JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S8

Physiotherapy Approaches to Neck Pain: A Comprehensive Review

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ABSTRACT

Neck pain is a prevalent and multifactorial condition with significant societal and economic impacts. In 2017, the global age-standardized prevalence and incidence rates of neck pain were 3551.1 and 806.6 per 100,000 individuals, respectively. The

Task Force on Neck Pain classifies neck pain into four grades, with Grades I-III considered non-specific and Grade IV encompassing severe pathology. Numerous risk factors contribute to neck pain, including psychological factors (stress, anxiety, depression), work-related factors, neuromusculoskeletal disorders, autoimmune diseases, and genetic predisposition. Diagnosis involves history-taking, physical examination, and potentially diagnostic imaging to rule out serious pathology and identify prognostic factors. Clinical prediction rules, such as the Keele STarT Back Screening Tool adapted for neck pain, can stratify patients into risk categories. Prognosis varies, with 50-85% of individuals not achieving full recovery, indicating the often episodic and recurrent nature of neck pain. Physiotherapy treatment combines manual therapy, exercise, and education, with moderate-quality evidence supporting the effectiveness of strength, endurance, and stabilization exercises for chronic neck pain. Cervical mobilizations and manipulations are equally effective, while thoracic manipulations may provide greater benefits compared to inactive treatment. Future research priorities include evaluating the effectiveness and cost-effectiveness of interventions, translating findings into clinical practice, and developing risk stratification tools.

KEYWORDS: Physiotherapy, Neck pain, Neck Pain Management, Physiotherapy Techniques, Cervical Spine Therapy.

1. Introduction

Neck pain is a multifactorial condition and represents a significant issue in contemporary society. Although it may not be the most prevalent musculoskeletal disorder, its importance cannot be overlooked (Cohen, 2015). The economic impact of neck pain is substantial, encompassing treatment costs, decreased productivity, and work-related complications. In 2016, neck and low back pain ranked first among 154 conditions in healthcare expenditures in the United States, accounting for an estimated $134.5 billion (Dieleman et al., 2020). In 2012, neck pain was cited as the cause of work absences for 25.5 million Americans, who missed an average of 11.4 days of work. Additionally, in 2017, the global age-standardized prevalence and incidence rates of neck pain were reported as 3551.1 and 806.6 per 100,000 individuals, respectively (Safiri et al., 2020).

There is no universally accepted treatment for neck pain. Various pharmacological and non-pharmacological interventions have been suggested, including laser therapy, massage, acupuncture, yoga, and aquatic therapy (Skelly et al., 2020).

Neck pain is clinically defined as discomfort in the neck region, with or without pain radiating to one or both upper limbs, persisting for at least one day (Hoy et al., 2014; Safiri et al., 2020). In 2008, the Task Force on Neck Pain established a consensus-based anatomical definition of neck pain after identifying over 300 case definitions. While individuals with neck pain may also experience accompanying symptoms such as headache or shoulder pain, the primary complaint remains the pain localized to the neck.

Categorization

In 2008, the Task Force on Neck Pain proposed a classification system for individuals with neck pain, dividing them into four categories (Haldeman et al., 2008). This classification builds upon the Quebec Task Force classification for whiplash (Spitzer et al., 1995), with the primary distinction being the Quebec Task Force's inclusion of a Grade 0 category, indicating the presence of trauma without pain. In the Task Force on Neck Pain classification, Grades I through III are considered non-specific neck pain (Haldeman et al., 2008). Grade I and Grade II are differentiated by the level of interference with daily activities, whereas Grade III, also known as cervical radiculopathy, includes objective neurological findings such as reduced deep tendon reflexes, muscle weakness, or sensory deficits, alongside positive provocation and reduction tests. Grade IV encompasses cases of severe pathology and corresponds to specific neck pain.

Incidence and Prevalence

According to the Global Burden of Disease (GBD) study, neck pain ranked 21st among 291 conditions in overall burden and fourth in terms of disability, highlighting its significance as a public health concern (Hoy et al., 2014; Safiri et al., 2020, p. 201). Within musculoskeletal disorders, neck pain is the fourth most common globally, following low back pain, which ranks first. Despite its prevalence, research on neck pain remains limited compared to low back pain (Safiri et al., 2020, p. 201).

