



TO OBSERVE THE PREVALENCE OF MECHANICAL LOW BACK PAIN IN AGE GROUP OF 18 - 30 YRS & COMPREHENSIVE MANEGEMENT AND PREVENTION STRATEGIES FOR IT: A BIOPSYCHOSOCIAL APPROACH AND EVIDENCE-BASED RECOMMENDATIONS

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Abstract: Background: Back pain is very commonly seen in all age groups. Its often more common in younger age group because of irregular postural habits, prolonged sitting in a improper way in front of screens and sometimes associated with physical inactivity. Mechanical low back pain are disabling musculoskeletal condition which is commonly reported to interfere in the patients daily activities. A recent study shows that the prevalence of MLBP Is nearly 19.5% in younger age group. Objective: The aim of the study to find out the prevalence of mechanical low back pain in age group of 18 - 30 yrs. Study Design: Observational Study/ Systematic Review. Method: A structured Literature search was done using various electronic and print data base. Source of Data collected are PubMed central, Google Scholar, Systematic review on neck pain, APTA, PeDRO. Result: Total 60 studies were shortlisted, among which 11 of them with proper methodology were reviewed and reported. Studies include both survey, cross sectional. Studies also shows greater incidence. Discussion: The most common condition that contribute to mechanical low back pain is prolonged sitting, improper posture, inactive life style, constant posture. Various work-related stress also responsible for mechanical low back pain in younger population. Conclusion: As the condition can become chronic and lead to many other complications. So timely interpretations and interventions along with good knowledge will be the key to deal with mechanical low back pain in younger population. Keywords: Mechanical low back pain, prevalence, biopsychosocial approach

I. INTRODUCTION

Pain affecting the back, encompassing the neck, thoracic, and lumbar regions, is frequently encountered in physiotherapy practice. Notably, neck and low back pain emerged as the primary contributors to worldwide disability in 2015 across various nations¹. The overall occurrence of low back pain is documented at 84%, with chronic low back pain affecting approximately 23% of individuals. Furthermore, an estimated 11 to 12 percent of the population experiences disability attributed to low back pain². The incidence of low back pain has reached epidemic proportion. A history of more than three months without any pathological symptoms is called mechanical Low back pain^[1-4].

It stands as the fifth most prevalent reason prompting individuals to seek medical attention, impacting nearly 60-80% of individuals over their lifetime¹. Research indicates that up to 23% of adults worldwide experience chronic low back pain, with a recurrence rate ranging from 24% to 80% within one year^[1].

Lifetime prevalence estimates reach as high as 84% among the adult population^[1]. A systematic review reveals an annual occurrence of back pain in adolescents ranging from 11.8% to 33%^[1]. Additionally, low back pain contributes to the disability of 11-12% of the overall population^[2].

Most individuals seeking medical attention for back pain typically fall into the category of non-specific mechanical back pain[3-4]. This type of pain originates from the spine, intervertebral discs, and surrounding soft tissues, encompassing issues such as muscle strain, disc herniation, lumbar spondylosis, spondylolisthesis, vertebral compression fractures, among other related factors [5].

Mechanical injuries which are caused by overuse of a natural structure, deformities or injuries to the soft tissues are also most common reason of mechanical low back pain[6-8].

According to the previous study and literature the work – related activities that most commonly seen in hospital and office workers are lifting heavy equipment and patients, transferring patients, maintain the same posture for a long period, repeated movements are the main cause of mechanical low back pain[9].

MATERIALS AND METHODOLOGY

A literature search was done using various electronic data bases.

Sources of data: Pubmed, Pubmed central, PeDRO, Scopemed, APTA.

STUDY DESIGN

Observational and systematic review

INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA

- Only English Articles

EXCLUSION CRITERIA

- Article of other languages

LITERATURE REVIEW

Jae – Yeop Kim et all in Sep 2018 : Shows that there was a strong relationship between severe exposure to each ergonomics risk factors and work related low back pain[10].

Ramin Mehrdad et all in Nov 2016: Done a systematic review of 51 articles and found that the mechanical low back pain was the most prevalent issue among health care workers[11].

