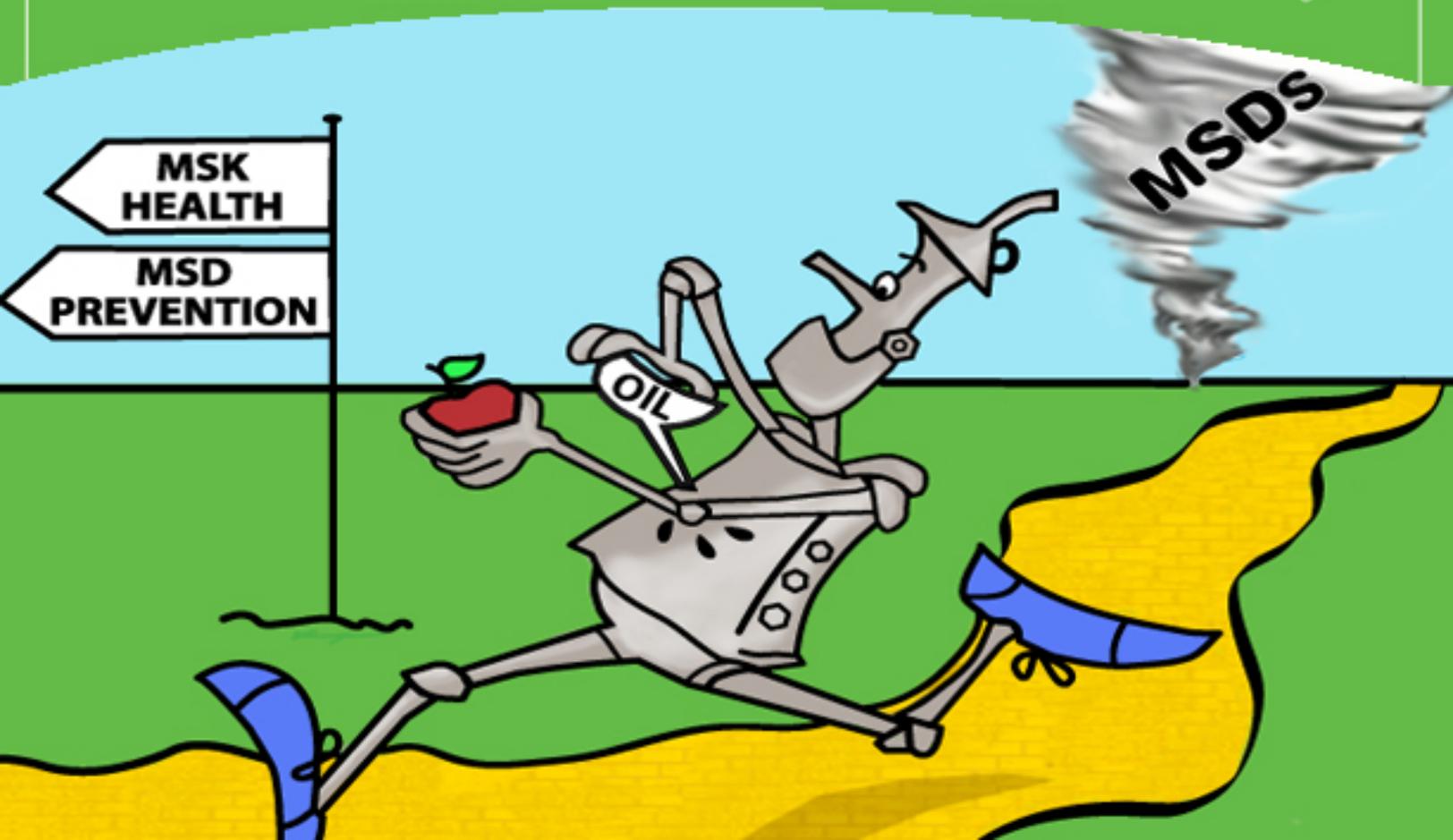


MSDs The Expendable Expense

White Paper



MSDs - The Expendable Expense

Introduction

Aching back, stiff neck, sore wrists and strained shoulders are common among employees in every organization. Musculoskeletal disorders (MSDs) include disorders and injuries involving muscles, tendons, ligaments, bones and joints. MSDs are highly prevalent and one of the main causes of activity limitation – affecting productivity, leisure time and overall quality of life. Low back pain is the most common MSD, with an estimated 80% of people reporting they've experienced low back pain at some point in their lifetime. Approximately 20% of people are experiencing low back pain at any given time.

