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Narrative Review of Factors Affecting Lower Back Pain among Workers in Pakistan

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Abstract

According to the world health organization (WHO), lower back pain (LBP) is the most common health hazard among workers and is among the top ten health hazards around the globe. The Global Burden of Disease (GBD) 2010 stated LBP as amongst the top 6 diseases which cause disability injuries and other chronic diseases. This is the impairment that poses the most economic burden on society as a whole, including individuals, businesses, and the government. This study aims to find out the factors that affect lower back pain among workers associated with different professions in Pakistan**.** Data were collected from different databases, such as PubMed, Google scholar, and PEDro by using a predefined search strategy with proper Boolean terms 'AND' or 'OR' or 'NOT'. The data were collected from the literature available for past 10 years. Additionally, articles with relevant material and titles were reviewed for conducting the current research review. The most common risk factors that were seen almost among all professions were static position and prolonged working hours, any work that demands prolonged standing or sitting, bending or twisting, and improper lifting. Several professional workers are at high risk for developing LBP but among all the professions physiotherapists, sonographers, bankers, and shopkeepers were at higher verge for developing LBP. It was found that the prevalence of LBP is increasing day by day and significantly affecting workers in every profession. Therefore, timely trainings with proper ergonomic techniques could decrease LBP and increase economic productivity in Pakistan. It can be said that good ergonomics for good economics.

1. Introduction

Lower back pain (LBP) is caused due to muscle tension or stiffness localized below the costal margin and above the inferior gluteal folds. LBP could also be termed acute and chronic lower back pain. Acute back pain lasts less than 3 months and it could be self-limiting. On the other hand,

chronic back pain is more severe and persists for more than 3 months and it leads to work dissatisfaction with disability [1]. LBP is undoubtedly one of the most common musculoskeletal disorders of our times with the highest prevalence of 58%-85% [2, 3]. It is commonly known that among different professionals, LBP is the most significant and prevalent health disability. [4-6]. A large number of people about 60-80% globally face this issue at least once in their life and some also experience this issue each calendar year [7]. LBP leads to chronic pain and disability when left untreated and it would ultimately cause missed work and absenteeism from the workplaces. Lower back pain is a leading cause of functional disability and lack of activity which occurs in almost similar proportions in all cultures that interferes with the quality of life and work performance. Thus, this is a familiar reason for the different consultations [5].

Globally, 37% of lower back pain is caused by ergonomic and occupational exposures causing an annual loss of 20% life years with disability [8]. The average health burden brought on by low back pain that impacts the health-adjusted life expectancy, or the average number of years a person expects to live, was determined to be responsible for 60.1 million disability-adjusted life years [9]. Another study concluded that 94.4% individuals believed that their LBP is associated with their job, in which 72.6% claimed that their pain started at the start of their profession. According to world health organization the lower back pain is the most common disability among workers and is among the top ten diseases around the globe [10]. According to the Global Burden of Disease (GBD) 2010, injuries and diseases that cause the most impairment include LBP. This impairment has the greatest rating in terms of its economic burden on general industry, people, and the government as a whole [11].

The causes of risk factors might vary from person to person such as inflammatory diseases, non-specific or idiopathic lower back pain (70%) which includes lumbar strain or sprain, mechanical lower back or leg pain constraints for 27% and it includes degenerative disc diseases and facet syndromes, spondylolisthesis, herniated disc or discogenic lower back pain, non-mechanical conditions counts for 1% and only 2% comes under visceral or systematic diseases. Hence, these all could cause lower back pain but workers who have occupational exposures might get affected mainly by non-specific and mechanical lower back pain [12]. There could be so many risk factors that could affect lower back pain which has been studied under different circumstances in different regions. A survey was conducted in 2014 by the Korean occupational safety and health agency to find out the ergonomic risk factors which are associated with work-related lower back pain. The study identified that pain and fatigue-inducing posture, moving heavy objects, standing posture, and repetitive hand or arm movement was the major predisposing factors for causing lower back pain [13]. A systematic review in 2018 stated that not

only ergonomic factors but personal factors such as age, gender, smoking status, and marital status might also become a reason for developing lower back pain but these factors could never be the only cause of LBP [14].

