



A LITERATURE REVIEW ON CORRECTING FORWARD HEAD POSTURE USING THE MCKENZIE APPROACH

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ABSTRACT

Introduction: Forward head posture (FHP) is a common musculoskeletal problem caused by modern lifestyle variables such as prolonged sitting, poor ergonomics, and excessive use of electronic gadgets. This literature review investigates the efficacy of the McKenzie Method in addressing FHP by doing a thorough examination of relevant research.

Methods: A comprehensive search was performed in electronic databases such as PubMed, Google Scholar, and Direct Science. The inclusion criteria were studies published between 2016 and 2023 that focused on the McKenzie method for treating FHP in children and adults worldwide. A total of 33 publications were discovered, with 6 chosen for in-depth research.

Results: The review discusses the prevalence, causes, and implications of FHP, with a focus on musculoskeletal health and overall well-being. The McKenzie Method, a holistic approach to spinal and extremity pain, has emerged as an effective intervention for treating FHP. McKenzie exercises have been shown in studies to significantly enhance neck function, postural alignment, and respiratory health.

Conclusion: The study concluded that the McKenzie Method appears to be a promising approach for managing FHP, addressing the serious health consequences of this postural abnormality. Additional study is required to improve its effectiveness and promote greater postural health and general well-being.

INTRODUCTION

Posture is defined as a state of musculoskeletal balance through which a minimal amount of stress is applied to the body. Many people try to maintain good posture, but they cannot sustain it due to various factors such as their occupation, recreational activities, and BMI⁽¹⁾. Our posture starts getting affected from a very early stage of life. As soon as children start school, their musculoskeletal system begins to change due to the continuous sitting posture. Children spend one-third of their time at school in a static position. Students sit on furniture that is not ergonomically suitable for them. Because of this static posture and faulty furniture, students experience pain in their back and neck regions, and the curvature of their spine gets affected⁽²⁾.

Modern life also impacts posture as students study on their computers and other electronic devices in incorrect sitting positions. Carrying heavy bags also leads to postural changes. It was found that adolescents carrying more than 15% of their body weight in their bags experience postural changes. Common postural defects in adolescents include rounded shoulders, forward head posture, swayback posture, and flat back⁽³⁾.

A prevalence study in Gujarat, India, states that 63 % of students between the ages of 12 and 16 years have forward head posture⁽⁴⁾. The prevalence of university students having a forward head posture is 63.96%⁽⁵⁾. Additionally, 79% of the population between the ages of 18 and 44 have a forward head

posture⁽⁶⁾. Causes of forward head posture include long-duration work in front of computers⁽⁷⁾. Those who wear glasses are more prone to forward head posture⁽⁸⁾, as are those carrying backpacks weighing more than 15% of their body weight⁽³⁾, electronic gamers⁽⁹⁾, and those who excessively use smartphones⁽¹⁰⁾. Lying on the stomach for more than 2 hours while reading also contributes to this condition⁽¹¹⁾.

Problems associated with forward head posture include restrictions in subcranial and upper thoracic movement, hypermobility of the mid-cervical spine, headaches, dizziness, occasional loss of balance, and difficulty in total spinal motion. Excessive extension of the upper cervical spine can reduce the space for the first and second occipital nerves to exit, leading to compression and referred pain in the head. Forward head posture can also cause upper thoracic kyphosis, reducing mobility in that region, which is not reversible. Additionally, adaptive shortening of anterior muscles and drooping of the clavicles can lead to thoracic outlet syndrome. The upper rib cage is immobilized in forward head posture, requiring increased abdominal activity during respiration⁽¹²⁾. If not treated, forward head posture can lead to TMJ dysfunction syndrome due to muscular imbalance⁽¹³⁾.