There are multiple risk factors that contribute to the development of MSDs including prolonged loading (repetitive strain injuries), excessive mechanical loading (as in back pain), vibration, cold, awkward working postures, decreased personal strength, increased age, previous injury, obesity and an overall decline in fitness.

As shown in Figure 1, there are 2 categories of risk factors – Individual and Ergonomic–contributing to MSD development. It is important that this “duality” of Individual and Ergonomic Risk Factors be addressed in any remediation or prevention program. Furthermore, determining the cause of MSDs is often difficult due to the complexity of the human body and the development of disorders over time. Repetitive strain, overuse, over-extension and poor positioning extend beyond the workplace. So, whether at work or during leisure activities, the focus has to be on protecting muscles and joints from pain and injury.

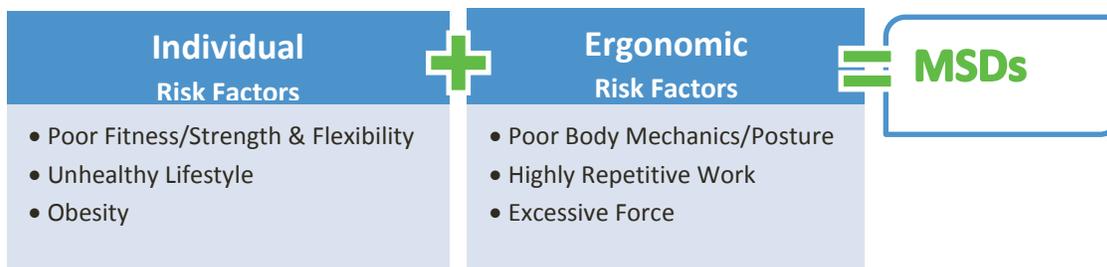


FIGURE 1. RISK FACTORS

The Rising Cost of MSDs

Research places the cost of musculoskeletal diseases in Canada at \$16.4 billion. MSDs had a staggering \$50 billion price tag for companies in the U.S. in 2011 with an estimate of *five times that amount* when factoring in indirect costs. Additionally, MSDs account for almost 33% of all workers' compensation costs.

They are also a huge driver of absenteeism costs, with European and U.S. estimates that MSDs account for nearly 50% of all absences from work lasting 3 days or longer and for 60% of permanent work incapacity (Figure 2). Individual health risk factors such as inactivity and obesity also contribute to the rising cost of MSDs. Research published by the American

Medical Association¹ demonstrates that the number of lost workdays and workers compensation claims costs were greatly increased with the level of obesity of participants. When comparing the study's heaviest participants and those of recommended weight, obese participants had almost 13 times more lost workdays, 7 times higher medical claims costs and 11 times higher indemnity costs.

There is no question that the economic burden of MSDs is considerable.

The good news is that while MSDs are highly costly, **they are 100% preventable.**

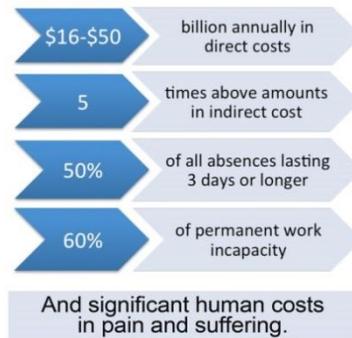


FIGURE 2. COST OF MSDs

Our research, published in the Journal of Occupational and Environmental Medicine², found that an integrated approach aimed at improving lifestyle, particularly related to maintaining healthy weight and increasing strength and fitness in combination with targeted MSK injury prevention and an onsite train-the-trainer program, can improve MSK health and decrease the incidence of MSDs.

Research Design

The research study was unique in its use of an integrated approach between traditional corporate wellness interventions and those focused specifically on the reduction of MSDs - most studies focus solely on MSD and ergonomic-targeted interventions.

Many of the risk factors commonly addressed as part of corporate wellness, such as inactivity, decreased strength and general fitness, obesity, unhealthy lifestyle, poor nutrition and fatigue are also major risk factors for MSDs. And these risk factors are also highly prevalent in most organizations.