In 2017, the GBD study estimated the age-standardized point prevalence of neck pain at 3,551 per 100,000 individuals, with a 95% uncertainty interval (UI) ranging from 3,140 to 3,978, and an annual incidence of 807 per 100,000 individuals (95% UI: 714 to 913) (Safiri et al., 2020, p. 201). The incidence and prevalence of neck pain increased with age and were higher in females than males. Between 1990 and 2010, the prevalence of neck pain remained relatively unchanged. Up to 70% of individuals are expected to experience neck pain during their lifetime; however, for most, the condition does not severely impair daily activities (Cohen & Hooten, 2017; Safiri et al., 2020, p. 201). Grade IV neck pain (serious pathology) is rare, with an incidence of up to 2% among referred patients. Grade III neck pain, or cervical radiculopathy, has an incidence ranging from 6.3 to 21 per 10,000 individuals, depending on variations in definitions of "radiating or radicular symptoms" used in clinical practice and research (Corey & Comeau, 2014; Thoomes et al., 2012). Many definitions include radiating symptoms without neurological signs or sensory deficits, which, according to the Task Force on Neck Pain, do not meet the criteria for Grade III neck pain. Most patients estimated at over 90% fall into Grades I or II (Hoy et al., 2014).

Several prognostic factors increase the risk of developing neck pain. Key risk factors include trauma, work-related factors (e.g., low job satisfaction, limited workplace support, and high stress), psychological factors (e.g., depression and poor mental health), and smoking (Hogg-Johnson et al., 2008, pp. 2000–2020). Notably, cervical disc degeneration has not been identified as a significant risk factor. The economic

burden of neck pain has not been extensively studied (Safiri et al., 2020).

Risk Factors

Neck pain is a multifactorial condition. Population-based studies have identified various modifiable and non-modifiable risk factors for neck pain, including advanced age, female gender, low social support, and a history of neck or lower back pain (Genebra et al., 2017). Given the tendency for neck pain to become a chronic issue, identifying these risk factors is crucial for effective prevention and early diagnosis (Kim et al., 2018). While many factors contribute to neck pain, there is stronger evidence for certain variables such as physical inactivity, daily computer use duration, perceived stress, and being female. Understanding protective and risk factors, triggers, and outcomes is essential for guiding prevention, diagnosis, treatment, and management strategies. The following sections outline the psychological and biological factors associated with neck pain based on current research.

Psychological Factors

The association between psychological variables and neck or back pain is well-documented in the literature (Linton, 2000). Data from the China Mental Health Survey revealed that individuals with mental disorders have more than twice the prevalence of chronic back or neck pain compared to those without mental disorders, particularly among those with mood disorders (Xu et al., 2020). Prospective studies have shown that psychological factors influence the onset and severity of pain, including acute, sub-acute, and chronic presentations. Factors such as stress, anxiety, mood, cognitive functioning, and pain-related behaviors are significant contributors to neck pain. Although evidence for personality traits like abuse as risk factors is limited, they are potential contributors (Martinez-Calderon et al., 2020).

Stress, pain catastrophizing, depressive symptoms, poor sleep quality, and alcohol consumption may alter central pain processing in the spine, brainstem, or cortical regions, leading to phenomena such as remote hyperalgesia. Further investigation into how cognitive, affective, and lifestyle factors influence central pain processing in non-traumatic neck pain is necessary (Xie et al., 2020). Four psychological domains are particularly relevant to neck pain: (1) cognitive factors, including attitudes and beliefs about pain and disability; (2) emotional factors such as anxiety, depression, and distress; (3) social dimensions, including family and work dynamics; and (4) behavioral factors like coping mechanisms, pain behaviors, and activity patterns (Liu et al., 2018; Ortego et al., 2016).