Lower back pain is an enduring and most frequent musculoskeletal disorder that might cause more functional impairment than and other conditions. In a study, it has been concluded that the approximate US $100-150 billion is the yearly expenditure of United States of America, Australia, and the United Kingdom in direct and indirect medical care [15, 16]. Critically, the problem of chronic lower back pain in countries experiencing financial, economic, and public health care fulfillment are Pakistan, India, Sri Lanka, and Bangladesh, which are still under discussion. Pakistan is an economically developing country which has a unique social and cultural setting. The expenditures reported by World Bank data in Pakistan by 2014 were about 0.92% of GDP [17]. The prevalence of lower back pain among south Asian countries is much higher than the global prevalence rate. Instead, these countries are bound by different societal structures [16] making it difficult to generalize the results rather than western countries. The low literacy rate and decreased occupational and healthcare structures impact lower back pain making it worse to tackle, hence causing a chronic lower back pain (LBP) [18].

Pakistan is a low-income country that is still underdeveloped and is fighting to compete globally. Since there is a lot of work and less time to relax, professionals here are under continuous stress and heading towards different musculoskeletal disorders in which lower back pain is at the top. According to Jan Hartvigsen, lower back pain is one of the major outcome of risk factors faced by lower income countries. However, this ratio of incidence is less in high income generating countries whose prime concern is health. This prime concern increases the turnover of a country by stabilizing the economy but in other countries the formal and informal factors might vary and have a negative effect on workers of different sectors [19].

The prevalence of lower back pain in Pakistan was found to be 26%-60% through various studies [20-22]. Similarly, the prevalence of lower back pain (LBP) around the globe was collected through different studies, in India it was about 54% [1], Yemen 74.5% [23], and in Turkey it was about 44.1% [24]. The lower back pain point prevalence calculated in China, Cuba, and Nepal was about 38.9% [25].

Lower back pain is a minted health care challenge for the professionals because the patients are increasing day by day from all the professions. Therefore, different factors are observed which affect the lower back pain verily due to different occupational exposures. The primary cause of lower back pain that is found common in different studies is the prolonged static posture [12].

The most prevalent health problem associated with poor posture is back pain, which has affected more than 70 percent of Americans, according to a 2010 report from the University of Ottawa. Multiple studies have found an association between the

lower back pain and poor work posture; prolonged sitting with poor posture could cause lower back pain. As a prevailing factor, lower back pain is a common issue. In Pakistan 26-60% of employees in different sectors are overburdened due to longer working hours made unbearable by bad posture, which ultimately increases the culture of absenteeism among employees, indirectly damaging the overall economy. Hence, this study chalks out the risk factors for the lower back pain among different occupations in Pakistan that work in order to make ergonomic strategies better for use in the country and also to raise country's production. This burden and risk factor could only be minimized if the workers would have an awareness of postures while working, factors causing lower back pain, and time management in longer working hours.

2. Methods

The data were collected from different databases which are PubMed, Google scholar, Cochrane library, and PEDro using a predefined search strategy with proper Boolean terms 'AND', 'OR' and 'NOT'. The MeSH (Medical subject heading) terms were used such as lower back pain, risk factors, office workers, disease, physiotherapists, health care workers, predisposing factors, and prevalence. The data was collected from the available literature of past 10 years and from the articles which were published only in English language were considered for the data analysis. Titles and abstracts of all the relevant considered articles were properly reviewed. The inclusion criteria was as follows: any study published in the English language, cross-sectional studies, cohort, case controls, randomized controlled trials, Quasi-experimental studies, systematic reviews, and meta-analyses were added, the age group included was from 18-65 years, major professions of Pakistan were added in the study.

