Pain medication vs. preventative ergonomics intervention: a construction sector study proposal

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1. Introduction

Death related to the overdose of opioids are on the rise in the United States. Occupations with the highest rate of these deaths include construction, agriculture, material moving occupations, maintenance/repair, production, food preparation, transportation, waste management, and health care. Currently, several reports have identified a trend observed in construction workers regarding the use of pain medications that range from over the counter analgesics to the extent of using opioids as their strategy to manage chronic musculoskeletal pain and discomfort. Understandably, the highest rates of deaths related to opioids come from industries with physically demanding jobs and also higher injury rates.

The prevention of work-related musculoskeletal disorders (MSDs) in construction workers is challenging. The combination of exposures to heavy manual handling, dealing with awkward postures, and working under time pressure, are some of the risk factors associated with different types of MSDs in the construction industry. Different types of MSDs are associated with different trades of construction workers, i.e., knee osteoarthritis in the floor coverers, back and low back disorder of the ceiling installers, neck and back disorders in farmworkers, amongst others. Musculoskeletal sprains and strains that represent 27.3% of all construction injuries and illnesses are the outcomes of these physical exposures, which is most commonly manifests as chronic pain and discomfort symptoms.

1.1 Opioid use, abuse, and misuse in the workplace

The USA consumes 75% of the world's total opioid prescription drugs. In the past, opioid-type analgesics were given only to individuals with cancer-related pain. The drug's high addiction potential made it too risky to recommend prescribing in non-cancer pain patients. Because opioids cause impairment, it is an enormous potential hazard in the workplace. That was until the 1980s when state boards lifted these restrictions, causing the number of prescriptions to skyrocket. The high potential for misuse and abuse of opioid medication is of serious concern, mainly because these it is being used at the workplace. Atleast twenty years back, work-related circumstances, the case definition for an opioid-consuming worker is that of a middle-aged individual, who uses tobacco daily, a history of fracture or dislocation, and suffers from back pain (Durand, 2019). Moreover, construction workers are consuming a high amount of both prescription and non-prescription opioids in comparison to other work sectors. According to the Centre for Protection of Workers' Rights (CPWR), construction workers are most vulnerable to have work related muscusloskeletal injuries and receive prescription opioids. According to the CPWR, in 2016, 40% of the total 42000 opioid related death cases were for prescription opioids.

According to the Centre for Disease Control, in 2017, there were 70,067 overdose cases reported in the U.S., and 95% of the overdoses occurred among the working-age population between the ages of 15-64 years old. More than 67,000 people died due to drug overdose in 2018, making it the leading injury-related death in the United States. Of all of these overdose cases, nearly 70% involved either had an illicit opioid or a prescription. Pierce, 2019 collected data for 300 randomly selected charts with an active musculoskeletal diagnosis based on the 10th revision of the International Statistical Classification of Diseases and Related Health Problems codes. The population involved in this random selection was comprised of primary care outpatient clinic and emergency department visitors during the timeframe of January 1, 2016 to March 31, 2016 in a predominantly rural community in Michigan. Researchers used the several variables as prescription medications, musculoskeletal conditions, and prescription drug monitoring modalities. Assessment of the chart variables explored that opioid was prescribed to 61.9% patients having atleast 1 diagnosis of back pain.

More recent studies show that the "fastest pain management" strategy is the driver for opioids consumption. Workplace musculoskeletal disorders and their associated pain symptoms may very well be the main reason for these opioid-related overdose deaths. Research on opioid use by claimants using worker compensation (W.C.) records in the United States

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shows that the highest estimates of usage are in Washington State (42%) and Louisiana (46.4%), followed by intermediate levels in Ohio (19.2%), and Michigan (27%)' The lowest estimate rated are in Illinois (6.6%) (Durand, 2019).

A study was conducted in Tennessee, which included all residents aged 15-99 years old who reported only one injury to W.C. during the years 2013-2015 (Figure 2). The purpose of the study was to focus on the relationship between an injury and opioid use. Therefor workers were excluded if they were missing date of birth, was either older or younger of the ages 15-99, had no physical injury, or lived outside the state of Tennessee. The study classified workers with one injury and workers with two or more injuries. Of the 202,380 reported cases, 172,256 were workers with one injury, and 30,124 were workers with two or more injuries category. The top five injuries that resulted in opioid use were strains, sprains, and tears (35.4%), contusions (15.7%), lacerations (14.1%), fractures (4.5%), and burns (2.4%). The average age for both characteristics was 40 years old. The results show that all the cases were predominantly male, from the rural of residence and middle Tennessee.

Furthermore, there was an association between demographic characteristics and type of injury with receiving an opioid analgesic within six months of injury in workers who reported one injury. The results show that the average age of these people is 42 years old and is 57% male. The type of injuries shows 52.6% others, 38.4% strain, sprain or tear, and 9% fracture.

1.2 Opioids use vs. Physical Therapy

Although opioids may help for pain reduction in an injury, they do nothing for the injury itself. Therefore, physical therapy may need to take place. Part of the reason that MSDs cost over 20 billion dollars per year is because only 25% of patients suffering from MSD see a physical therapist, which makes most people suffering from pain from an MSD to lose all the benefits of physical therapy. Physical therapy helps treat muscle and joint problems, and Physical Therapist (P.T.) train to access and handle MSDs. If one does attend physical therapy before seeing a physician, positive results with decreases in many areas such as length of conclusion, cost, visits, opioid prescriptions, and unnecessary radiographic exams.