Stress

Stress is a recognized risk factor for neck pain and disability (Linton, 2000). Studies with fair methodological quality have shown that adolescents with neck pain report significantly more stress symptoms than their asymptomatic peers. Regular or persistent stress is significantly associated with increased odds of experiencing neck pain (Andias & Silva, 2020). Stress can influence central pain processing at spinal, brainstem, or cortical levels, leading to remote hyperalgesia (Xie et al., 2020). Additionally, stress serves as a mediator between pain and disability (Hall et al., 2011; Lee et al., 2015).

Anxiety

Anxiety is associated with chronic pain, including neck pain, and disability (Martinez-Calderon et al., 2020). Studies have found higher levels of trait and state anxiety among adolescents with neck pain compared to those without (Andias & Silva, 2020). Anxiety disorders are the second most common comorbid condition in individuals with neck pain, with specific phobias being the most prevalent (Xu et al., 2020).

Lower pressure pain thresholds (PPTs) are linked to anxiety and correlate with pain intensity, frequency, duration, and disability in neck pain patients (Sá & Silva, 2017). However, findings on the mediating role of anxiety in pain and disability are inconsistent. Some studies have found no evidence that anxiety acts as a mediator, while others show strong associations between chronic spinal pain and anxiety disorders (Lee et al., 2015). Generalized anxiety disorder and post-traumatic stress disorder (PTSD) are more commonly comorbid with spinal pain than social phobia or panic disorder/agoraphobia (Demyttenaere et al., 2007; Gureje, 2008).

Depression

The relationship between depression and neck pain is bidirectional (33). Chronic neck pain and associated disabilities are frequently linked to mood disorders, particularly depression (Ahmed et al., 2019). Studies indicate that depression increases morbidity among neck pain patients, with depressive symptoms found to alter central pain processing at various levels (Xie et al., 2020). Depression may also mediate the relationship between pain and disability (Hall et al., 2011).

Cognitive Variables

Cognitive factors such as attitudes, cognitive styles, and fear-avoidance beliefs are associated with increased neck pain and disability (Ahmed et al., 2019). Pain catastrophizing and self-perceived poor health are key cognitive contributors (14). Research has also identified self-efficacy as a significant factor, with low pain self-efficacy associated with greater disability (Ahmed et al., 2019).

Sleep Problems

The relationship between sleep quality and neck pain is bidirectional; poor sleep can exacerbate neck pain, and vice versa. Evidence from multiple studies suggests that inadequate sleep duration and quality significantly increase the odds of experiencing neck pain. Sleep management may reduce pain sensitivity and improve modulatory capacity (Nijs et al., 2017; Xie et al., 2020).

Social Support

Poor social support is associated with neck pain. Specifically, inadequate social support at work and loneliness in early adulthood are linked to increased risk of neck pain. Conversely, actively seeking social support appears to mitigate neck pain severity and duration (Buitenhuis et al., 2003).

Behaviour

Behavioural factors such as coping strategies and lifestyle choices can influence neck pain outcomes. Avoidance-oriented coping strategies are associated with prolonged neck pain, while seeking social support can shorten pain duration (Buitenhuis et al., 2003; Wachholtz et al., 2007).

Work-Related Factors

Workplace factors such as sustained awkward postures, perceived job demands, and low coworker support are significant risk factors for neck pain. Working with computers, particularly with poor posture or prolonged durations, is strongly associated with neck pain (Mork et al., 2020).

Neuromusculoskeletal Disorders

Conditions like cervical spondylosis, fibromyalgia, cervical radiculopathy, and whiplash-associated disorders (WADs) are common contributors to neck pain. Cervical spondylosis involves degenerative changes in the cervical spine, often leading to pain and reduced mobility (Haldeman et al., 2010; Moradi-Lakeh et al., 2017, p. 199).

Autoimmune Diseases

Autoimmune conditions such as rheumatoid arthritis, systemic lupus erythematosus (SLE), and ankylosing spondylitis can cause neck pain through chronic inflammation of joints and tissues (Gillick et al., 2015).

