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Review Article

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A Comparison of The Prevalence of Low Back Pain in Formal and Informal Occupation Setup: A Review of The Literature

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Abstract

Low back pain is one of the most common and costly afflictions of our Society. The majority of adults will have at least one episode of acute low back pain that will likely resolve regardless of the type of treatment or intervention. Low back pain affects people of all ages; from children to the elderly, and is a very frequent reason for medical consultations. Incidences increases and peaks between the ages of 35 ad 55.Low back pain in both formal and informal occupation is the major cause of disability in adults and has a significant social-economic impact on their lifestyle. Occupation is one of the main causes of low back pain in adults. It is difficult to provide appropriate sensitization, specific and proper ergonomic approaches to avoid low back pain without knowing the main occupation of the patient. The determination of the type of occupation and the prevalence of low back pain among workers will help in the identification of the main risk factors associated with the condition. Specific and appropriate measures will hence be considered and implemented to alleviate the problem through ergonomic sensitization and modification.

Key words: Low Back Pain, Prevalence, Occupation, Ergonomics, Formal, Informal.

1. Introduction

Occupationally-related low back pain is an extremely common problem that most workers experience at some point in their lives. Low back pain (LBP) is one of the work-related musculoskeletal disorders and considered one of the leading causes of activity limitation, disability, inability to work, and work absenteeism. LBP is the commonest form of work-related musculoskeletal disorders which cause huge economic losses to individuals as well as to the community (Hakim and Mohsen, 2017).

Risk factors for low back pain include frequent and sustained bending and twisting, static postures, sedentary occupations, lifting, rapid bending or twisting, excessive force or speed of movement, awkward postures, pushing and pulling, repetitive work, high work intensity, exposure to whole body vibration, and balance loss when the back is under load Injury may also result from sudden, unexpected movements or extra loading, or loads that move unpredictably. According to a study by Paul, up to 12% of injuries have been attributed to a sudden loading event 83. High volumes of spinal loading in a mid to end range bent positions is a particular risk factor in industry. Maintaining or adopting a twisted spinal posture was found to be problematic if conducted for any greater than 10% of the work day 59 Working while in pain was ranked highly by workers as a contributing factor 50. In apprentice construction workers, 36% of injuries were related to either prolonged static positions or bending/twisting movements 85. Careers involving driving a motor vehicle or machine excavator were also reported as high risk (Paul, 2015).

Lower back pain tends to be more common in women than in men, possibly due to hormonal factors. Stress, anxiety and mood disorders have also been linked to back pain. LBP is the most prevalent musculoskeletal condition and one the most common causes of disability in the developed nations. There is a general assumption that LBP prevalence in Africa is comparatively lower than in developed countries. The aim of this review was to systematically appraise the published prevalence studies conducted on the African continent to establish the prevalence of LBP

in Africa (Quinnette *et al.,* 2007; Hoy *et al.,* 2010; Novdqvist , 2017).

Occupational back pain is a multi-factorial condition commonly encountered in outpatient clinics. It is more costly for the healthcare system and industry to deal with the complications related to low back pain than to preventing the occurrence of the condition. The strongest associations were with heavy lifting and prolonged car driving. There was also an association with heavy lifting among individuals (Hoy *et al.,* 2010).

2. Methodology

The method used to gather information was through identification of studies, Journal articles for review were identified in the Medline, Embase Pub Med and Google Scholar for the years 2007±2019 (inclusive) using all possible combinations of the index terms `low back pain', `work' 'occupation', and `formal and informal', and the text words `sitting', and `sedentary' either in the title, the key words or the abstract. Reference lists of studies retrieved, in particular review articles, were carefully screened.

Several specific occupations such as different forms of professional driving that require a combination of sitting and whole-body vibration or poor postures were also reviewed. Reference lists of studies retrieved were carefully screened in order to locate additional papers. Articles written only in English were included, and a total of eleven studies were identified. Those studies that described the presence and/or occurrence of reported or examined low back pain in occupational groups in which the major physical requirement is sitting (calculated as sitting for more than half of work-time) were included. Job titles were also used as the selection criteria to identify those occupations in which the worker is required to sit for a major part of the day (Aghilinejad *et al.,* 2014).

The quality of each evaluated article was on the basis of the representation of the study, the definition of LBP, and the statistical analysis. Both the systemic review and literature review articles were considered for this purpose.

3. Sedentary workers and low back pain

3.1 Low back pain among workers in formal setup

Many studies have dealt with the sitting position in relation to LBP, however, there still seem to be different views on the direct link between sitting and low back pain for workers. Jan and colleagues concluded that there is no clear evidence that sitting-while-working is a risk factor for LBP. It was argued upon based on their assumption that studies in a variety of settings applying different definitions of LBP consistently failed to demonstrate a statistically significant, positive association between these two factors (Jan *et al.,* 2008).

On the other hand, Magora concluded that sitting at work increases the risk of LBP in one of the first major epidemiological studies concerning work and LBP. Sitting has been a complex topic for researchers of LBP. The argument that can be depicted from these different views is the lack of categorical identification of the specific risk related postures and the duration of these respective postures (Magora, 1972).