The preclusion or exclusion criteria were as follows: articles other than the English language, case reports, laboratory studies, lower back pain due to pregnancy, any malignancy or cancer, and patients with psychological issues were excluded. Furthermore, studies investigating lower back pain as a thoracic or cervical pain were not included in the current research.

3. Results

Table 1 explains the risk factors among different occupations in Pakistan along with the lifetime prevalence or 12 months prevalence.

A country is a hub of different professions which are essential to run a state stably. These, different occupations come with different biomechanical approaches towards their work such as high paying professionals would be having different sort of work related issues while less paying professionals would have more intense work related musculoskeletal disorders. In Pakistan various occupations differ in the prevalence of the lower back pain such as among dentists 33.3% [26], nurses 32% [27], school teachers 28.8% [28], college teachers 44% [29], office workers 29.45% [22] , sonographers 53.21% [30], health care providers (doctors, nurses, and

paramedics) 58% [31], physiotherapists 72.9% [32], barbers 61.1% [33], bankers 52.4% [34], shopkeepers 56.25% [35], traffic wardens 38.1% [36], low wage workers 58.1% [37], car drivers 42.5% [38], and lastly, bus drivers with a 15.5% [39].

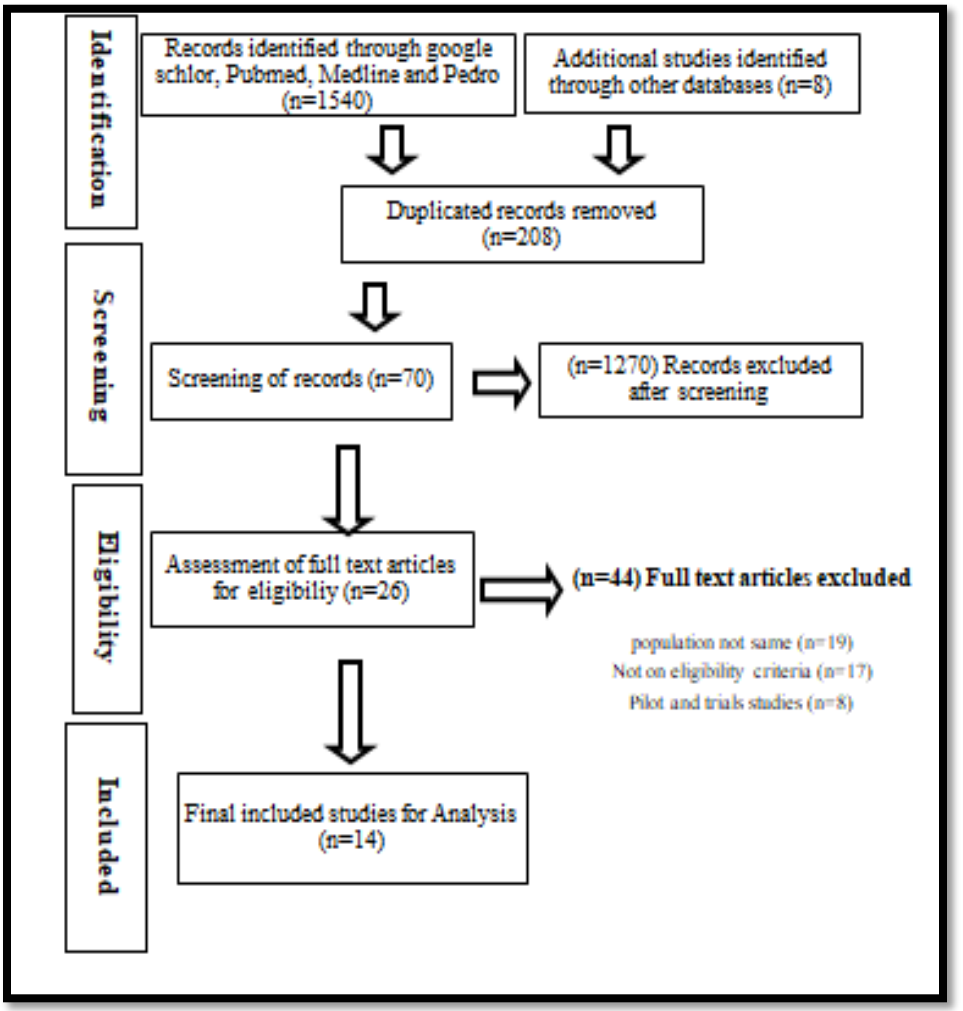

Figure 1. Flow Chart Showing Preferred Reporting Items

Table 1. Risk Factors and Prevalence among Different Occupations

Study	Occupation	Sample size	Response rate	Prevalence			Risk factors
				Point prevalence	12 months	Lifetime	
Ijaz M. et al. [40].	Coal miners	260	100%		13.06 (OR)		Hours of working shift, no. of repetitions /minute, loading and unloading, dumping, tumbling and blasting tasks, coal cutting
Rathore F. et al. [27].	Nurses	150	74%		32%	52.4%	Manual handling of patients, working in standing posture for prolonged hours, reaching or working away from one's side
Tauqeer S. et al. [41]	Bankers	164	65%			52.4%	Poor job design, continuous computer use, repetitive work, data entry, static posture
