

## Assessing Cervical Radiculopathy And Disability In Computer Professionals During The COVID-19 Lockdown Period: A Review

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### Abstract

Neck pain is a prevalent musculoskeletal complaint, exacerbated by factors such as poor posture and prolonged computer usage, particularly during the COVID-19 lockdown period. This review investigates the mechanical causes of neck pain, focusing on the contribution of poor posture to irregular forces and strain on the neck musculature. Additionally, it evaluates the severity of neck pain symptoms and their impact on functional disability during the lockdown period. Measures of neck mobility, symptoms, sleep disturbance, everyday activities, and participation in everyday life are examined to assess the level of functional impairment experienced by individuals with neck pain. The implications of these findings for neck pain management strategies are discussed, emphasizing the importance of addressing modifiable risk factors, promoting ergonomic practices, and providing access to telehealth or virtual physical therapy services.

**Keywords:** Neck pain, mechanical causes, poor posture, computer usage, lockdown, functional disability, telehealth, virtual physical therapy.

### 1. INTRODUCTION

Since its emergence in December 2019, the COVID-19 pandemic has significantly impacted global health and economies, with profound implications for various sectors, including healthcare and occupational health. As of May 13, 2020, the worldwide count of confirmed coronavirus infections has exceeded 4.3 million, with a staggering death toll of over 288,000. In India alone, the number of confirmed cases has surpassed 70,000, with nearly 2,300 fatalities (Dubey, 2020). The management of COVID-19 has been effective, with respiratory failure from acute respiratory distress syndrome (ARDS) identified as the primary cause of mortality (Mehta et al., 2020). The declaration by the World Health Organization (WHO) that COVID-19 constitutes a pandemic has provided clarity amidst confusion in both academic literature and the media (World Health Organization, 2020). Debates on when a disease outbreak qualifies as a pandemic often resurface during global health crises. The discussion surrounding the terminology used for COVID-19 raises two crucial questions: why was there reluctance to label the outbreak as a pandemic initially, and does the terminology hold practical significance?

In line with prevailing definitions, an outbreak evolves into an epidemic when there is widespread geographic distribution of the disease. For several weeks, the COVID-19 outbreak, spreading to over 100 countries, appeared to meet the criteria for a pandemic (Hogg-Johnson et al., 2008). However, the use of the term "pandemic" may not necessarily alter the actions required to control the spread of the virus (Malone et al., 2002). Governments worldwide have implemented lockdown measures and focused on social distancing to curb transmission, emphasizing the importance of staying at home and minimizing contact with contaminated surfaces (Rubinstein et al., 2007). These measures, coupled with specific protective actions such as frequent handwashing and respiratory etiquette, aim to mitigate the impact of the pandemic (Rubinstein et al., 2008). Additionally, public health strategies have been adapted to ensure flexibility while maintaining social cohesion, preserving jobs, and securing food supplies (Harrison, 2011). Countries must weigh the anticipated benefits and adverse effects of each intervention, fostering community engagement, building trust, and mitigating socio-economic harm (Aegerter et al., 2021). As part of the pandemic response, it is imperative to monitor and manage the spread of COVID-19 cases rigorously. This includes extensive testing, contact tracing, and isolation of both confirmed cases and their contacts (Rodine & Vernon, 2012). As social restrictions are eased, continued vigilance in case identification and isolation remains crucial to address potential resurgences or imported cases effectively (Harrison, 2011). Furthermore, enhancing healthcare and social services is essential to promptly assess individuals, provide adequate treatment, and safeguard healthcare facilities and personnel (Gosain et al., 2022). Amidst the COVID-19 pandemic, there has been a growing concern regarding the prevalence and impact of cervical radiculopathy, particularly among computer professionals.