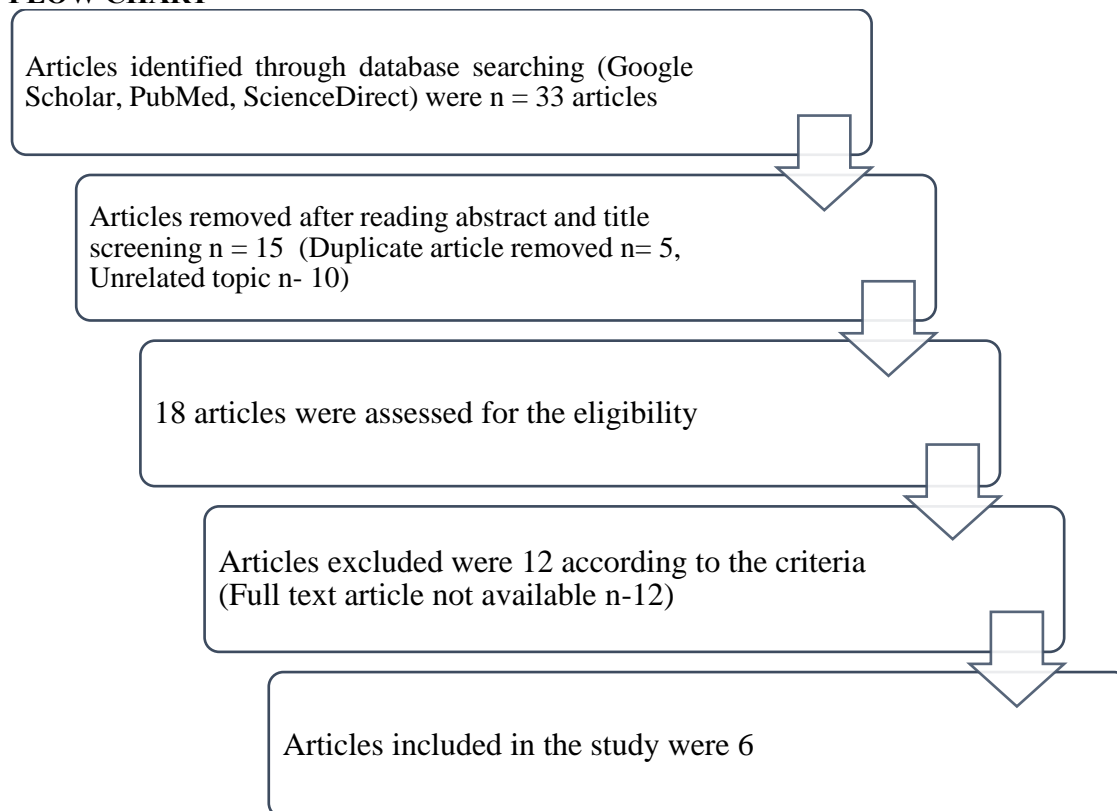
Patho mechanics of forward head posture: A lordotic curve is normally present in the cervical spine. Continuous contraction of head and neck muscles is required to maintain a static posture for prolonged periods. Extension of the upper cervical spine and flexion of the lower cervical spine result in a protraction



movement. Conversely, flexion of the upper cervical spine and extension of the lower cervical spine result in a retraction movement. In normal posture, the line of gravity should pass through the external auditory meatus, cervical spine bodies, acromion, and anterior to the thoracic spine. If the cervical spine remains in a protracted position for a prolonged period due to any reason or activity, it can lead to a postural deviation known as forward head posture. Due to these postural misalignments, muscles require greater force to counter the external torque produced by gravity, altering the line of gravity from its normal location⁽¹⁴⁾.

This article aims to review the literature on correcting forward head posture through the McKenzie Method. The McKenzie Method, also known as Mechanical Diagnosis and Therapy (MDT), is a comprehensive approach to spinal and extremity pain. It emphasizes self-treatment and active patient involvement to manage and prevent musculoskeletal conditions. The following sections will detail the principles of the McKenzie Method and its application in addressing forward head posture, supported by evidence from relevant studies and clinical practice.

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REVIEW OF LITERATURE

1. Erina et al (2023) conducted a study, the purpose of the research is to compare the effect of isometric and cervical McKenzie exercises on the neck functional score in computer users who have forward head posture. This study

METHODOLOGY

Materials and Methods

A comprehensive search was conducted in electronic databases including PubMed, Google Scholar, and Direct Science.

Keywords such as forward head posture, neck pain, musculoskeletal pain, epidemiology, McKenzie approach Studies focusing on the prevalence, risk factors, biomechanical aspects, and interventions for forward head posture were included. The articles were collected in full text. A total of 33 articles were collected and only 6 articles are used in this study for the research.

Study Selection

Inclusion Criteria

- Articles were included from year 2016 to 2023.
- Articles include the use of McKenzie approach to treat forward head posture.
- Article related to forward head posture worldwide.