Junejo M.A. et al. [30].	Sonographers	145	60%			53.21%	More than one place for work, rescheduling, experience, sitting for long hrs
Tanzil S. et al. [31].	Health care providers	300	80%		58%		Having job shift for more than 8 hrs, lifting and moving heavy objects, those having monthly income < 25k.
Fayaz W. et al. [36].	Traffic wardens	204	65%			38.1%	Prolonged standing, center of gravity changed, excessive bike riding, wholebody vibration.

Study	Occupation	Sample size	Response rate	Prevalence			Risk factors
				Point prevalence	12 months	Lifetime	
Ali Shah Z. et al. [32].	Physiotherap-ists	140		42.6%		72.9%	Performing different manual therapy techniques, working in static position for long time, transferring or lifting patients, and repetition of tasks.
Mahmood T. et al. [33].	Barbers	118	85%			61.1%	Increased standing time for 6-12 hours, aging
Hussain T. et al. [35].	Shopkeepers/ salesman	96				56.25%	Poor posture and prolonged working hours
Sadia H. et al. [38].	Car Drivers	120	90%			51%	Whole body vibration, poor posture
Aslam M.W. et al. [39].	Truck drivers	273	100%		15.5%		Total time of driving, whole body vibration
Waqas M. et al. [29].	College teachers	342	85.5%	13.7%		29.8%	Prolonged standing, writing on black board
Zahid H. et al. [28].	School teachers	1000	81%			28.8%	Improper posture
Arooj A. et al. [22].	Office workers	669	64%			29.5%	Increased working hours more than 6 hours, type of chair used, intensity of discomfort

4. Discussion

This study explains the prevalence and risk factors of lower back pain among different professions in Pakistan. Pakistan is one of the developing countries along with limited knowledge, awareness, and trainings associated with occupational health and safety. Additionally, this is why it is essential to train the professionals ergonomically by first knowing the predisposing factors causing lower back pain among them. Hence, occupational structures in Pakistan primarily rely on informal employment criteria with low accessibility to work insurance, job modification, and compensation systems. Coping strategy of lower back pain among the occupations is as low as the economy [17].