Neck radiculopathy, a common musculoskeletal complaint affecting a significant portion of the population annually, is influenced by various modifiable factors such as smoking and poor ergonomic practices (Kwon et al., 2018). Studies have emphasized the link between prolonged computer use and an elevated risk of musculoskeletal disorders, including neck radiculopathy (Ragonese, 2009). The transition to remote work during the lockdown period has exacerbated these concerns, as individuals spend extended hours in front of their computers in potentially suboptimal ergonomic setups (BenEliyahu, 1996). Extensive research has underscored a high prevalence of neck radiculopathy among adolescents, largely attributed to prolonged periods of sitting in fixed positions, particularly at workstations (Mehta et al., 2010). Even seemingly minor factors, such as using bifocal glasses while working at a computer, can contribute to cervical misalignment as individuals' strain to view the screen properly (Carreon et al., 2010). This overlap in risk factors highlights the multifaceted nature of neck radiculopathy and underscores the importance of addressing ergonomic practices, especially in the context of increased computer usage during remote work scenarios (Peolsson et al., 2007).

The sedentary lifestyle and prolonged sitting associated with fixed positions at workstations have been linked to the development of cervical radiculopathy and headaches in adolescents (Cleland et al., 2006). Prolonged sitting correlates with a high incidence of neck or occipital pain and shoulder discomfort in youths (Carroll et al., 2008). Activities such as TV watching and reading books have also been associated with neck or occipital pain in adolescents, while computer use is a common trigger for neck or occipital pain in young adults (Tome et al., 2004). The modern demands of occupations often require prolonged engagement and significant mental and physical exertion, leading to stress on the musculoskeletal system that may exceed natural tolerances (Destee et al., 1989). Moreover, frequent computer use, especially exceeding 2-3 hours daily, has been identified as a significant risk factor for Neck Radiculopathy (Rydell & Räf, 1999). The prevalence of computer-related Neck Radiculopathy surged in the 1990s and early 2000s, coinciding with the widespread adoption of computers (Malone et al., 2002). Forward head posture, characterized by the protrusion of the head forward from its natural alignment, is commonly observed among individuals with Neck Radiculopathy (Rubinstein et al., 2007). This abnormal static posture, coupled with repetitive dynamic activities, alters joint mechanics and places prolonged strain on the body's musculoskeletal structures (Rubinstein et al., 2008). Occupations and recreational activities that involve prolonged sitting or repetitive motions, such as playing instruments or video games, can exacerbate this condition. Effective management of Neck Radiculopathy requires comprehensive evaluation using validated outcome measures, such as the Neck Outcome Score (NECK OUTCOME SCORE) (Kapandji, 2007). Given its significant impact on functional capacity and potential for long-term disability, there is a critical need for innovative interventions to address Neck Radiculopathy effectively (O'Sullivan & Schmitz, 2007). However, assessing the efficacy of interventions necessitates robust outcome measures tailored to capture the diverse aspects of this complex condition (Szeto & Straker, 2005).

This review paper aims to assess the prevalence, risk factors, and impact of cervical radiculopathy among computer professionals during the COVID-19 lockdown period. By synthesizing existing literature, we seek to provide insights into the epidemiology, clinical manifestations, management, and disability associated with this condition. Additionally, we aim to identify preventive strategies and interventions to mitigate the burden of cervical radiculopathy in the context of remote work arrangements during the pandemic.

## 2. REVIEW OF LITERATURE

Jyotindra Dubey reported that the global tally of confirmed COVID-19 infections has reached approximately 4.3 million, with a death toll of 288,209. Russia has seen a surge in cases, becoming the third most affected country after the US and Spain. In India, confirmed cases have surpassed 70,000, with the death toll nearing 2,300. The rapid escalation of cases in India is evident, with the initial 10,000 cases taking 75 days to accumulate, whereas subsequent increments of 10,000 cases have taken just two days each. Puja Mehta et al. highlighted that the current management of COVID-19 is robust, with acute respiratory distress syndrome (ARDS) being the leading cause of mortality. Secondary hemophagocytic lymphohistiocytosis (sHLH), characterized by hyperinflammation, has emerged as a complication, often triggered by viral infections. COVID-19 patients exhibit a cytokine profile like sHLH, with predictors of mortality including elevated ferritin levels. Screening for hyperinflammation is crucial in severe COVID-19 cases, with potential therapeutic options including immunosuppression.

