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Prevalence of Musculoskeletal Symptoms and Associated Risk Factors Among the Patients Care Attendant from Selected area in Dhaka City

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Abstract **Original Research Article**

Background: It is essential to uncover musculoskeletal symptom prevalence and associated risk factors among the working population to establish effective prevention and intervention strategies. While studies worldwide report significant risk among patient care attendants (PCAs), evidence is lacking in the context of Bangladesh. **Objectives:** The study aimed to assess musculoskeletal symptom prevalence in the last 7 days and 12 months, and explore links to socio-demographic and physical risk factors. ***Methods:*** A cross-sectional study involving 50 participants selected via convenient sampling from BRB hospitals in Dhaka, conducted between July 2019 and December 2019. The Modified Dutch Musculoskeletal Questionnaire assessed musculoskeletal symptoms, their associations with socio-demographic factors, and physical risk factors among patient care attendants (PCAs). ***Result:*** The findings revealed significant musculoskeletal symptom prevalence among patient care attendants (PCAs). Neck pain was prominent at 44%, mean 1.660 (SD = ± 0.478), followed by lower back and ankle/foot at 36%, mean 1.640 (SD = ± 0.484), and knee at 26%, mean 1.740 (SD = ± 0.443). Wrist and shoulder reported 18%, mean 1.820 (SD = ± 0.388), while upper back and hip reported 8%, mean 1.920 (SD = ± 0.274). Elbow symptoms were at 4%, mean 1.960 (SD = ± 0.197). In the past 12 months, 34% reported neck pain, mean 1.660 (SD = ± 0.478), and 32% reported lower back symptoms, mean 1.680 (SD = ± 0.471). The most affected body part was the neck. Socio-demographic factors were significantly linked to musculoskeletal symptoms. Identified work-related physical risk factors included prolonged standing (90%) and slight trunk bending (54%). Frequent arm, hand, or finger movements constituted the second-highest risk at 70%. ***Conclusion:*** Work-related musculoskeletal disorders are a significant global concern, affecting patient care attendants. Effective ergonomic management is crucial to mitigate risks, necessitating further research on prevalence and job-related factors.

Keywords: Work-related musculoskeletal disorders, physical risk factors, Patient care attendants (PCA).

INTRODUCTION

Musculoskeletal Disorders (MSDs) have emerged as significant occupational health concerns across various workforces. Healthcare professionals worldwide exhibit a relatively high prevalence of self-reported musculoskeletal complaints, contributing to disability and work time loss. The historical roots of work-related musculoskeletal disorders date back to Ramazzini's observations in the 18th century [1]. MSDs

have witnessed a growing trend globally, with substantial implications for workers' well-being and economic costs.

Epidemiological investigations by Andoa *et al*., underscore the heightened risk of work-related musculoskeletal disorders among nurses, a physically demanding occupation often characterized by forceful movements, heavy lifting, and prolonged standing [2]. Notably, nursing professionals endure musculoskeletal symptoms, impacting various aspects of their well-being [3]. However, such prevalence data remain lacking in the context of Bangladesh.

Work-related musculoskeletal disorders encompass various factors, including heavy lifting and repetitive tasks, affecting human support systems like muscles, nerves, and bones. The consequences extend beyond individuals to organizations and societies [4]. The dental profession, especially dentists, faces notable risks. Occupational risk factors' impact on health, disability, and productivity underscores the significance of addressing these concerns. Globally, musculoskeletal disorders constitute a leading cause of occupational injury and disability, affecting diverse demographics Ergonomics-related challenges, such as awkward postures and manual material handling, contribute to workers' vulnerability [5].

In study, MSDs pose considerable challenges to the working population. Healthcare and nursing professionals, including patient care attendants (PCAs), are notably affected. To mitigate risks, addressing physical risk factors through effective ergonomic strategies is imperative. Moreover, further research is essential to comprehensively gauge prevalence and job-related risk factors [3].

OBJECTIVES

General Objective:

- To determine the prevalence of musculoskeletal symptoms and their associated risk factors among Patient Care Attendants (PCA) in a specific area of Dhaka city.

Specific Objectives:

- To Examine the socio-demographic characteristics related to musculoskeletal symptoms among Patient Care Attendants (PCA).
- To Identify the most frequently affected body parts.
- To Evaluate the prevalence of musculoskeletal symptoms in the preceding 7 days and 12 months among Patient Care Attendants (PCA).
- To Investigate the associated risk factors among Patient Care Attendants (PCA).