As shown in Figure 1, the development of MSDs stems from a combination of individual and ergonomic risk factors, which underscores the need to integrate both health and ergonomic programs in the development and implementation of interventions. Our study, the Healthy LifeWorks program, was a voluntary comprehensive wellness intervention that was developed, implemented and evaluated over a 4-year period within a Canadian Provincial Government department. 402 employees completed Health Risk Assessments (HRAs) in 12 sites throughout the province of Nova Scotia; 233 employees also completed a musculoskeletal pain questionnaire and constitute the study sample.

The presence, location and severity of musculoskeletal symptoms were assessed before and after the program using the Nordic Musculoskeletal Questionnaire (NMQ). The NMQ focuses on nine body regions: neck, shoulder, upper back, elbow, wrist, lower back, hip/thigh, knee and ankle/feet. Three aspects of MSK pain were assessed: 1) 12-month prevalence by asking "Have you at any time during the past 12 months had trouble (ache, pain and discomfort) in (nine body regions)?" 2) interference with work by asking those with musculoskeletal pain "Have you at any time during the last 12 months been prevented from

¹ Ostbye, T., Dement, J. and Krause, K. (2007). "Obesity and Workers' Compensation Results from the Duke Health and Safety Surveillance System" American Medical Association. Archives of Internal Medicine; 167:766-773.

² Curwin, S., Allt, J., Szpilfogel, C. and Makrides, L. (2013) "The Effect of a Comprehensive Workplace Wellness Program on the Prevalence and Severity of Musculoskeletal Disorders in a Canadian Government Department" Journal of Occupational and Environmental Medicine, 55(6).

doing work (at home or away from home) because of the trouble?” and 3) current disorders (during last 7 days) by asking those with musculoskeletal pain “Have you had any trouble at any time during the last 7 days?”

The NMQ was distributed to 12 geographic locations reaching both blue and white collar employees. 233 employees responded to the NMQ before and after the implementation of the comprehensive wellness intervention.

Interventions

The comprehensive wellness interventions utilized an integrated approach (Table 1) promoting healthy lifestyle and ergonomic awareness. The intervention period focused on both the promotion of healthy lifestyles and prevention of MSDs as well as targeted interventions for employees at risk or with existing MSDs.

The Evexia MSK Health/MSD Prevention Model™
<p>The Evexia MSK Health/MSD Prevention Model™ addresses BOTH individual AND ergonomic risk factors.</p> <p>This Best Practice model is most effective when it is:</p> <ul style="list-style-type: none"> • Implemented collaboratively with Occupational Health and Safety • Organization-wide • Long-term • Evaluated <p>Key Components include:</p> <ul style="list-style-type: none"> • An integrated approach promoting healthy lifestyle and ergonomic awareness • Targeted interventions for employees at risk or with existing MSDs • A Train-the-Trainer program to empower peer mentors • Information aimed at changing employee attitudes and beliefs about MSDs

TABLE 1. THE EVEXIA MSK HEALTH/MSD PREVENTION MODEL

with a focus on increasing endurance, strength and flexibility; ergonomics and musculoskeletal injury prevention with emphasis on train-the-trainer sessions for sustainability; and, education about posture and sitting techniques.

Several interventions also focused on MSDs in particular: workshop presentations aimed at educating workers about common MSDs, principles of prevention and treatment, advice on activity, and common beliefs and misconceptions about MSDs; handouts explaining workstation setup principles for office workers; workplace assessment and modification, and changes in equipment setup and behaviour; individual consultations with workers to discuss personal MSDs; strength training programs; and, train-the-trainer workshops for occupational health committee members.

The train-the-trainer workshops/webinars were a unique component of the interventions, aimed at empowering peer mentors to help identify risk factors and encourage micro-break exercises to prevent common MSDs.

The intervention consisted of Health Risk Assessments, workshops, group presentations, health fairs, competitions, incentives programs, various educational resources as well as one-on-one counselling and coaching via telephone, and computer-based support across lifestyle risk factors.

These interventions related to a number of health issues identified by the HRA such as nutrition and weight management; smoking cessation by telephone and onsite group sessions; physical activity

Results

Low back pain was the most common MSD, followed by neck and shoulder pain pre and post intervention. Figure 3 displays the number of employees reporting a MSD in 0 to 9 of the body regions assessed by the NMQ before and after the intervention program.