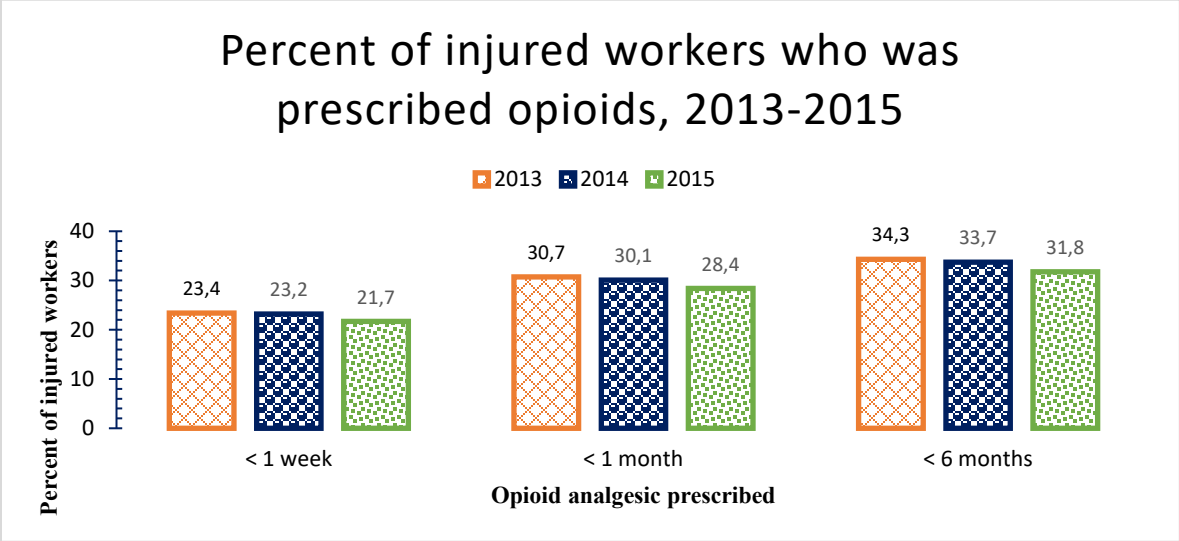

Figure 1. Receipt of an opioid analgesic after injury in workers who reported on injury to Tennessee's WC 2013-2015 (172,256). In 2015, 31.8% of the workers who received an opioid within six months, 80% were opioid-free at the time of their injury.

There is evidence of the success and effectiveness of physical therapy sessions as a preventative measure of MSD symptoms. Even if the pain symptoms have set in, physical therapy can reverse disorders such as disc herniation (Jeong et. Al., 2017). Physical therapy can help restore function and movement, relieve pain, improve strength and conditioning, promote long term health, reduce the duration of injury, prevent the risk of future injury, and correct imbalances and improve the work condition. Physical therapy gives an injured person a chance to treat their pain while correcting the injury in a non-invasive and non-pharmacological manner.

Physical therapy can be done in several different ways depending on the type of injury. The two main types of physical therapy for pain reduction and injury correction include manual therapy and electronic simulation. After physical

therapy helps with pain management and healing, strengthening exercises follow to aid for a full or close to full recovery. Knowing the benefits of physical therapy, injured persons can rely on it often to get them back to daily routine activities and work.

However, it is yet unclear if construction workers are well informed or even aware about possible access to health care to administer physical therapy sessions. The objective of our project is to find out through participatory meetings if the workers choose physical therapy sessions over the opioid usage as their strategy for pain management.

2. Methods

We are in the process of arranging several participatory groups and performing anonymous surveys with them. Through these meetings and surveys, we intend to identify which method of managing the pain is perceived to be the most feasible and sustainable for them. Participants will select from options asking to decide on what they consider to be a better pain management technique: pain medications or preventative interventions.

Due to the covid19 pandemic situation, we had made only limited progress towards that. We are still waiting to hear back from construction companies. We plan to finish a five-part analysis process that will be described, including the preparation of data, grouping and coding, consolidation in order to produce a report of the results.

3. Concluding Remarks

No one can deny that WRMSDs may be a contributor to the opioid crisis. Moreover, poor workplace ergonomics is also a contributor to WRMSDs. Actions need to take place to help prevent ergonomic hazards that lead to WRMSDs. That is why it is critical to implement workplace interventions that address the hazards relating to the workplace, which lead to injuries and subsequent potential for opioid use as the strategy for pain management. These actions include applying a systematic and comprehensive process for identifying, analyzing, and controlling workplace hazards that lead to WRMSDs. Studies have shown numerous amounts of benefits by having a physical therapist on site who can provide ergonomic training and education, manual therapy, therapeutic exercises, workplace modification, and referral for an eye examination. Ultimately education workers about the situation regarding ergonomic hazards go a long way in creating a moral safety culture.

For several years now, the National Institute for Occupational Health and Safety (NIOSH) focus on preventative interventions for work-related MSDs has been significant, mainly when it comes to ergonomics-type interventions. These types of interventions aim to reduce the outcome of exposure to risk factors and concurrently to prevent pain symptoms in exposed workers. In order to decrease the incidence of WRMSDs, professionals should be aware of the six ergonomic risk factors such as force, contact stress, vibration, cold, awkward posture, and repetitive motion. Our study aims to investigate whether pain medication use is more appealing than using alternative preventative or pain management strategies such as the use of ergonomic assistive devices and routine stretching exercises. Moreover, we also aim to understand why the use of pain-relief medication overlooks the potential risk of side-effects.

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