Exclusion Criteria

- Articles before the year 2016 not be included.
- No pathological disorders, fractures, or stenosis conditions were included which caused forward head posture.

used a quasi-experimental design. By using purposive sampling, 24 computer users were selected for the study, the participants were split into two groups and given cervical McKenzie exercise (n = 12) and cervical isometric exercise (n = 12). Every group was given a distinct



- exercise. The Neck Disability Index (NDI) questionnaire was used to measure the neck's functional score both before and after the intervention. It has been concluded that cervical McKenzie exercise is much more effective than cervical isometric exercise, is more beneficial in raising neck functional scores in patients with FHP.⁽¹⁵⁾
- Shreya Joshi et al (2019) The purpose of this study was to determine how the McKenzie self-therapy protocol improved adolescent girls' forward head posture and respiratory health. Sixty school-age girls were divided into two groups at random for experimental research. For 12 weeks, group A received McKenzie self-therapy while group B was in control. The craniovertebral angle (CVA) was used to assess the forward head angle. The peak expiratory flow metre was used to measure the peak expiratory flow rate, or PEF. With McKenzie self-therapy, a significant improvement in respiratory function and forward head posture was observed. The control group's respiratory function showed a significant difference. There was a greater variation in CVA in the exercise group, but there was no discernible difference in respiratory performance across the groups.⁽¹⁶⁾
 - Vishnupriya Deshpande et al (2019) this study aims to investigate how young individuals forward head posture is affected by the McKenzie technique, neck exercises, and a combination of both. Thirty subjects, aged eighteen to thirty-five, were divided into three groups Group-A, Group-B, Group- C randomly and given three sessions a week for four weeks of McKenzie approach, neck exercise, or combination treatment. The McKenzie method and neck exercises were both beneficial in treating forward head posture; however, there was a statistically significant difference between groups (A) and (B), (B) and (C), but not between groups (A) and (C).⁽¹⁷⁾
 - SeYoon Kim et al (2019), the study aimed to examine how forward head posture and respiratory function were affected by the McKenzie exercise programme. Thirty adult males and females, ages 20 to 29 with forward head posture, were assigned randomly into two groups: the experimental group (N = 15) and the control group (N = 15). For four weeks, participants in the experimental group conducted the McKenzie exercises three times a week, whereas those in the control group received no assistance at all. Measurements of forced vital capacity (FVC), FVC% predicted, forced expiratory volume at one second (FEV1), and FEV1% predicted were made to assess changes in respiratory function. Craniovertebral angle (CVA) was also taken. When pre- and post-test measures were compared, the experimental group's CVA considerably increased, indicating postural improvement, while the control group showed no significant change. In the experimental group, there were significant improvements in all respiratory measurements (FVC, FVC %pred, FEV1, and FEV1 %pred), while no significant differences were observed in the control group. So, they concluded forward head posture and respiratory function can both be enhanced by the McKenzie exercise.⁽¹⁸⁾
 - Do Youn Lee et al (2017) The purpose of this study was to ascertain the impact of exercises that improve forward head posture on rounded shoulder posture when using the self-stretch, McKenzie, and Kendall exercises as intervention methods. The 28 participants that were chosen were divided into three groups at random: the Kendall exercise group (n = 9), the self-stretch exercise group (n = 10), and the McKenzie exercise group (n = 9). The craniovertebral angle was employed to compare the forward head posture. The scapular index was developed to quantify the rounded shoulder posture. Within each group, there were notable variations in the scapular index and craniovertebral angle, but not between the groups. The study's findings demonstrated that all interventions raised the scapular index and the craniovertebral angle, indicating that the exercises used improved the forward-head and rounded-shoulder postures.⁽¹⁹⁾
 - Kumar Neeraj et al (2016) The goal of this research was to compare the benefits of McKenzie Neck Exercise vs Strengthening Neck Exercise for individuals with neck pain. 44 individuals with neck pain were included in a convenience sample and randomly assigned to one of three groups, A, B, or C. Postural correction, hot packs, and McKenzie treatment will be administered to Group A subjects. Postural correction, a hot pack, and strengthening exercises will be given to the Group B patient. Postural correction and Hot Pack are the subjects of Group C. For four weeks, all three groups received treatment. Tools Using analysis of variance, the subjects' height, weight, and age were compared among groups A, B, and C. The McKenzie method, the isometric strengthening exercise, and the hot pack method differed significantly from one another for treating cervical pain. Studies have shown that the McKenzie protocol is superior to the isometric strengthening exercise.⁽²⁰⁾

DISCUSSION

The literature review provides a full summary of forward head posture (FHP), its prevalence, underlying causes, and associated health consequences, as well as the McKenzie Method's effectiveness in treating this widespread postural defect. The findings highlight the enormous impact of modern lifestyle and ergonomic variables on posture, beginning at a young age.