According to the World Health Organization (WHO), public health and social measures are essential to mitigate the spread of COVID-19. These measures include personal hygiene practices, case identification, contact tracing, social distancing, travel restrictions, and strengthening healthcare systems. Social distancing measures aim to halt transmission chains by promoting physical distancing and reducing contact with contaminated surfaces. Implementing flexible work arrangements and enhancing healthcare infrastructure are integral components of the response strategy. Hogg-Johnson et al. examined the epidemiology and management of neck radiculopathy, emphasizing the importance of understanding its prevalence, risk factors, and associated factors. The Neck Pain Task Force report synthesized evidence on the frequency, risk factors, prevalence, and associated factors of neck radiculopathy, providing insights for effective healthcare planning and provision. Carroll LJ et al. discussed the common occurrence of neck radiculopathy and its impact on individuals, highlighting the importance of understanding its course and prognostic factors. Knowledge of the course of neck

radiculopathy aids in treatment planning and assessing the effectiveness of interventions. Identifying modifiable and nonmodifiable prognostic factors informs lifestyle modifications and healthcare strategies to optimize outcomes for individuals with neck radiculopathy.

Brook I. Martin et al. emphasized that advancements and treatment strategies should ideally mitigate clinical issues sufficiently to offset their costs, leading to stable or decreasing healthcare expenditures and improved health status. However, an increase in healthcare spending without a corresponding improvement in health status may raise concerns about clinical waste. Ronald Loepke et al. highlighted that over 80% of healthcare spending is dedicated to managing chronic conditions, with almost half of Americans affected by at least one chronic health condition. Employers, as major purchasers of healthcare services, incur substantial costs related to employee health, with efforts focused mainly on reducing clinical costs rather than considering the impact of health on workforce productivity.

J. Sillanpää et al. noted a correlation between increased computer and mouse usage and a higher prevalence of disorders in the neck and extremities. Poor workstation design and prolonged computer use were associated with a greater risk of developing symptoms, particularly musculoskeletal issues related to mouse use. Gender disparities were observed, with women experiencing more musculoskeletal symptoms associated with visual display unit (VDU) use.

Janice Cheung et al. addressed the significant societal burden of neck radiculopathy due to its high prevalence and healthcare costs. Although physical activity can help manage various types of chronic musculoskeletal pain, limited research exists on the relationship between physical activity and neck radiculopathy. Côté P et al. highlighted neck disorders as a major source of pain and functional limitations in workers, primarily resulting from complex interactions between individual and workplace risk factors. Prevention strategies aimed at reducing the incidence of neck radiculopathy in workers are currently lacking. Gharib NM and Hamid NS conducted a study to assess the prevalence and associated risk factors for musculoskeletal pain among female college students at Taif University in the Kingdom of Saudi Arabia. Rachel C. Colley et al. utilized data from the 2007 to 2009 Canadian Health Measures Survey to assess physical activity levels using accelerometry. Their findings presented data on time spent in different intensity levels of physical activity, as well as daily step counts.

Yuri Kwona et al. highlighted the health implications of prolonged sitting, noting that individuals spend over 8 hours per day in a seated position. Prolonged sitting has been associated with increased pressure within the intervertebral discs, potentially leading to spinal or musculoskeletal disorders. Studies have shown a high prevalence of low back pain (LBP) among office workers who sit for extended periods. L Smith et al. conducted a cross-sectional study to investigate the association between computer use and headaches as well as neck radiculopathy among school students. They found a significant correlation between high levels of computer use and the prevalence of headaches and neck radiculopathy, particularly among students with poor psychosocial scores. Auvinen J et al. reported that high levels of physical activity are associated with an increased prevalence of neck or occipital pain and severe shoulder pain in adolescents. Conversely, prolonged sitting was linked to a higher intensity of neck or occipital pain and shoulder pain in adolescents, with different sedentary activities such as TV watching or computer use showing varying associations with pain.