4.1 Factors Affecting Lower Back Pain among Coal Miners/Laborers

Coal mining is a task that requires proper techniques. Regardless of proper ergonomics in Pakistan, many factors could cause lower back pain such as increased number of working hours, extreme flexion of trunk, lifting heavy objects, coal cutting, loading and unloading, and maintaining static posture for longer hours. The primary task of miners is to provide manual resistance, lifting heavy and cumbersome equipment [40]. Work-related risk hazards for laborers include lifters, mining equipment, and body vibration from heavy lifting with various machines. An assessment of workers done worldwide in early 2020 stated that workers with less sleep for example < than 7 hours, increased working shifts and persisting awkward posture which was a cause for developing lower back pain among construction workers and laborers [42].

4.2 Factors Affecting Lower Back Pain among Nurses

People in the healthcare industry, for instance nurses have the highest ratio of lower back pain. The major causes of high incidence among nurses are the consistent and longer working hours due to whivh they develop lower back pain (LBP). The major risk factors which were affecting their lower back was due to performing a task repeatedly , attending a number of patients in one day, less breaks while working, working in awkward and bad posture, working in static position for longer time such as standing, sitting, bending, and performing overtime and irregular shifts [27, 43]. Furthermore, a study on Ethopian nurses has concluded that working for ≥ 8 hours, salary ≤3500 BIRR (Ethopian currency), night shifts, over-burdens, and working overtime were some of the main factors that affected the nurses and they developed lower back pain [44].

4.3 Factors Affecting Lower Back Pain among Bankers

Bankers usually work in sitting postures for longer hours and they spend their major time while using a computer screens. A number of factors have been studied in different studies were improper ergonomics, awkward sitting posture, low or high screen height, static posture for longer time, continuous computer use, poor job design, repetitive work, and data

entry[41]. Additionally, to present a similar issue one of the studies in Rwanda, the prevalence calculated was 45.8%. The stated risk factors were due to the type of adopted posture such as forward bent posture, backward bent posture, back straight or bent over the chair. Other predicators were types of chair used either moveable or fixed, duration of using computer per day, and time spent in sitting position [45].

4.4 Factors Affecting Lower Back Pain among Ultra-sonographers

Ultra sonography is one of the busiest occupations in every country as well as in Pakistan. Main factors that affect lower back pain among sonographers were due to excessive time, ranging from 4 hours to 12 hours, working at more than one place, rescheduling, and sitting for longer hours [30]. There are so many studies on the musculoskeletal disorders of sonographers in which lower back pain is the most common issue that includes prolonged sitting/standing position due to prolonged working hours, frequent change of work places by working in more than one setup or type of equipment used while working [46, 47].

4.5 Factors Affecting Lower Back Pain among Health Care Providers

Healthcare providers are doctors, nurses, paramedics, and physicians. Much of the previous literature has conducted an idiosyncratic research on each profession. Collectively, the risk factors that affect lower back pain were prolonged shifts such as ≥ 8 hours, prolonged or static posture, and those having salary ≤ 25000 PKR. A recent systematic review in 2020 conducted in Saudi Arabia on health care workers has its finding accordingly such as longer working hours, generalized body aches due to work stress, and consistent standing posture/position [48]. Similarly, nurses work for several hours and often carries various subjects for example patient handling and transfers causing a red flag to their own posture [27].

4.6 Factors Affecting Lower Back Pain among Teachers

Teaching is a profession that essentially requires prolongs standing for consecutive hours. In Pakistan, many studies have been conducted for the causative factors of lower back pain among teachers in which intensity of discomfort during working hours, working hours for more than 6 hours, delivering lectures in standing posture, and numbers of classes more than 5 per day were stated as a reason for developing lower back pain [28, 49]. Similar risk factors have been noticed around the world such as in South Africa prolonged standing, transportation methods, a backward bent posture, and lifting heavy objects were found significant predicators of lower back pain among teachers [50]. Teachers usually deliver lectures in standing postures hence; this prolonged standing might become a risk factor for developing lower back pain. Similarly, a study in Saudi Arabia found that no. of classes per week, comfortableness of school furniture, daily hours of working, more than 10 years of teaching, and not practicing exercises were the main risk factors which were

considered to analyze the lower back pain (LBP) in teachers [11].