The number of employees reporting no musculoskeletal pain

increased from 11% (n=26) pre-intervention to 21% post intervention (n=49). 60% (n=140) of employees had 0 to 2 regions of

pain post-intervention compared to 43% pre-intervention (n=101). On average, each participant had one fewer pain location after the intervention program. There was also a significant decline in the 12-month prevalence of musculoskeletal pain in all body regions except the hip/thigh region.

Decreases in 12-month and 7-day prevalence and number of pain locations suggest an overall improvement in musculoskeletal health after the integrated wellness intervention. There was an approximately 10% decrease in the 12-month prevalence of musculoskeletal disorders, ranging from 4% for hip/thigh problems to 12% for lower and upper back problems. The proportion of employees reporting that a musculoskeletal disorder interfered with their normal work during the past 12 months decreased from 83% to 46%.

Discussion

Research on workplace interventions to reduce MSDs has shown mixed results. This is likely due to the fact that most workplace interventions have focused exclusively on MSDs instead of a broader approach to health improvement.

Measurement choices have also differed, with most interventions focusing on measuring time lost from work due to MSDs as opposed to also examining their prevalence and severity which are critical variables in implementing an effective MSD prevention program. Identifying lost work time due to MSDs identifies only one piece of the puzzle as this method likely only captures the worst MSDs and, as we know, many employees continue to work despite experiencing MSD pain, which further impacts presenteeism.

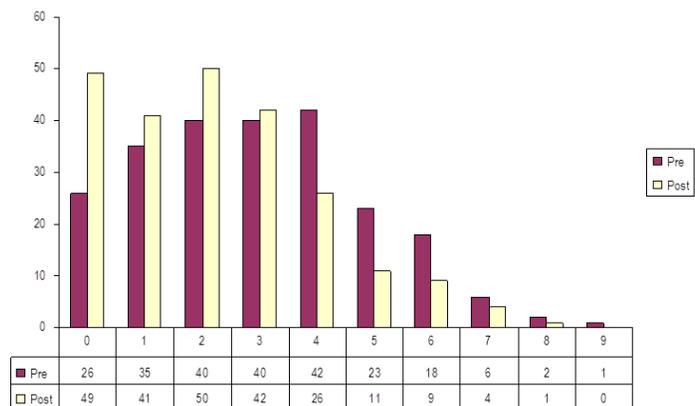


FIGURE 3. NUMBER OF EMPLOYEES REPORTING A MSD IN 0 TO 9 BODY REGIONS BEFORE (PRE) AND AFTER (POST) THE HEALTHY LIFEWORKS PROGRAM

Key Observations

1. Occupational Health and Safety and Corporate Wellness need to collaborate to prevent and reduce prevalence and incidence of MSDs.
2. An integrated approach must be used that combines traditional wellness interventions and targeted MSK health and MSD prevention.
3. Information aimed at changing attitudes and beliefs about MSDs needs to be a central component in addition to education about risk factors.
4. Appropriate evaluation must be conducted to guide the MSK Health/MSD Prevention program, track results and determine effectiveness.

The most effective approach is to address both individual and ergonomic risk factors. And such an approach can only be effective through collaboration between employee safety and wellness. This is very much in line with best practice recommendations by the NIOSH Total Worker Health™ Program: Seminal Research Papers 2012.³

As shown in Table 1, there are four key components to an effective MSK Health/MSD Prevention model: promotion of a healthy lifestyle and ergonomic awareness, targeted interventions for employees at risk or with existing MSDs, a train-the-trainer program to empower peer mentors and information aimed at changing employee attitudes and beliefs about MSDs.

These components need to be delivered in a model that is implemented collaboratively between Occupational Health and Safety and Corporate Wellness, is long-term, extends throughout the entire organization and is appropriately evaluated, both before and after the intervention.

Results from the Healthy LifeWorks and other studies support the model outlined in Table 1 that incorporates joint efforts between safety and wellness. When such efforts are combined, with full organization-wide support, MSDs and their significant associated costs can indeed be reduced and prevented.

For more information, read the full article [here](#).

³ NIOSH (2012). Research Compendium: The NIOSH Total Worker Health™ Program: Seminal Research Papers 2012. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2012-146, 2012 May: 1-214.