Shrawan Kumar proposed four theories to explain the precipitation of musculoskeletal injuries in the workplace, emphasizing the biomechanical nature of occupational musculoskeletal injuries and the influence of individual factors such as genetics, morphology, and psychosocial makeup. Paula T. Hakala et al. emphasized the significant clinical burden of neck radiculopathy in both adults and young individuals. Studies have shown a high prevalence of neck radiculopathy, with co-occurrence of symptoms such as low back pain (LBP) being common. Ramos EM et al. highlighted the increasing use of computers and electronic games among children, leading to anxiety and discomfort, particularly in the neck region. Occupational therapy interventions focusing on educating children, parents, and teachers on proper ergonomics and workstation setups may be beneficial in alleviating computer-related discomfort. Adam Burke et al. found a high prevalence of physical pain attributed to computer use among students, with specific computer activities such as using a joystick or playing non-educational games being associated with increased physical discomfort.

Patricia Grlegel-Morris et al. investigated the frequency of postural abnormalities in healthy subjects and their association with pain. They found that postural abnormalities in the thoracic, cervical, and shoulder regions were common and were often associated with pain. Laura J. Haughie et al. examined the association between forward head posture and cervical mobility in relation to neck radiculopathy. Their findings suggested a correlation between forward head posture and reduced cervical mobility in individuals experiencing neck radiculopathy. Tina Juul et al. emphasized the significance of neck radiculopathy as a prevalent musculoskeletal disorder, highlighting its impact on work capacity and long-term disability. They stressed the need for effective interventions and reliable outcome measures for assessing treatment efficacy. M. Gap et al. proposed a nine-item survey to assess neck radiculopathy, demonstrating good repeatability and internal consistency. The survey offers a standardized measure to evaluate patients with neck radiculopathy, aiding in treatment planning and outcome assessment.

### **3. IMPACT OF LOCKDOWN MEASURES ON NECK PAIN**

During the COVID-19 pandemic, lockdown measures have dramatically altered daily routines and behaviors, leading to significant changes in the prevalence and severity of neck pain among individuals worldwide. With widespread closures

of workplaces, schools, and recreational facilities, many people have transitioned to remote work or online learning, resulting in prolonged periods of computer usage and sedentary behavior. The abrupt shift to remote work and increased reliance on computers has been accompanied by a rise in musculoskeletal complaints, including neck pain. Research indicates that extended hours spent in front of computer screens, often in suboptimal ergonomic setups, can contribute to neck strain, stiffness, and discomfort. Individuals may adopt poor posture, such as slouching or craning their necks forward, while working at makeshift home offices, exacerbating existing musculoskeletal issues or predisposing them to new ones (Gosain et al., 2022).

Moreover, the closure of gyms, sports facilities, and recreational spaces has limited opportunities for physical activity and exercise, which are essential for maintaining musculoskeletal health and reducing the risk of neck pain. Lack of access to regular exercise routines or outdoor activities may further compound the effects of prolonged sitting and computer use, leading to muscle tension, reduced flexibility, and increased susceptibility to neck pain. Additionally, the psychosocial stressors associated with the pandemic, such as fear of infection, economic uncertainty, and social isolation, can contribute to musculoskeletal symptoms, including neck pain (Gosain et al., 2022). Heightened levels of stress and anxiety may manifest as physical tension and muscle stiffness in the neck and shoulders, exacerbating pre-existing musculoskeletal conditions or triggering new episodes of pain.