Forward head position is common in all age groups, with research showing that 63 % of the age group 12 to 16, 63.96 % of university students, and 79 % of the population aged 18 to 44 years demonstrate this postural condition. The predominance is attributed to long durations of sitting, poor ergonomics, and heavy backpack use. Specific behaviours, such as long-term computer work, excessive smartphone use, and wearing bags weighing more than 15% of body weight, are important causes. This prevalent occurrence underscores the importance of appropriate intervention techniques to reduce the related health risks.

FHP has wide-ranging ramifications, affecting not only musculoskeletal health but also overall well-being. FHP is associated with limitations in subcranial and upper thoracic movement, hypermobility of the mid-cervical spine, headaches, dizziness, occasional loss of balance, and issues with total spinal motion. These symptoms are compounded by



biomechanical changes produced by prolonged cervical spine protraction, which can result in increased muscular strain and nerve compression. Moreover, adaptive shortening of anterior muscles and drooping of the clavicles can result in thoracic outlet syndrome, while immobilization of the upper rib cage in FHP necessitates increased abdominal activity during respiration. If left unaddressed, FHP can also contribute to temporomandibular joint (TMJ) dysfunction due to muscular imbalance.

The Patho-mechanics of FHP involve a disruption of the normal cervical spine alignment, necessitating continuous contraction of head and neck muscles to maintain the posture. The altered line of gravity requires greater muscular force to counteract the external torque, leading to increased strain and potential postural deviations. Understanding these mechanics is crucial for developing effective therapeutic interventions.

The McKenzie approach has shown considerable promise in correcting FHP. Several studies reviewed demonstrate its effectiveness in improving neck function, postural alignment, and respiratory health. For instance, Erina et al. (2023) found that cervical McKenzie exercises significantly improved neck functional scores in computer users with FHP compared to cervical isometric exercises. Similarly, Shreya Joshi et al. (2019) reported significant improvements in both FHP and respiratory function among adolescent girls following the McKenzie self-therapy protocol.

Other studies further support these findings. Vishnupriya Deshpande et al. (2019) highlighted the benefits of the McKenzie method combined with neck exercises in treating FHP in young adults. SeYoon Kim et al. (2019) demonstrated significant improvements in postural alignment and respiratory function in adults with FHP after a four-week McKenzie exercise program. Additionally, Do Youn Lee et al. (2017) found that the McKenzie exercises improved both FHP and rounded shoulder posture, indicating its comprehensive benefits. Kumar Neeraj et al. (2016) also confirmed the superiority of the McKenzie method over isometric strengthening exercises in treating cervical pain associated with FHP.

In summary, the McKenzie Method emerges as a highly effective approach for managing and correcting FHP. Its emphasis on self-treatment and active patient involvement makes it a practical solution for various settings, from schools to workplaces. Future research should focus on the long-term efficacy and adherence to the McKenzie Method, comparative studies across different populations, and the integration of technological tools to enhance its effectiveness. Addressing these areas will further validate and refine the use of the McKenzie Method in promoting better postural health and overall well-being.

CONCLUSION

In conclusion, forward head posture (FHP) is a prevalent postural defect affecting various age groups, primarily due to modern lifestyle factors such as prolonged sitting, incorrect ergonomic setups, and excessive use of electronic devices. The

associated health problems of FHP are extensive, impacting musculoskeletal health and overall well-being by causing movement restrictions, muscle strain, nerve compression, and potential conditions like thoracic outlet syndrome and temporomandibular joint dysfunction.

The literature reviewed highlights the significant potential of the McKenzie Method in addressing FHP. Studies consistently demonstrate the effectiveness of the McKenzie exercises in improving neck function, postural alignment, and respiratory health across different populations. The method's emphasis on self-treatment and active patient involvement makes it a practical and accessible solution for various settings.

Given these findings, the McKenzie Method stands out as a highly effective approach for managing FHP. However, future research should focus on assessing the long-term efficacy and adherence to this method, conducting comparative studies across diverse populations, and integrating technological tools to further enhance its effectiveness. These steps will help validate and refine the use of the McKenzie Method, ultimately promoting better postural health and overall well-being.

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