Genetic Factors

Genetic predisposition plays a role in neck pain, with twin studies and genome-wide association studies (GWASs) identifying genetic loci linked to the condition. However, further research is needed to confirm these associations (Fejer et al., 2006; Meng et al., 2020).

Gender and Age

Gender is a debated risk factor for neck pain. While females are generally considered at higher risk, recent studies suggest no significant differences across genders in prevalence, incidence, and disability (Jahre et al., 2020; Kim et al., 2018). Aging is a critical factor, with neck pain prevalence peaking in middle age and declining thereafter (Safiri et al., 2020, p. 19).

Diagnosis and Assessment

The diagnostic process for neck pain in physiotherapy involves history-taking, physical examination, and, if necessary, referral for diagnostic imaging. History-taking aims to gather information about the patient's prognosis and determine whether they belong to a subgroup requiring a specific management approach. The initial hypothesis formed during history-taking is either confirmed or excluded through physical examination or diagnostic imaging.

Red Flags

A crucial step in physiotherapy assessment is ruling out serious pathology or red flags. Red flags consist of specific patterns of symptoms or signs that may indicate serious conditions requiring additional diagnostic investigation. Among patients with neck pain following trauma, the most used screening tools for fractures are the Canadian C-Spine Rule and the National Emergency X-Radiography Utilization Study (NEXUS). A systematic review reported that both tools have high sensitivity, meaning that a negative result reliably rules out the possibility of a fracture (SnNOut) (Michaleff et al., 2012).

Screening for malignancies has not been formally evaluated. Other assessments include tests for upper cervical ligament instability or vertebral artery insufficiency. These tests aim to identify patients at high risk of severe complications during cervical spinal manipulation. Despite their inclusion in many guidelines for manual therapists and chiropractors, these methods have been poorly studied and remain unvalidated (Hutting et al., 2013). Nonetheless, current guidelines recommend performing such screening tests as part of the evaluation process.

History Taking

The next phase in the diagnostic process involves identifying prognostic and differentiating factors to estimate the patient's prognosis and determine the appropriate subgroup for management strategies. Historically, patients with trauma-related neck pain, previously termed whiplash or whiplash-associated disorder, are considered a distinct subgroup. These patients are characterized by a history of trauma, often from motor vehicle accidents. Greater severity of pain at baseline or during initial consultation has been associated with poorer prognoses (Walton et al., 2013).

Patients with work-related neck pain, defined as neck pain exacerbated by work and alleviated during weekends or periods of leave, are also categorized as a subgroup, as they tend to exhibit worse prognoses. Various work-related factors, such as low job satisfaction and high stress, are known to contribute to this poorer outcome (Verwoerd et al., 2019).

It remains uncertain whether patients with cervicogenic headaches, which typically develop following neck pain and are aggravated by neck movements, should be classified as a subgroup of headache patients or neck pain patients. There is currently limited data on the prognoses and prognostic factors for this subgroup (Becker, 2010).

For patients presenting with cervical radiculopathy, there is no consensus in the literature on classification based solely on symptoms and neurological examination. The Task Force on Neck Pain defines these patients as having neurological symptoms or sensory deficits, such as altered reflexes or sensory loss, along with radiating pain that often follows a radicular pattern. A small study indicated that sensory loss and pain radiating to the elbow exhibit high specificity, making them reliable for diagnosing cervical radiculopathy (SpPIn) (Wainner et al., 2003).

Patients with radiating symptoms but no neurological deficits are classified as having Grade II neck pain. Prognoses for cervical radiculopathy are generally favorable, with most patients recovering within 4 to 6 months (Wong et al., 2014).

The subgroups mentioned above, including trauma-related neck pain, cervicogenic headache, neck pain with radiculopathy, and work-related neck pain, align with the categories outlined in the clinical practice guideline by Blanpied et al. These include neck pain with movement control disorders (such as whiplash-associated disorders), neck pain with headaches, neck pain with radiating pain, and neck pain with mobility deficits.