Overall, the combination of increased computer usage, sedentary behavior, limited physical activity, and psychosocial stressors during the lockdown period has had a profound impact on the prevalence and severity of neck pain among individuals. Understanding these effects is crucial for developing targeted interventions and strategies to mitigate neck pain and promote musculoskeletal health during and beyond the COVID-19 pandemic. These interventions may include ergonomic assessments and adjustments for home workstations, implementation of regular breaks and stretching exercises during computer use, promotion of physical activity through online resources or virtual fitness classes, and provision of mental health support to address psychosocial stressors associated with the pandemic.

#### 4. MEASURES FOR SOCIAL AND PHYSICAL DISTANCING

Social and physical distancing measures have played a crucial role in slowing the spread of COVID-19 by reducing close contact between individuals and minimizing opportunities for viral transmission. These measures include maintaining a physical distance of at least one meter, wearing face masks in public spaces, avoiding large gatherings, and practicing good hand hygiene. The effectiveness of these measures in mitigating the spread of COVID-19 has been supported by epidemiological evidence and public health recommendations. By limiting the opportunities for the virus to spread from person to person, social and physical distancing measures have helped to flatten the curve of infection rates and prevent healthcare systems from becoming overwhelmed (World Health Organization, 2020). However, while these measures have been effective in reducing the transmission of COVID-19, they have also had significant implications for individuals' social interactions and support systems.

Many people have experienced increased feelings of loneliness, isolation, and stress because of being physically separated from friends, family, and community networks (Dubey, 2020). These changes in social dynamics can have a direct impact on individuals' experiences of neck pain. Social support plays an important role in coping with chronic pain conditions, including neck pain, and the disruption of social networks during periods of social distancing may exacerbate feelings of stress and anxiety, which can contribute to the perception of pain (Gosain et al., 2022).

**Table 1:** Social and Physical Distancing Measures

MEASURES	EFFECTIVENESS	IMPLICATIONS FOR NECK PAIN MANAGEMENT
<i>Maintaining physical distance</i>	Effective in reducing viral transmission.	Reduced social interactions and support systems may exacerbate feelings of stress and anxiety, impacting the perception of neck pain
<b>WEARING FACE MASKS</b>	Reduces the spread of respiratory droplets carrying the virus.	Prolonged mask use may lead to discomfort or strain in the neck and shoulders, contributing to musculoskeletal discomfort and neck pain
<b>AVOIDING LARGE GATHERINGS</b>	Limits opportunities for viral transmission.	Reduction in social activities may lead to feelings of isolation and loneliness, which can exacerbate stress and contribute to neck pain
<b>PRACTICING GOOD HAND HYGIENE</b>	Reduces the risk of viral transmission through contact with surfaces.	Increased awareness of hand hygiene may lead to more frequent handwashing, which can exacerbate symptoms of dry, irritated skin in the hands

The shift to remote work and virtual communication platforms may lead to changes in ergonomic setups and work environments, which can contribute to the development or exacerbation of neck pain. Poor ergonomic practices, such as

using laptops in non-ergonomic positions or sitting for prolonged periods without breaks, can increase the risk of musculoskeletal discomfort and pain.

Overall, while social and physical distancing measures have been effective in mitigating the spread of COVID-19, they have also had significant implications for individuals' social interactions, support systems, and ergonomic practices, which may impact their experiences of neck pain.

## 5. MODIFIABLE AND NON-MODIFIABLE RISK FACTORS

Neck pain is a complex and multifactorial condition influenced by a combination of modifiable and non-modifiable risk factors. Understanding these risk factors is essential for effective prevention and management of neck pain. Non-modifiable risk factors for neck pain include age, gender, and genetics (Hogg-Johnson et al., 2008). Studies have shown that neck pain becomes more prevalent with age, with older individuals more likely to experience chronic neck pain than younger individuals. Additionally, women tend to report higher rates of neck pain than men, although the reasons for this gender difference are not fully understood. Genetics also play a role in predisposing individuals to neck pain, with certain genetic factors increasing the likelihood of developing musculoskeletal disorders.

