on Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) and Stanford Presenteeism Scale. The prevalence of musculoskeletal symptoms was estimated through descriptive statistics and the relationship between musculoskeletal pain and presenteeism was analyzed by way of inferential tests.

The study was done in Tagbilaran City Central Public Market of Tagbilaran City, Bohol, Philippines. This market is a region with a large population of people who trade and have physically demanding tasks, such as lifting, spending lots of time standing, and repeating actions, that is why this context is suitable to conduct the study on the work-related musculoskeletal disorders. The target group was the ones that were engaged in the selling of meat, fish, vegetables, and dry commodities at the open markets.

They identified 39 vendors, from which a sample of 36 respondents (92.31%) was selected at a 95% level of confidence and a 5% margin of error. Participants were selected based on availability at the time of data collection. Those who fit the criteria included: age- had to be older than 18 years; complained of musculoskeletal pain in the last 7 days; had to work continuously in the market for at least two months.

The respondents were chosen in the study so long as they: are not in a physical therapy course and have a mental or psychological impairment that can affect the ability to answer the questionnaire. The musculoskeletal-related symptoms were measured using Cornell Musculoskeletal Discomfort Questionnaire (CMDQ) which is a standardized scale of measuring discomfort in 18 body parts such as neck, shoulders, upper and lower extremity and back. The CMDQ has three dimensions, that is, Frequency of discomfort (weighted scores: 0, 1.5, 3.5, 5, 10), Severity of discomfort (1 = slight, 2 = moderate, 3 = severe) and Work Interference (1 = none, 2 = slight, 3 = substantial). Frequency, Severity and work interference were then summed weighted to give an average CMDQ value of each part of the body giving a range of 0 to 90. The more the scores the more musculoskeletal burden. The Stanford Presenteeism Scale was used to determine presenteeism, a scale that determines the extent to which health problems affect the productivity at work.

In earlier research on the CMDQ, its psychometric authority has proven satisfactory (high internal consistency (Cronbach Alpha:) and good test-retest reliability), which provides evidence that it can be regarded as a valid and reliable tool in measuring musculoskeletal pain. Frequencies and percentages were used as descriptive statistics to estimate the prevalence of musculoskeletal symptoms. To test the hypothesis regarding musculoskeletal pain scores and presenteeism, correlational analyses were conducted to examine their relationship. The critical alpha level was set at a reasonable level, and the result was statistically significant.

RESULTS AND DISCUSSION

Profile of the Participants. The age distribution is also relatively balanced, as the largest cohort is the youngest (18-25 years, 27.78%). It implies that vending is appealing to younger and new people, as well as older, more experienced people, with a substantial proportion (47.23%) being 44 and above, indicating that the workforce is getting older in the market. Most respondents were women (58.33%), consistent with informal market economies, where women are predominant (Peimani & Kamalipour, 2022). This gender balance is essential for examining possible sex-specific differences in the perception of pain and ergonomic risk, as the Biopsychosocial Model suggests (Engel, 1977). The level of experience was very diverse. Although the proportion of those who were new (within 1 year) was 22.22%, a significant share of 38.89% had 10 or more years of experience in sales. It shows that both transient and highly entrenched vendors are present in the workforce. One of the critical issues is extended daily working hours. Ninety-one point six seven percent (91.67%) of the vendors worked over 6 hours per day, and 44.44% worked 11-15 hours, and 8.33 worked over 15 hours. This excessive duration of exposure significantly accelerates the time spent in stationary postures, motions, and load-carrying, with a direct and immediate impact on the risk of work-related musculoskeletal disorders (WRMDs) (Shah & Patil, 2024). The three primary product categories, including fish/meat (30.56%), vegetables/fruits (33.33%), and dry goods (36.11), had almost equal distribution of vendors. The physical demands required by each are different. Fish/meat sellers are dealing with cold, heavy, wet products; produce sellers often bend and group; dry goods sellers often pick up heavy boxes. This diversity enables a comparative analysis of pain patterns in relation to task-specific ergonomics.

Prevalence by Body Region. The data showed that musculoskeletal pain on the right shoulder is highly concentrated, with 38.89% of the total vendors reporting it. This observation is a strong indication that unilateral and right-handed activities predominate in vending. These must consist of continuous lifting, extending, handling goods, and raising the arms in a static position during the organization of items or while serving clients. The second-most common sites include the neck and the lower back (11.11% each). The neck pain is also due to the long-term forward head posture when making transactions and handling products. Conversely, lower back pain is also a classic symptom of manual material handling, lifting improperly, and excessive standing on hard surfaces-one of the main environmental stressors as noted in the Biopsychosocial Model (Engel, 1977). The significant reports of wrist pain (right: 8.33; left: 5.56) further indicate the repetitive and forceful nature of hand-based activities, including cutting, bagging, and money handling. Such a high degree of asymmetry in shoulder pain (Right: 38.89% vs. Left: 2.78%) is a key ergonomic finding. It provides a specific intervention target, meaning that job aids, workstation redesign, or technique training focused on load-sharing and bilateral involvement may directly reduce the most frequent cause of pain.

Prevalence by Frequency, Severity, and Work Interference. The majority (83.34%) of vendors do not report daily pain; when they do, the effect is severe. The fact that 50% of them report moderate Severity and 61.11% report at least moderate work interference demonstrates that MSP is not a nuisance to ignore. It is a direct response to the International Classification of Functioning, Disability, and Health (ICF) Model (WHO, 2001). The pain causes limitations in activity (e.g., difficulty lifting, slower movement) and restrictions on participation (decreased work capacity), which are not merely a health problem but something that restricts functioning in the work environment. Presenteeism, which is the act of working below capacity because of health problems, is a measure of the so-called Moderate Interference according to the vast majority of vendors. This result perfectly concurs with the primary goal of the study, which is to measure the loss of productivity. However, even when they do not experience pain on a daily basis, the periodic but substantial discomfort can signify that vendors are frequently working under the impact of pain, which could lead to poorer service quality, an increased error rate, and even exacerbate their condition over a longer period. Low-to-moderate Frequency, moderate Severity, and interference pain create a scenario in which the workforce copes with a frequent and effective

issue. It demonstrates that interventions should prevent the onset of pain but, more importantly, address its effects once it occurs, using mechanisms such as paced work, micro-breaks, and on-the-spot pain management.