In the classification by the Task Force on Neck Pain (Haldeman et al., 2008):

- Grade I includes individuals with neck pain and no signs of major structural pathology, with no or minor interference with daily activities.
- Grade II involves individuals with neck pain and no signs of major structural pathology, but with significant interference in daily activities.
- Grade III pertains to neck pain without major structural pathology but with neurological signs, such as decreased deep tendon reflexes, weakness, or sensory deficits in the upper extremities.
- Grade IV covers individuals with neck pain associated with major structural pathology, including conditions like fractures, vertebral dislocation, spinal cord injuries, infections, neoplasms, or systemic diseases, such as inflammatory arthropathies.

Physical Examination

Physical examination may include inspection of posture, palpation, range of motion assessment, muscle strength evaluation, reflex testing, sensation testing, and specific diagnostic tests. The selection of procedures depends on the findings from history-taking and the suspected diagnosis. The primary goal is to confirm or exclude the preliminary diagnosis.

For cervical radiculopathy, specific tests are recommended to confirm the diagnosis. Among these, Spurling's test and the traction test demonstrate high specificity, with values ranging from 89% to 100% for Spurling's test and 90% to 97% for the traction test, making them useful for confirming a diagnosis (SpPIn) (Thoomes et al., 2018). Conversely, the Upper Limb Tension Test is highly sensitive (87% to 93%) and is valuable for ruling out cervical radiculopathy (SnNOut) (Thoomes et al., 2018). The reproducibility of these specific tests varies, with kappa values ranging from 13% to 93% (Lemeunier et al., 2017). Although neurological testing of dermatomes and myotomes is advised, its diagnostic validity has not been thoroughly evaluated.

Clinical Prediction Rules

Numerous clinical prediction rules exist, but many are based on suboptimal methodologies or lack validation (Wingbermühle et al., 2018). A systematic review identified 99 prediction models for neck pain or trauma-related neck pain, with three showing potentials for use in physiotherapy or primary care settings. One model was

designed for general neck pain, while two were specific to trauma-related neck pain (Schellingerhout et al., 2010; Sterling et al., 2012). Factors consistently associated with higher recovery likelihood include age under 35 years. A low initial disability score (less than 32% on the Neck Disability Index) was relevant specifically for trauma-related neck pain models. The Keele Subgroup Targeted Treatment (STarT) Back Screening Tool, initially developed for acute low back pain, has been adapted for neck pain, stratifying patients into low, medium, and high risk for chronic symptoms. However, its predictive validity remains limited (Bier et al., 2017).

Diagnostic Imaging

Guidelines generally discourage routine imaging for neck pain, reserving it for cases involving severe trauma or suspected serious pathology. When necessary, imaging can confirm or rule out specific conditions, such as cervical radiculopathy due to disc herniation. Sensitivity and specificity of imaging techniques vary widely, from 27% to 96% (Nordin et al., 2008). For fractures, computed tomography (CT) scans are most reliable, with sensitivities between 96% and 99% (Holmes & Akkinepalli, 2005). Magnetic resonance imaging (MRI) demonstrates high sensitivity and specificity (95% to 97%) for diagnosing cervical disc herniation (Shim et al., 2009).

However, imaging should be used cautiously due to the high incidence of false positives. A study involving 1,211 asymptomatic participants revealed that 87% presented with bulging discs, and 5.3% showed spinal cord compression, despite the absence of symptoms (Lin et al., 2020).

Prognosis and Course

In 2008, the Task Force on Neck Pain estimated that between 50% and 85% of individuals with neck pain do not achieve full recovery, indicating that neck pain often has an episodic and recurrent nature. A systematic review found that for individuals with acute neck pain, the average pain score decreased by 45% over the first 6.5 weeks, with no further reduction observed beyond this period (Hush et al., 2011). This prognosis was based on recovery rates from cohort studies and control group participants who did not receive treatment.

The prognosis for cervical radiculopathy is generally more favorable than for neck pain without radiculopathy (Wong et al., 2014). Factors associated with poorer prognoses include prior episodes of neck pain, concurrent low back pain, concurrent headaches, poor general health, psychological factors such as anxiety, frustration, or depression, and work-related issues, including low job satisfaction, high physical job demands, and lack of control over the work environment (Wirth et al., 2016). In contrast, younger age, active coping mechanisms, and an optimistic outlook are linked to better prognoses (Walton et al., 2013).

