Investigation of the Prevalence of Lower Extremity Work-Related Musculoskeletal Disorders in Distribution Center Workers
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DISCLOSURES: None

INTRODUCTION: In distribution center environments, employees are exposed to excessive walking on hard surfaces (1), stepping up or down between work surfaces, vibration exposure from material handling equipment such as forklifts and pallet jacks and working at a rapid pace (2). Occupational ergonomic literature has mainly been focused to musculoskeletal disorders to the back and upper extremities. Currently, very little is known about the prevalence of lower extremity work related musculoskeletal disorders (WRMSDs) in material handling occupations where people spend a majority of their workday walking or driving stand up style machinery. The overall goal of this study was to understand the scope of this problem by studying the self-reported prevalence of WRMSD symptoms in the lower extremities amongst material handlers in distribution centers.

METHODS: This research was a part of field based cross-sectional epidemiological study performed at three retail distribution centers. At each facility, workers from different material handling jobs were recruited to complete a lower extremity surveillance to collect symptom data. Across the different distribution centers, 341 full-time employees, aged 18 years or older were recruited. Those choosing to participate provided informed, written consent approved by The University’s Institutional Review Board.

The survey, comprised of five sections, queried participants about the demographic information, health behaviors, employment history, and musculoskeletal health. Descriptive statistics were generated for each survey item. Overall means and frequencies were used to examine the prevalence on lower extremity work related musculoskeletal symptoms participants were categorized by their job type. Depending on the job, the employees are either walking a majority of the time in smaller areas (inside shipping trailers) or larger areas (in pick modules) or driving equipment such as forklifts and pallet jacks. Prevalence was calculated by dividing the number of participants in the category who experienced a symptom within the last year by the total number of survey respondents.

RESULTS: Of the 341 participants, 226 individuals or 66.3 percent of the survey population reported symptoms in one or in multiple regions of the lower extremity. The highest prevalence of symptoms was reported in the ankles and feet (43.4 percent), while approximately a third of the survey population reported symptoms in the hip & thighs and the knees (Figure 1). A majority of those with symptoms indicated that their discomfort worsens with work. In comparison, few changed their job or duties or took sick leave due to the symptom. Drivers of stand-up style forklifts showed a higher prevalence of symptoms in ankles/feet as compared with other occupations. Individuals who were walking in larger areas had a higher prevalence of symptoms in the hip/thighs, lower legs and ankle/feet as compared to those confined to smaller areas. Symptoms increased as the worker aged or worked at the occupation longer. Higher prevalence was also seen for those who currently smoked or had smoked in the past as compared to those who had never smoker. Females reported more symptoms as compared to men.

DISCUSSION: Findings of this study show that lower extremity WRMSDs are prevalent amongst distribution center workers. Approximately two-thirds of the participants in this study reported discomfort in one or more areas of the lower extremity. Prevalence differed depending on the job type. Significant associations were found between lower extremity symptoms and individual factors such as age, gender, job tenure, and smoking status, indicating the importance of looking at individual factors in the development of risk models for WRMSDs.

SIGNIFICANCE: Given that a significant percentage of the study population had self-reported symptoms in the lower extremity, there is a need for further investigations to understand the causal pathways and potential control mechanisms that could improve worker health, turnover, absenteeism, and morale.

REFERENCES:

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