Relationship Between Demographic Profile and Musculoskeletal Pain. Age Profile and MSP. The analysis found no significant association between age and any MSP characteristic (p = .632-.691). It indicates that musculoskeletal pain is not predominantly an ailment of older vendors in this setting. Both younger (18-25 yrs) and older cohorts report pain. It challenges a common assumption and instead suggests that the biomechanical stressors of the job are sufficient to cause discomfort even in younger, presumably more resilient, bodies.

Relationship Between Musculoskeletal Pain and Presenteeism. Two-thirds of the market vendor population (66.67) actually has a High level of presenteeism. The lowest percentage of vendors was only 8.33% in the low presenteeism range, and importantly, the very low presenteeism range was not reached at all, suggesting a significant level of impaired productivity. This distribution shows that the most prevalent experience of these public market vendors is not reduced capacity but continued high performance despite musculoskeletal pain. The 91.67% in the Moderate to High categories affirms that the idea of working effectively and managing pain is the rule, rather than an exception.

Spearman's Rho Correlation Between Pain Frequency. The Spearman correlation analysis shows no significant correlation between work presenteeism and pain frequency (rho = -0.088, p = 0.609). It shows that the rate of musculoskeletal pain episodes does not significantly affect vendors' ability to maintain work productivity. The vendors of very low and moderate Frequency both exhibit the same level of presenteeism, suggesting that the temporal patterns of pain are not predictive of work performance outcomes in this population.

Spearman's Rho Correlation Between Pain Severity. Reveals a statistically significant negative association between work presenteeism and pain severity (rho = -0.375, p = 0.024). This finding is of paramount importance to the study's objectives. The negative correlation indicates that higher levels of presenteeism (better ability to work despite health issues) are associated with lower pain severity.

Spearman's Rho Correlation Between Pain Interference and Presenteeism (n=36). The Spearman correlation analysis shows no statistically significant relationship between presenteeism at work and pain interference (rho = -0.209, p = 0.221). Even though the correlation coefficient is negative (indicating that an increase in presenteeism is associated with a decrease in interference), the correlation is not significant at the 0.05 level. It is interesting to note that there is no strong correlation between presenteeism and interference, as the interference measures are used to assess the direct effect of pain on everyday activities. This is the conceptual dimension most closely associated with work performance. The fact that this relationship does not reach significance, compared with the severity-presenteeism relationship, may indicate that pain intensity is a more salient predictor of work capacity than the degree of functional disruption in this population.

CONCLUSION

Musculoskeletal pain among market vendors is not really about who they are, age, sex, or years of experience, but about the tough, everyday reality of their work environment. Standing for hours, lifting heavy loads, reaching repeatedly, and working on hard floors create a kind of equal-opportunity pain that affects almost everyone, regardless of strength or age. It aligns well with the ICF Model, which views health problems not just as body issues but as interactions between people and their environments. Right shoulder pain stands out, affecting 38.89% of vendors, because most of their work is done with one dominant arm, reaching, handing money, arranging goods, and favoring the right arm and shoulder. Its pattern aligns with Gate Control Theory, which holds that sustained physical strain keeps pain signals "turned on" in the nervous system, making that side especially vulnerable. Pain usually comes and goes about 1–4 times a week for 83% of vendors and is often rated as moderate, yet it still clearly interferes with daily work. From the Human Development Model Disability Creation Process, these episodes are like short "spells" of disability, moments when capacity dips but usually recovers. What is striking, however, is the very high level of presenteeism: 66.67% of vendors still manage to work at a high level despite their pain. In this informal setting, presenteeism looks less like "working while sick" and more like remarkable resilience vendors push through to keep earning, even when it hurts. This resilience is shaped by economic pressure: unlike formal workers with sick leave, vendors lose income the moment they slow down, so they adapt, pace themselves, and find ways to keep going. Still, the significant negative correlation between pain severity and presenteeism ($\rho = -0.375$, p = 0.024) shows that pain intensity matters: when pain becomes intense, even the most determined workers can't fully maintain their usual performance. Pain is widespread, but disability is not inevitable. Vendors are adapting as best they can within a harsh physical and economic environment. To support them, interventions should not only improve ergonomics but also protect and build on the resilience that already exists—particularly by targeting pain severity and designing work conditions that allow them to stay productive without pushing their bodies too far.

RECOMMENDATIONS

To Market Administrators, Local Government Units (LGUs), and healthcare practitioners, it is recommended that a multifaceted approach be adopted to mitigate musculoskeletal pain (MSP) and enhance vendor work engagement through environmental modifications and clinical interventions. By addressing stressors such as poor ventilation, inadequate lighting, and ergonomic deficiencies through the installation of anti-fatigue mats and portable seating, administrators can foster a market-wide environment that reduces physical strain and promotes sustained work focus, particularly as lower pain severity is significantly correlated with higher presenteeism. Simultaneously, rehabilitation specialists should implement culturally appropriate screening tools and "vendor-friendly" protocols, incorporating isometric exercises, strength training, stretching, thermal therapy, and cognitive coping strategies that reframe work engagement, thereby optimizing occupational health and economic productivity for this high-risk demographic.

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