METHODS AND MATERIALS

A quantitative cross-sectional design was employed, offering efficiency in estimating prevalence and exploring associations. This approach provided a snapshot view of the situation, aligned with the study's temporal objectives, and was resource-effective. The initial sample size calculated was 212; however, due to project limitations, 50 PCAs were selected. The study occurred at BRB Hospital Ltd. from July 2019 to December 2019. It aimed to examine musculoskeletal symptoms and associated factors among PCAs, utilizing a quantitative cross-sectional design for efficient prevalence estimation and association exploration, reflecting the study's temporal objectives and resource constraints.

Inclusion Criteria

- Both male and female Patient Care Attendants (PCA) with a minimum of 12 months job experience before data collection.
- All age groups were considered to explore age-related relationships with work-related musculoskeletal symptoms and associated risk factors.

Exclusion Criteria

- Participants unwilling to join the study were excluded.
- Medically unstable subjects were excluded due to potential confusion in responses.
- Individuals with a history of major accidents or surgeries were excluded to avoid potential confounding factors in the study's findings.

Data Collection

Structured questionnaires were the primary data collection tool. These included the Modified Dutch Musculoskeletal Questionnaire, which had been translated and validated. The questionnaire covered a range of aspects, including demographic information, prevalence of musculoskeletal symptoms over specific time periods, and factors associated with these symptoms. The inclusion of various body regions and factors allowed for a comprehensive assessment.

Data Analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS), version 20. Descriptive statistics, such as frequencies and percentages, were used to provide a clear overview of the demographic characteristics of participants and the prevalence rates of musculoskeletal symptoms. Chi-square tests were utilized to explore the associations between demographic factors, risk factors, and the prevalence of musculoskeletal symptoms. The significance level was set at $p < 0.05$ to determine the statistical relevance of these associations.

Ethical Considerations

Ethical considerations were paramount throughout the study. Approval was obtained from the ethical committee of Bangladesh Open University. Informed consent was secured from each participant, ensuring their voluntary participation and understanding of the study's objectives. Participants' privacy and confidentiality were strictly maintained during data collection and analysis. The study also adhered to copyright regulations for the use of the Dutch Musculoskeletal Questionnaire. Clear communication was maintained with participants, allowing them to withdraw from the study at any time without repercussions.

RESULTS

This cross-sectional study was conducted among Patients Care Attendants (PCA) were enrolled in this study. The objective of the study to find out the Prevalence of musculoskeletal symptoms and its associate risk factors among the Patients Care Attendants (PCA) in selected area of Dhaka City. Data were analyzed with the help of SPSS, V-16 software and the results obtained were as follows.

Age of the participants

In this research, researcher shows that the majority of the respondents 50% were 16-25 years of age followed by 36% were 26-35 years of age, 10% were 36-45 years of age, 6% were 46-55 years of age. The respondents mean age was1.72 (SD = ± .881) years.

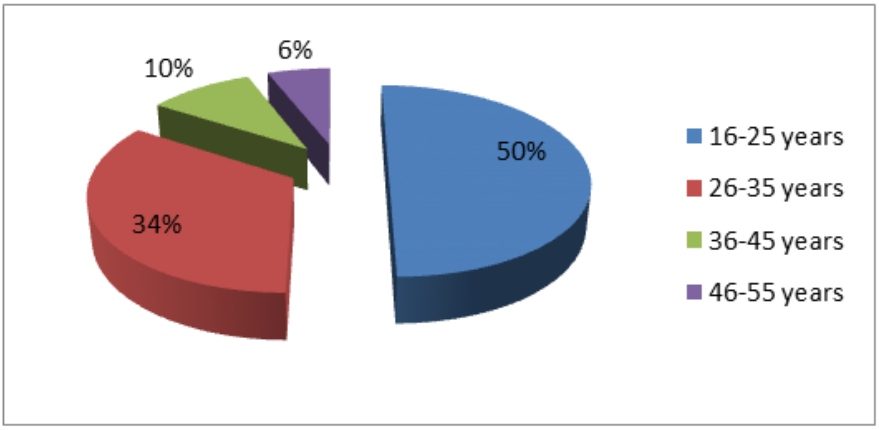

Figure-1: Age of the participants

Table 1: Distribution of Job-Related Risk Factors, (n=50)