Modifiable risk factors for neck pain include smoking, exposure to tobacco, and psychological health. Smoking has been identified as a significant risk factor for neck pain, as it can contribute to poor circulation, reduced tissue oxygenation, and impaired healing processes (Hogg-Johnson et al., 2008). Similarly, exposure to tobacco smoke, whether through active smoking or second-hand smoke, has been associated with an increased risk of neck pain. Psychological factors such as stress, anxiety, and depression can also influence the development and severity of neck pain. Chronic stress and negative emotional states can lead to muscle tension, increased pain sensitivity, and altered pain processing, all of which can contribute to the experience of neck pain.

**Table 2:** Modifiable and Non-modifiable Risk Factors

<b>RISK FACTORS</b>	<b>DESCRIPTION</b>	<b>IMPACT ON NECK PAIN</b>
<b>NON-MODIFIABLE FACTORS</b>		
<b>AGE</b>	Neck pain becomes more prevalent with age	Older individuals are more likely to experience chronic neck pain
<b>GENDER</b>	Women tend to report higher rates of neck pain than men	Gender differences in pain perception and musculoskeletal structure may contribute to this disparity
<b>GENETICS</b>	Certain genetic factors increase the likelihood of developing musculoskeletal disorders	Genetic predisposition may influence an individual's susceptibility to neck pain
<b>MODIFIABLE FACTORS</b>		
<b>SMOKING</b>	Smoking is a significant risk factor for neck pain	Nicotine and other chemicals in tobacco smoke can impair circulation and tissue healing, contributing to musculoskeletal discomfort
<b>PSYCHOLOGICAL HEALTH</b>	Stress, anxiety, and depression can influence the development and severity of neck pain	Chronic stress and negative emotional states can lead to muscle tension and altered pain processing, exacerbating neck pain

During periods of lockdown and social distancing, these risk factors may interact with changes in behavior and environment to influence the prevalence and severity of neck pain (Hogg-Johnson et al., 2008; Gosain et al., 2022). For example, increased stress and anxiety related to the COVID-19 pandemic may exacerbate existing neck pain symptoms, while changes in work environments and ergonomic setups may contribute to the development of new cases of neck pain (Szeto & Straker, 2005). Overall, addressing both modifiable and non-modifiable risk factors is essential for effectively preventing and managing neck pain. This may involve implementing strategies to reduce stress (Hogg-Johnson et al., 2008), promoting healthy lifestyle behaviors, such as regular exercise and smoking cessation, and creating ergonomic work environments to minimize the risk of musculoskeletal discomfort and pain (Szeto & Straker, 2005).

## 6. MECHANICAL CAUSES OF NECK PAIN

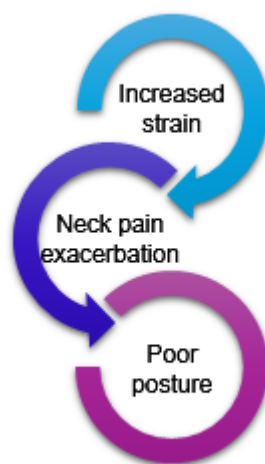
### 6.1 Poor Posture and Its Contribution to Neck Pain

Poor posture is a significant contributor to neck pain, particularly during extended periods of sitting or computer usage. When individuals maintain poor posture habits, such as forward head posture, rounded shoulders, or slouched sitting, it leads to increased strain on the cervical spine and neck muscles. For example, forward head posture places additional stress on the neck muscles as they work to support the weight of the head when it is positioned forward of the shoulders. The table 3 outlines common poor posture habits and their effects on neck musculature:

**Table 3:** Poor posture habits and bad effects on neck musculature

<b>POOR POSTURE HABIT</b>	<b>EFFECTS ON NECK MUSCULATURE</b>
Forward Head Posture	Increased strain on cervical spine and neck muscles
<b>ROUNDED SHOULDERS</b>	Tension in upper trapezius and neck muscles
<b>SLOUCHED SITTING</b>	Compression of spinal discs and increased muscle tension

### 6.2 Mechanisms of Neck Pain Exacerbation



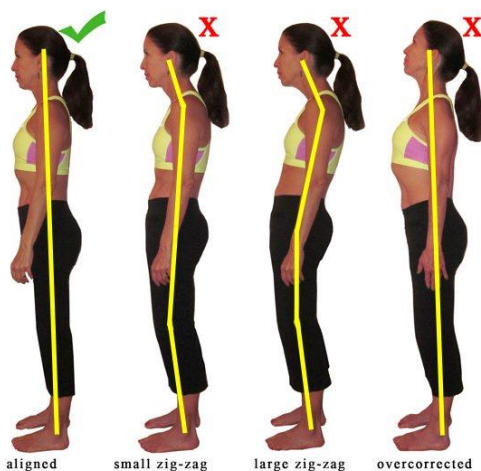
**Cycle of poor posture**

**Flowchart 1:** Poor posture cycle

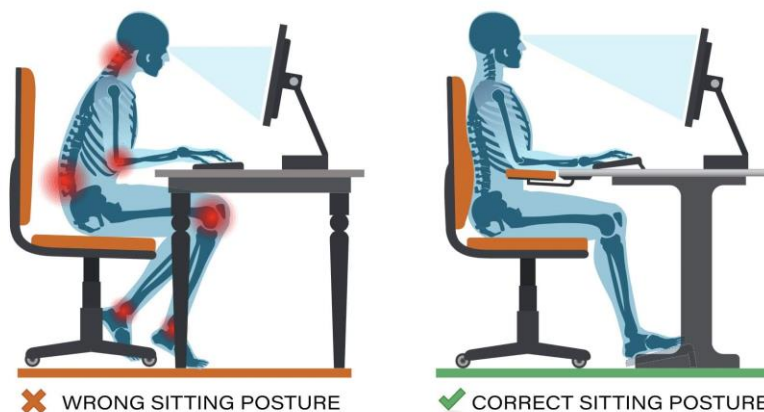
During the lockdown period, prolonged sitting and increased computer usage exacerbate these mechanical factors, further contributing to neck pain (Szeto & Straker, 2005). The cycle begins with poor posture, which leads to increased strain on the neck musculature and cervical spine (Kamwendo et al., 1991). This strain can then result in muscle tension, stiffness, and discomfort, ultimately leading to the development or worsening of neck pain.

Furthermore, the lack of ergonomic workstations at home may compound these issues, as individuals may not have proper support for maintaining correct posture. The flowchart illustrates how these factors interact to increase the prevalence of neck pain.

Poor posture imposes additional strain on the muscles and ligaments that provide support to the lower back, leading to certain muscles becoming overworked. This overexertion can trigger muscle spasms and occasionally result in muscle strains. This figure illustrates the musculoskeletal strain in different poor posture positions.

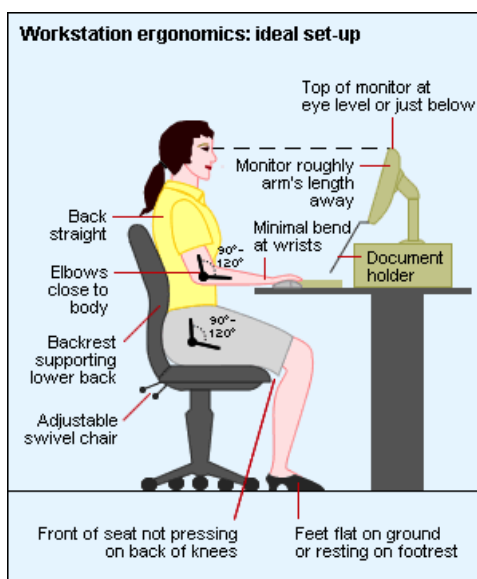


**Figure 1:** Visual representation musculoskeletal Strain in Poor Posture



**Figure 2:** Comparison of Ergonomic vs. Non-Ergonomic Workstations

This figure compares the ergonomic setup of a workstation with a non-ergonomic setup, emphasizing how proper ergonomics can reduce strain on the neck and prevent neck pain.