Physiotherapy Treatment

Most guidelines on diagnosing and treating neck pain recommend a combination of manual therapy, exercise, and education as the most effective evidence-based physiotherapy approaches (Corp et al., 2021). Massage may also be beneficial, although evidence is inconsistent. Psychological or behavioral interventions and

multidisciplinary treatments are effective for certain subgroups. However, other interventions lack robust evidence.

Education

Education aims to enable patients to make informed decisions about their health-related behaviors (Yu et al., 2016). According to a Cochrane review, patient education is considered an essential component of physiotherapist-patient communication (42). Although this review found no evidence supporting the effectiveness of education for neck pain treatment, a more recent systematic review indicated that structured patient education can be as effective as other conservative treatments for neck pain of traumatic or non-traumatic origin (Yu et al., 2016). Recommended educational interventions include reassuring patients about the non-serious nature of their condition, providing information on pain and prognosis, advising against imaging unless necessary, encouraging activity, and teaching self-care, exercises, and stress management skills (Gross et al., 2012).

Exercise

Exercises for neck pain encompass a wide range, including general land-based or aquatic exercises and specific techniques for endurance, strength, stretching, or McKenzie exercises. A Cochrane review categorized evidence quality using the GRADE system and found that strength, endurance, and stabilization exercises benefit chronic neck pain (moderate-quality evidence). For chronic cervicogenic headaches, only strength and endurance exercises showed benefits (moderate-quality evidence). Stretching, strengthening, and stabilization exercises had minor benefits for acute cervical radiculopathy (low-quality evidence), with standardized effect sizes ranging from 0.3 to 0.7 (95% CI 0.1 to 1.3), indicating small to moderate effects (A. Gross, Kay, et al., 2015; A. R. Gross et al., 2016).

A network meta-analysis found no specific exercise superior for chronic non-specific neck pain (Zoete et al., 2021). Research suggests that changes in motor control of deep cervical muscles may contribute to neck pain persistence. A systematic review evaluating motor control exercises (e.g., craniocervical flexion exercises) found clinically relevant benefits for chronic neck pain, with standardized effect sizes between 0.33 and 0.58 for pain and disability reduction (Martin-Gomez et al., 2019).

Mobilization and Manipulation

Manual therapy, including mobilizations and manipulations, is frequently used to improve spinal joint motion and range of motion. Mobilizations involve low-grade, small- or large-amplitude passive movements within the patient's range of control, while manipulations involve high-velocity, low-amplitude forces directed at specific cervical or thoracic segments near the end range of motion without the patient's control.

A Cochrane review and a systematic review found that cervical mobilizations and manipulations are equally effective for non-specific neck pain (moderate-quality evidence). Cervical manipulations showed small benefits (low-quality evidence), whereas thoracic manipulations demonstrated greater benefits compared to inactive treatment (moderate-quality evidence) (A. Gross, Langevin, et al., 2015; Wong et al.,

2016). However, a systematic review evaluating thoracic manipulations could not confirm their superiority over cervical manipulations based on two direct comparison studies (Masaracchio et al., 2019). Thoracic manipulations were more beneficial than mobilizations or standard care (very low-quality evidence), with mean differences in pain on a 100-mm visual analogue scale of 14 mm (95% CI 6 to 22) and 13 mm (95% CI 4 to 22), respectively.

Combined interventions of exercise and manipulations appear more effective (moderate-quality evidence) than exercises alone for immediate pain relief, though not for other outcomes. The effect size for this combination is small (SMD 0.15, 95% CI 0.00 to 0.30), indicating limited clinical relevance (Coulter et al., 2019; Miller et al., 2010).

Massage

Massage therapy involves manipulating the body's soft tissues through touch and includes various techniques differing in pressure and method of application (54). Conventional Western massage, commonly used by physiotherapists, has shown benefits in treating neck pain compared to no treatment or placebo in one small study (Wong et al., 2016).