Variable	Response	Frequency	Percent	Valid Percent	Cumulative Percent
Lift or carry heavy loads	Yes	45	90.0	90.0	90.0
	No	5	10.0	10.0	100.0
Bend slightly with trunk	Yes	41	82.0	82.0	82.0
	No	9	18.0	18.0	100.0
Bend and twist simultaneously with trunk	Yes	35	70.0	70.0	70.0
	No	15	30.0	30.0	100.0
Bend trunk for long periods	Yes	30	60.0	60.0	60.0
	No	20	40.0	40.0	100.0
Bend and twist trunk for long periods	Yes	29	58.0	58.0	58.0
	No	21	42.0	42.0	100.0
Bend neck in forward for long periods	Yes	27	54.0	54.0	54.0
	No	23	46.0	46.0	100.0
Twist neck for long periods	Yes	31	62.0	62.0	62.0
	No	19	38.0	38.0	100.0
Twist slightly with trunk	Yes	37	74.0	74.0	74.0
	No	13	26.0	26.0	100.0
Twist trunk for long periods	Yes	28	56.0	56.0	56.0
	No	22	44.0	44.0	100.0
Make short repetitive movement of	Yes	33	66.0	66.0	66.0

Variable	Response	Frequency	Percent	Valid Percent	Cumulative Percent
trunk	No	17	34.0	34.0	100.0
Make short repetitive movement with neck	Yes	37	74.0	74.0	74.0
	No	13	26.0	26.0	100.0
Reach with arms or hands	Yes	38	76.0	76.0	76.0
	No	12	24.0	24.0	100.0
Make frequent movements with arms, hands, or fingers	Yes	35	70.0	70.0	70.0
	No	15	30.0	30.0	100.0
Stand for long period of time	Yes	45	90.0	90.0	90.0
	No	5	10.0	10.0	100.0
Sit for long period of time	Yes	9	18.0	18.0	18.0
	No	41	82.0	82.0	100.0
	Total	50	100.0	100.0	100.0

In this study, the investigator found that the high prevalence of musculoskeletal symptoms at last 7 days were neck 34%, the mean were 1.660; (SD = ± .478), lower back 32%, the mean were 1.680; (SD = ± .471), ankle/foot 26%, the mean were 1.740; (SD = ± .443), wrist 24%, the mean were 1.760; (SD = ± .431), knee 18%, the mean were 1.820; (SD = ± .388), shoulder 14%, the mean were 1.860; (SD = ± .350), upper back 12%, the mean were 1.880; (SD = ± .328), elbow 10%, the mean were 1.900; (SD = ± .303), hip 8%, the mean were 1.920; (SD = ± .274).

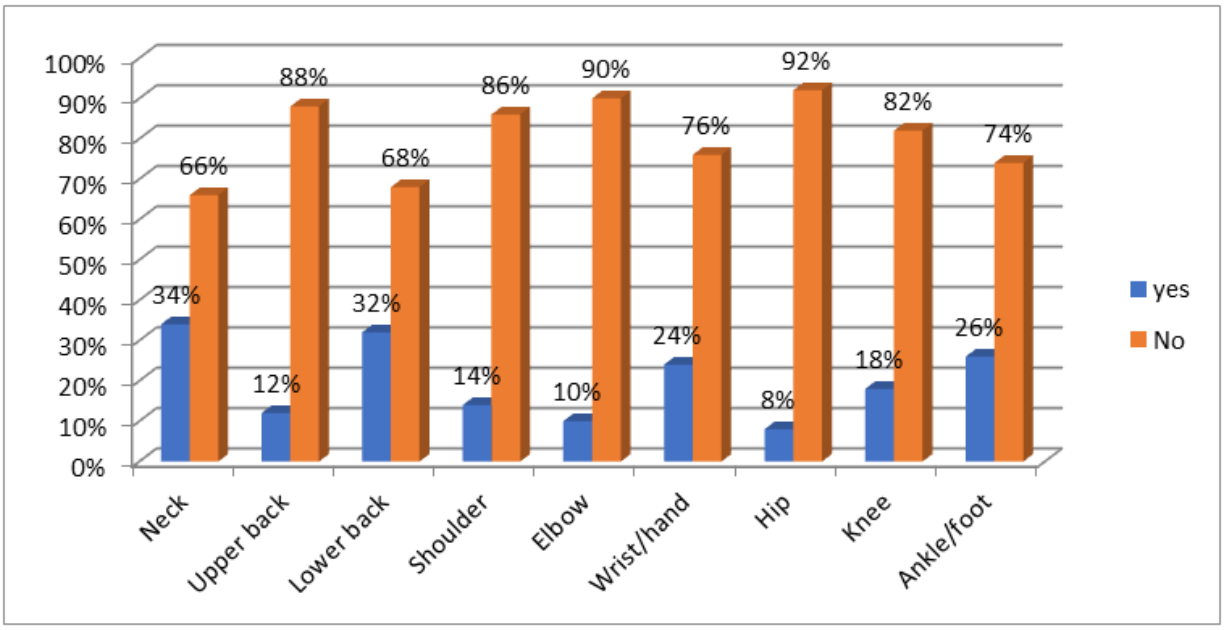

Figure-2: Prevalence of musculoskeletal symptoms in nine body region at last 7 days of the respondents