Haiou Yang et all in Sep 2016 : Estimate prevalence of low back pain from the 2010 National Health Interview Survey (NHIS) and found that the prevalence rate of self- reported low back pain in U.S. was 25.5% in 2010 and there is association between the psychological factors and work-family imbalance[12].

Jordan Edwards et all in 2018: Conducted a cross sectional analysis using six years of administrative data from local energy setting (2018) and found that the 60.8% of individual diagnosed with non – specific low back pain[13].

RESULTS

Total 60 studies were shortlisted, among which 11 of them with proper methodology were reviewed and reported. Studies include both survey, cross sectional.

Studies also shows greater incidence mechanical low back pain.

S r no	Name of the Author	Total no. of Subjects	Protocol	Result
1.	Bareza Rezaei et all Sep 2021	-	Systematic Review (154 studies included in the study)	The estimated life time prevalence of lower back pain in health care personnel was 54.8% [14].
2.	Abeer Abuzeid Atta Elmannan et all Nov 2021	212	Cross – Sectional study	Shows that the low back pain prevalence was 65.6% [15].
3.	Naif M. Al Hamam et all Sep 2021	442	Cross – Sectional study	Found that the health care providers in KSA with high rating of low back pain disability [16].
4.	Ibrahim Alnaami et all Feb 2019	740	Cross – Sectional study	Found that the overall prevalence of low back pain in the past 12 month amounted to 73.9% [17].
5.	Jae – Yeop Kim et all in Sep 2018	utilized data from the fourth KWCS	Cross – Sectional study	There was a strong relationship between severe exposure to each ergonomic risk factor and work-related LBP [18].
6.	Jordan Edwards et all in 2018	using six years of administrative data	Cross – Sectional study	found that the 60.8% of individual diagnosed with non – specific low back pain [13].

7.	Ramin Mehrdad et all in Nov 2016	-	Systematic review of 51 articles	Found that the MLBP was the most prevalent issue among health care workers[11].
8.	Haiou Yang et all in Sep 2016	Done 2010 National Health Interview Survey (NHIS)	Prevalence study	Found that the prevalence rate of self - reported low back pain in U.S. was 25.5% in 2010 and there is association between the psychological factors and work-family imbalance[12].
9.	Babutunde O A Adegoke et all in Jun 2015	571	Prevalence study	Found that Lifetime, twelve-month, one-month and point prevalence rates of ALBP were 58.0%, 43.8%, 25.6% and 14.7% respectively[19].
10.	Weiguang Yao et all in oct 2011	2235	Prevalence study	Found that the occurrence of nonspecific LBP was with 29.1% students suffer from low back pain[20].
11.	Ferran Pellise et all in Jan 2009	1470	Cross sectional Study	Found that Low back pain was reported by 587 adolescents ie 39.8%, and isolated LBP in 42.6%[21].

Table 1.1 Summary of the Studies suggest different variations of patients as studied by the researcher as mentioned in the table. Thus, it gives preliminary analysis of outcome measure.

DISCUSSION

As per the studies low back pain is a highly prevalent and debilitating condition which is associated with work absenteeism, disability and huge health care costs[22].

Many patients recovered in six weeks but pain still persists in 39 % to 76%[23-24].

People who are off work with low back pain have higher pain and disability scores than people who are working and have active lifestyle[25].

Also include psychological factors distress[26], personal factors such as previous back pain history and unsatisfaction in job[27].

LOWER CROSS SYNDROME

Lower Cross Syndrome involves imbalances between tight and overactive muscles (hypertonic) and weak and inhibited muscles (hypotonic). The primary muscle groups affected are the hip flexors, lumbar erector spinae, and the iliopsoas (tight and overactive), along with the gluteus maximus and abdominal muscles (weak and inhibited).[28].



If these muscle differences are left untreated, the joints and muscles around undergo changes progressively. Strength, flexibility and range subsequently decreases, which contributes to degenerative diseases and pain in lower back[29].