Non-Physiotherapy Management

Medication

People with neck pain may use over-the-counter medications, such as paracetamol or NSAIDs. Physiotherapists, while not prescribing medication, should be aware of relevant evidence to guide patients. A systematic review found no trials evaluating paracetamol for neck pain but reported NSAIDs to be more effective than placebo (Predel et al., 2013). NSAIDs were as effective as muscle relaxants or acupuncture (Khwaja et al., 2010) but less effective than spinal manipulation and exercises (Bronfort et al., 2012). A study with 72 patients found topical diclofenac gel, a NSAID, more effective than placebo for acute neck pain (60). Oral NSAIDs also provided clinically relevant pain reduction (MD 16 mm on a 100-mm visual analogue scale, 95% CI 12 to 21) (Machado et al., 2017).

Surgery

For persistent neck pain unresponsive to conservative care, patients may be referred for corticosteroid injections or surgery. Randomized trials evaluating corticosteroid injections have focused on cervical radiculopathy, with one study comparing injections alone, physiotherapy interventions, and their combination. No significant differences in arm pain outcomes were observed (Cohen et al., 2014). A systematic review of nine controlled studies found no major differences between surgical and conservative care (very low-quality evidence) (Bureau et al., 2014). Minimal differences were noted among surgical techniques, and adding fusion to anterior decompression provided no additional benefit.

Future Research

The systematic reviews discussed above highlight several limitations, including a

small number of studies on targeted interventions, overall small sample sizes, a high proportion of studies with a significant risk of bias, and substantial clinical heterogeneity among studies. These limitations hinder definitive conclusions and suggest that future research may alter current findings and recommendations. Compared to low back pain, which has a similar disease burden, neck pain remains relatively understudied, warranting further research (2).

A recent Delphi consensus study on research priorities in neck pain identified the primary research priority as evaluating the effectiveness and cost-effectiveness of all major interventions. The second most important priority was exploring how to best translate research findings into clinical practice. Research into diagnostic assessments ranked lower, at priority 11 out of 15 (Silva et al., 2019).

Future research could include risk stratification through the development and evaluation of clinical prediction models or rules. This would involve assessing the impact of risk stratification in neck pain trials, improving understanding of the validity of diagnostic assessments, and determining which patients benefit most from specific treatment strategies (Schellingerhout et al., 2008). Additionally, studies should focus on identifying the optimal characteristics and dosages of commonly used interventions to reduce heterogeneity between studies (Price et al., 2020).

The Global Burden of Disease study on neck pain emphasizes the importance of increasing population awareness about neck pain, its risk factors, and the benefits of early detection and management to reduce the future burden of the condition (2). This underscores the need for global patient education and mass media campaigns. A recent systematic review on mass media campaigns for low back pain suggested that such campaigns may effectively change health beliefs, providing a model for similar initiatives targeting neck pain (Suman et al., 2021).

2. Conclusion

Neck pain is a complex and multifactorial condition that significantly impacts individual health, productivity, and societal costs. With its episodic and often chronic nature, neck pain necessitates a multidisciplinary approach for effective management and prevention. The interplay between psychological, biological, and work-related factors highlights the need for tailored interventions to address both modifiable and non-modifiable risk factors.

Current evidence underscores the importance of integrating physiotherapy, manual therapy, exercise, and education as key treatment strategies. Psychological factors such as stress, anxiety, and depression are critical contributors to neck pain and its chronicity, necessitating interventions that target these dimensions. Moreover, work-related ergonomics and behaviors play a pivotal role, emphasizing the need for workplace adjustments and preventive measures.

The field of neck pain research remains limited compared to conditions like low back pain, and future studies should aim to address gaps, particularly in identifying optimal intervention dosages and evaluating cost-effectiveness. Increasing awareness of neck pain risk factors, along with mass media campaigns, may contribute to

reducing its prevalence and associated disabilities. Nurses play a vital role in patient education, early detection, and implementing evidence-based interventions to manage and prevent neck pain, positioning them as key advocates in mitigating this global health burden.

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