In this study, the investigator found that the high prevalence of musculoskeletal symptoms at last 12 months were neck 44%, the mean were 1.660; (SD = ± .478), lower back and ankle/foot 36%, the mean were 1.640; (SD = ± .484), knee 26%, the mean were 1.740; (SD = ± .443), wrist and shoulder 18%, the mean were 1.820; (SD = ± .388), upper back and hip 8%, the mean were 1.920; (SD = ± .274), elbow 4%, the mean were 1.960; (SD = ± .197).

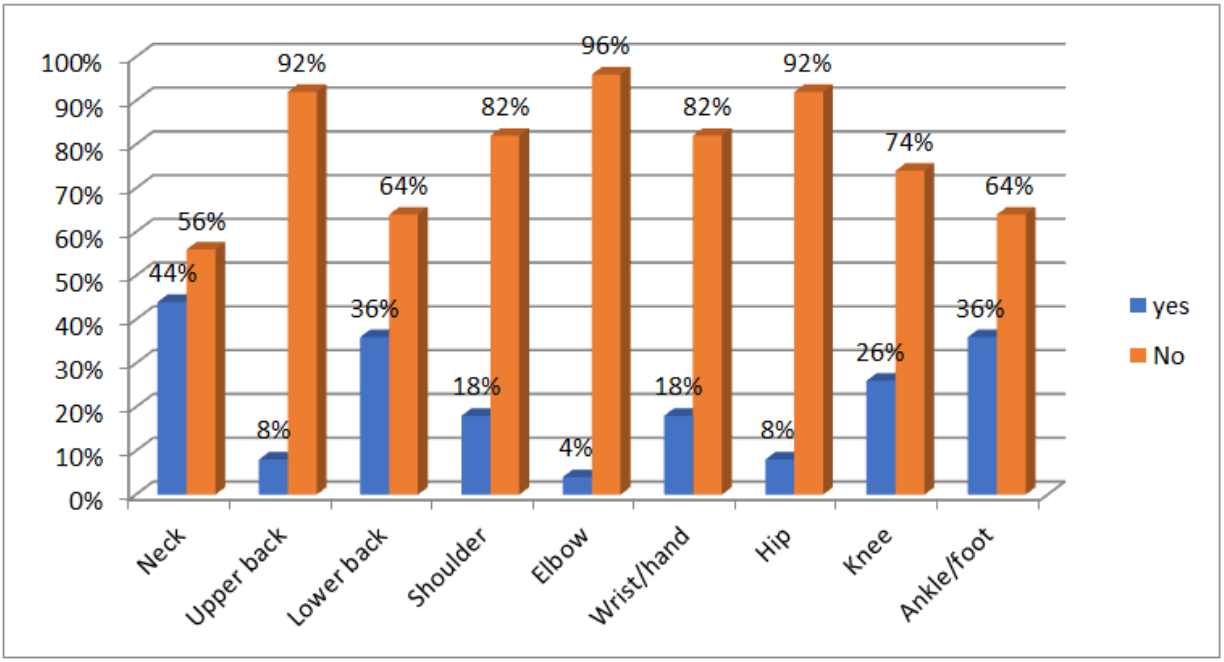

Figure-3: Prevalence of musculoskeletal symptoms in nine body region at last 12 months of the respondents

DISCUSSION

The cross-sectional study was carried out at BRB Hospital Limited in Dhaka City, focusing on Patient Care Attendants (PCA). The study's objective was to determine the prevalence of musculoskeletal symptoms and their associated risk factors among PCAs in the specified area. The research included 50 PCAs from selected regions and assessed musculoskeletal symptom prevalence over the past 7 days and 12 months in nine body regions. The study revealed that lower back had the highest prevalence of symptoms, while wrist had the lowest. International studies have shown consistent findings regarding prevalent body sites affected by musculoskeletal symptoms.

Munabi *et al.*, reported that 80.8% of 741 participants experienced musculoskeletal pain in any body region in the last 12 months. Common sites were lower back (61.9%), feet and ankles (38.1%), knees (37.1%), neck (36.9%), upper back (35.8%), and shoulders (32.6%) [3]. GA, Reyes Llerena *et al.* found that legs (16.6%), lower back (15.4%), and upper back (11.6%) were the most commonly reported sites of discomfort among 387 nurses [6].