The primary objective of the physiotherapeutic assessment for individuals presenting with back pain is to categorize them in accordance with the diagnostic triage principles advocated by international guidelines for back pain management. While serious conditions such as fractures, cancer, infection, and ankylosing spondylitis, as well as specific causes of back pain accompanied by neurological deficits like radiculopathy and cauda equina syndrome, are infrequent, it is imperative to conduct screenings for these conditions. Serious pathologies constitute approximately 1-2% of cases involving low back pain, whereas specific causes of low back pain with neurological deficits are observed in 5-10% of cases. Upon exclusion of serious and specific etiologies, individuals are diagnosed with non-specific (or simple or mechanical) back pain[30].

Non-specific back pain, characterized by its absence of identifiable serious or specific causes, constitutes the diagnosis for over 90% of patients seeking primary care. This demographic represents the majority of individuals with low back pain who present for physiotherapeutic intervention[31].

Current guidelines[11][12][13][14] advocate for non-pharmacological approaches, emphasizing advice and interventions such as physiotherapy. This includes modalities like exercise and manual therapy as part of the recommended management strategies.

A recent investigation by Ford et al[32] proposes that tailored physiotherapy for individuals with low back pain (LBP), employing a Specific Treatment of Problems of the Spine (STOPS) approach, may offer enhanced effectiveness in LBP management. To guide these targeted treatment plans, the adoption of stratified care has been recommended[33]. Stratified care involves tailoring treatment to subgroups of patients based on specific characteristics. Foster et al propose three distinct evidence-supported approaches to stratification[34].

Moreover, findings from a clinical trial conducted by Finta et al., titled "The effect of diaphragm training on lumbar stabilizer muscles: a new concept for improving segmental stability in the case of low back pain," indicate that diaphragm training has a positive impact on enhancing other active stabilizers of the lumbar spine, such as the transversus abdominis and lumbar multifidus muscles, in cases of low back pain[35].

There is strong evidence for short term effectiveness and moderate – quality evidence for long term effectiveness of yoga, various manipulation techniques, physical modalities, McKenzie method effectively treat the mechanical low back pain and decrease the recurrence of low back pain and health care expenditure[36].

The guidelines explore various avenues for preventing low back pain, with a notable emphasis on physical exercise. The recommendation underscores the preventive role of physical exercise in mitigating the repercussions of low back pain, including work absenteeism and the likelihood of recurring episodes. Specifically, the guidelines endorse physical exercise for training back extensors and trunk flexors, complemented by regular aerobic training. Notably, while exercise frequency and intensity are considered crucial components, the guidelines do not provide specific recommendations in this regard[3][4][35].

The integration of education and information within a treatment context, grounded in the biopsychosocial model, yields enhanced efficacy when coupled with other interventions. Information delivery aligned with the biopsychosocial model focuses on shaping beliefs regarding low back pain and minimizing work-related losses attributable to this condition. The dissemination of information, characterized by an emphasis on these biopsychosocial principles, exhibits a positive influence on adult population beliefs about back pain³. It is pertinent to note that interventions customized to individual needs and circumstances tend to yield more favorable outcomes compared to interventions administered in group settings[36].

CONCLUSION

Mechanical low back pain is related to many factors but can be easily relieved by taking proper measures.

The life style modification and improved psychological factors greatly help in alleviating the mechanical low back pain and discomfort related to it.

In conclusion, this research underscores the significance of a comprehensive approach to the management and prevention of low back pain, guided by the biopsychosocial model. The integration of education and information, particularly tailored to individual needs, within a treatment setting, demonstrates a positive impact on beliefs about low back pain and contributes to reducing work-related losses associated with this condition. Notably, interventions grounded in the biopsychosocial model exhibit a superior effect when combined with other therapeutic measures.

Furthermore, emphasizing the importance of evidence-based recommendations in preventive strategies. The nuanced approach recommended in this research, acknowledging the diversity of factors contributing to low back pain, contributes to a more informed and effective framework for both treatment and prevention. Overall, these insights underscore the evolving landscape of low back pain management and emphasize the need for tailored multidimensional interventions to address the complex interplay of physical, psychological, and social factors associated with this prevalent condition in the age group of 18-30 yrs.

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