4.7 Factors Affecting Lower Back Pain among Office Workers

Office workers spend majority of their time by sitting on a chair and working on a computer for longer hours without adequate gaps. Uncomfortable chairs, less exercise and increased working hours are the main factors associated with their lower back pain found in Pakistan [22]. A study conducted on lower back pain among the office workers in three Spanish countries found that using keyboard for more than 4 hours a day, lifting heavy objects ≥ 25lb, physical demands of the job, and time pressure are some major causative factors for the lower back pain [51].

4.8 Factors Affecting Lower Back Pain among Physiotherapists

Physiotherapists among Pakistan are the health care professionals who develop plans for prevention and screening of common musculoskeletal disorders. Physiotherapists perform an exercising job that is physically demanding by which there could be so many risk factors for the lower back pain with constrained postures in physiotherapists who have been practicing for more than 12-24 months [32]. In a narrative review it was stated that by working day and night, physiotherapist could also develop LBP in which major factors recorded in Pakistan were repetitive tasks, applying manual therapy techniques very often, lifting patients and help them in walk trainings, treating a large number of patients, bending and twisting movements, continue to work while having injury, treating a large number of patients, doing a same task over and over again, and overtime and working in static position for long hours [32]. In a study in 2016 in Bangladesh about physiotherapists found out that most frequent posture during work such as forward bending, sitting or standing may account for LBP. Other predicators included in the study were lack of lumbar support on chair, no regular exercise and lot of mental pressure due to work [52].

4.9 Factors Affecting Lower Back Pain among Traffic Police

Low back has been found evidentially in certain professions and occupations. However, little is known about the traffic wardens job which include constant motorbike riding and staying on the stops for longer hours which becomes a major reason for lower back pain (LBP). A recent study on lower back pain among traffic wardens in Pakistan indicated that body vibrations due to prolonged biking and constant standing; causes a change in center of gravity, were the main markers for LBP [36]. A study in Korea found that LBP prevalence about 44.4% is found in traffic wardens due to overtime and prolonged standing hours [53].

Cromie et al have given a "Self-protective behaviors" work strategy, which could be applied to almost every occupation, recommended using ergonomically friendly tools or equipment, distributing the workload among workers, hiring more people, taking personal responsibility for risk management, and altering attitudes and increasing knowledge of health

approaches[54].

By knowing the above stated risk factors in relation to a specific occupation, the degree of absenteeism could be minimized and the travel cost of the patients toward hospitals could also be revised by properly training the professionals in an ergonomic manner. Hence, in this narrative review, the most common risk factors were prolonged posture, poor posture, and increased working hours, which were found in almost all the professions. If we work on these substitutes, we would be able to make Pakistan's economy stronger by increasing productivity due to the decreased percentage of the workers.

4.10 Limitations

This study has some limitations as a proper treatment has not been discussed for the individuals at a professional level as the main focus of this current study was to study the risk factors. Therefore, articles which did not have open access were not added in the current research. Hence, this research implicates the previous literature review on the basis of the current study of risk factors and further research could be conducted on its suggested treatments according to the outcomes of this present research.

5. Conclusion

The main risk factors that are common among all the professions are static position, prolonged posture, and long working hours without adequate gaps. These risk factors are common among all professions and could have a negative impact on individuals' health. Hence, the current study investigates these risk factors outcomes and their effects on a human backbone.

5.1 Suggestions

To efficiently manage the absenteeism of workers from their work places it is necessary to timely train them with proper ergonomically techniques that could decrease the pain and increase economical productivity in Pakistan. Essentially, it is of prior importance as good ergonomy runs good economy. Hence, the future research could provide the preventive measures of low back pain in the working setups and seminars should be arranged for postural trainings. The workplace set ups should strictly implement the proper ergonomics strategy for its workers. Postural trainings should be the utmost priority for any organization and they should arrange different seminars for occupational ergonomics.

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