A similar reported 27% complaints in the neck, 22% in shoulders/upper arms, and 3% in elbows/forearms among nurses in the Netherlands with surveyed 821 Swedish hospital nurses, with self-reported ongoing musculoskeletal symptoms in the neck (48%), shoulders (53%), low back (56%), hands (22%), and knees (30%), attributed to repetitive tasks and sustained postures [7]. In an Indian study, 67.0% of nurses experienced low back pain. The most affected body parts were the neck (34%), followed by the lower back (32%) and ankle (26%). Andoa *et al.*, found similar results, with the lower back (54.7%), neck (42.8%), and knee (31.3%) being commonly affected [8]. Similar trends were observed globally; however, a study of Korean hospital nurses reported low back pain as the second most common complaint (72.4% among 330 nurses) [9].

Associations between demographic factors and musculoskeletal symptoms were noted. A Japanese study found a 69.7% prevalence of low back pain associated with age. Lagerstrom *et al.* found age related to neck and shoulder pain. Physical risk factors were also assessed; short repetitive trunk movements and frequent arm/hand/finger movements were associated with musculoskeletal symptoms [7]. Similar studies highlighted physical exertion, bending/twisting, patient handling, and awkward posture as significant risk factors [9].

Furthermore, the research explored associations between physical risk factors and musculoskeletal symptoms. Findings aligned with previous studies, indicating that repetitive movements, bending, twisting, and manual patient handling were significant risk factors [10]. Posture-related factors also emerged as contributors to musculoskeletal complaints [8].

Work-related physical risk factors emerged as significant contributors to musculoskeletal symptoms among PCAs. The association between repetitive trunk movements, frequent arm/hand/finger movements, and

symptom prevalence emphasizes the importance of addressing occupational activities that contribute to strain [10]. These findings are consistent with previous studies that have emphasized the role of patient handling tasks and awkward postures in increasing the risk of musculoskeletal issues.

Comparative analysis with international studies reveals both similarities and disparities in musculoskeletal symptoms and risk factors. For instance, while the lower back emerged as a commonly affected body part across studies, the ranking of other affected regions varied [8]. These differences might be attributed to variations in healthcare practices, work culture, and patient handling techniques across different countries.

In this study, contributes to the growing body of evidence highlighting the prevalence of musculoskeletal symptoms among Patient Care Attendants and the underlying risk factors. The findings emphasize the urgent need for targeted interventions aimed at reducing physical strain, providing ergonomic training, and implementing workplace modifications to safeguard the well-being of PCAs. By addressing these challenges, healthcare organizations can enhance the working conditions of PCAs, ultimately leading to improved job satisfaction, reduced absenteeism, and better patient care.

CONCLUSION

This study uncovers a significant prevalence of musculoskeletal symptoms among Patient Care Attendants (PCAs), with particular emphasis on neck pain. Females and those within the 16-25 age group are notably affected. The need for tailored interventions, especially physiotherapy, to alleviate discomfort and raise awareness becomes evident. Education campaigns on risk prevention are crucial, and healthcare organizations must prioritize strategies to enhance musculoskeletal health and job satisfaction for PCAs.

Limitations of Study

- As the study place is purposively selected in Dhaka city so the result of the study might be area specific and might not reflect the country scenario.
- Sample size was small to generalize the study result.
- Though the topic of this study is new one, the availability of the relevant published material is not satisfactory.
- This study was done in a short period, so all factors in relation to Patient Care Attendants (PCA) musculoskeletal problem may not be highlighted. If enough time was available, knowledge on this thesis could be extended.

RECOMMENDATIONS

- **Enhance Sample Size:** In future studies, it is recommended to use a larger and more diverse sample size to ensure greater representativeness and reliability of the findings.
- **Explore Prolonged Standing:** Conduct further research to delve into the underlying factors contributing to musculoskeletal pain arising from prolonged standing, providing valuable insights for preventive measures.
- **Address Obesity:** Given that obesity places a consistent burden on the lower back, promoting weight management strategies should be emphasized to mitigate its impact on musculoskeletal health.
- **Safe Lifting Techniques:** Promote safe lifting practices, such as bending from the knees, engaging core muscles, maintaining a straight back, and avoiding twisting while lifting heavy objects.
- **Nutritional Focus:** Advocate for maintaining a balanced nutrition and diet to prevent excessive weight gain, particularly around the waistline, which can strain lower back muscles.
- **Bone Health:** Encourage a diet rich in calcium, phosphorus, and vitamin D to support bone health and facilitate new bone growth, contributing to overall musculoskeletal well-being.

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Conflict of Interest: None declared

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