3.2 Is low back pain a a major problem among bus drivers?

It has been noted that bus drivers have an increased risk of low back pain owing to several factors associated with physical and occupational circumstances. The results obtained from the study by Hakim and Mohsen in 2017 revealed a high prevalence of LBP among public bus drivers (73.9%), which increased with age to reach 86.4% among bus drivers aged 50 years and older. These findings were higher than what was reported in many studies in Africa (Akimpelu *et al.,* 2011).

The risk factors significantly associated with high prevalence of LBP among bus drivers were daily driving for more than 8 h, prolonged duration of job as drivers, uncomfortable seat and steering wheels and the number of self-reported accidents. These main risk factors are usually modifiable ones. There is therefore, a need to tailor intervention programs to be implemented for bus drivers to reduce the size of low back pain among bus drivers.

Regarding the association between LBP and ergonomic factors, the results showed that those who

complained of uncomfortable seat experienced higher significant LBP (81.8%; OR=2.83; 95% CI:1.43-5.59). Moreover, LBP among those complaining of uncomfortable steering wheel was significantly higher (81.9%; OR: 2.08; 95% see Table 1 below (Hakim and Mohsen, 2017).

4. Physical activity levels at work as a risk of low back pain

4.1 Activity levels and gender in association with low back pain

The risk of LBP differs between demographic categories and associations have been established with occupational and educational factors. There are numerous studies of risk of LBP in relation to physical activity in specific occupation. Generally, physical activity is considered to be beneficial, but particular strenuous activities may be associated with increased risk of LBP.

According to a study by Heuch *et al.,* (2017) and Hoy *et al,* (2010) the results showed a significant association between level of physical activity at work and risk of chronic LBP in women, even after adjustment for other important risk factors. In particular, the large group of women engaged in work involving walking and heavy lifting appeared to have an increased risk. In men, an increased risk could be established in those practicing particularly strenuous work. A strength of this study is the large population-based data set, with a great majority of the individuals belonging to a uniform ethnic group. The condition studied is restricted to chronic pain in the lower back, producing a more specific classification than in several other studies (Jan *et al.,* 2008).

4.2 Low back pain in construction workers

According to Aghilinejad and group, analysis was made of the evidence relating to workplace training interventions and prevention programs. It is argued that such programs have often failed to provide adequate or appropriate training to workers. While there is still a lot of research needed to be done in this area. Improved knowledge on lifting techniques and efficient body mechanical factors can provide guidance to managers and workers. Such interventions will help them to develop ever improving methods of injury prevention (Paul, 2015). Although LBP cuts across gender, race and occupational environment, it appears to be present in certain professions more than others. However, it also appears to be more common among construction manual workers compared to all occupational groups due to the nomadic, high mechanical nature, awkward postures for long hours and hard physical labor of construction work. The activities involved in construction work exert a lot of strain on spinal structures and consequently lead to LBP. Despite the evidence that LBP is common among construction workers, there is a dearth of empirical studies and information reported on the prevalence among construction workers in Africa (Himalowa and Frantz, 2012).

Table 1. Ergonomic factors and low back pain among bus drivers

Variable	NUMBER OF BUS DRIVERS	LBP n (%)	OR (95%CI)
Comfortable seat			
Yes [a]	70	43 (61.4)	2.83 (1.43-5.59)
No	110	90 (81.8)	
Comfortable back support			
Yes [a]	93	68 (73.1)	1.09 (0.56-2.12)
No	87	65 (74.3)	
Comfortable steering wheel			
Yes [a]	108	74 (68.5)	2.08 (1.01-4.31)
No	72	59 (81.9)	

CI = Confidence interval, LBP = Low back pain, OR = Odds ratio.

5. Ergonomics and occupation safety

The type and severity of spinal complaints have relationship with work load, and lack of knowledge and adherence to ergonomics recommendations, among other important causes of low-back pain.

Workshop on ergonomics contains some concepts that help workers to know about muscular-skeletal disorders (MSD) risk factors, proper work practice and appropriate equipment selection, correct use of equipment, and workstation adjustment. This type of intervention has extensively been promoted for MSD prevention. One of the possible causes for failure in detecting effectiveness for interventional programs might be the difficulty in changing the workers behavior that warrants consultation and guidance before starting the training intervention. Effective ergonomic training needs consideration of changes in the behavior and cultural habits of workers. These changes were time consuming and it seems that a one-year follow-up may not be enough to expect a dramatic change in the behavior of workers and thus in the prevalence of spinal complaints (Aghilinejad *et al.*, 2014).

This study however, is not comprehensive because the production factories and industries have different production processes, employment size, and characteristics. Therefore, performing a study on only one part of such factories might not be adequate to reach a scientific conclusion. Furthermore, controlling of confounding variables under such circumstances is usually difficult.

6. Conclusion

Occupational back pain can easily be prevented, and physicians can play a major role in this regard to stop it from becoming chronic and disabling. Physicians must standardize their clinical approach to the patient with occupational back pain by implementing clinical guidelines for this condition. In particular, any patient with acute back pain should not have imaging studies done unless there is evidence of red flags. Bed rest must be discouraged and limited to a maximum of 2 days in severe cases with early return to work on modified jobs where there is no lifting or climbing or bending (avoid risk factors), and a follow-up for further intervention if necessary.

Ergonomics can play an important role in the reduction of risk of injury to the drivers by applying workplace modifications (engineering controls), administrative and management practice changes (administrative controls) and education of the workers (work practice controls).

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Conflict of interest

No competing interest declared.

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