**Figure 3:** Ideal setup for ergonomic workstation

An ideal ergonomic workstation setup prioritizes comfort, efficiency, and injury prevention (O'Sullivan & Schmitz, 2007). This includes ensuring that the chair supports the natural curve of the spine (Kapandji, 2007), the monitor is positioned at eye level to reduce neck strain (Szeto & Straker, 2005), and the keyboard and mouse are at a height where the elbows form a 90-degree angle to minimize wrist and shoulder discomfort. Frequent breaks and proper lighting can further enhance productivity and reduce the risk of musculoskeletal issues (Carter & Banister, 1994).

### 6.3 Symptom Severity and Functional Disability

During the lockdown period, it's crucial to assess the severity of neck pain symptoms and their impact on functional disability. The table outlines common neck pain symptoms and their severity.

**Table 4:** Common neck pain symptoms and their severity

SYMPTOM	SEVERITY
NECK PAIN	Moderate
LIMITED RANGE OF MOTION	Severe
SLEEP DISTURBANCE	Mild
DIFFICULTY IN ACTIVITIES	Moderate
REDUCED PARTICIPATION	Moderate

### 6.4 Implications for Neck Pain Management

The findings underscore the importance of addressing modifiable risk factors for neck pain both during and beyond the COVID-19 pandemic. Modifiable factors such as poor posture, prolonged sitting, and inadequate ergonomic setups have been identified as significant contributors to neck pain. Healthcare providers should prioritize interventions aimed at addressing these factors to prevent the onset or exacerbation of neck pain.



- i. Promoting Ergonomic Practices: Efforts to promote ergonomic practices are essential for mitigating the impact of prolonged sitting and computer usage on neck pain (Schieber & Santello, 2004). Healthcare providers should provide guidance on optimizing workstation setups at home, including recommendations for proper chair height, monitor placement, keyboard position, and the use of supportive devices such as ergonomic chairs or adjustable desks (Szeto & Straker, 2005). Visual aids, such as infographics or instructional videos, can help individuals understand and implement ergonomic principles effectively (Carter & Banister, 1994). Additionally, employers and organizations can play a role in supporting ergonomic practices by providing resources and support for employees working remotely (Harrison, 2011).
- ii. Access to Telehealth and Virtual Physical Therapy Services: The COVID-19 pandemic has highlighted the importance of telehealth and virtual care services in delivering effective neck pain management (Aegerter et al., 2021). Telehealth platforms offer a convenient and accessible means of accessing healthcare services, including physical therapy, without the need for in-person visits (Mehta et al., 2010). Healthcare providers can conduct virtual assessments, provide tailored exercise programs, and offer guidance on self-management strategies for neck pain through telehealth platforms (Rubinstein et al., 2008). Furthermore, virtual physical therapy sessions allow individuals to receive personalized care and support from the comfort of their homes, reducing barriers to accessing treatment and improving adherence to therapy programs (Destee et al., 1989).

## 7. CONCLUSION

In conclusion, the review highlights the significant impact of the COVID-19 lockdown period on the prevalence of cervical radiculopathy and associated disability among computer professionals. The prolonged hours spent in front of computers, coupled with poor ergonomic practices and sedentary lifestyles, have exacerbated mechanical causes of neck pain, leading to increased musculoskeletal strain and discomfort. This underscores the urgent need for comprehensive ergonomic interventions and lifestyle modifications to mitigate the risk of cervical radiculopathy in this population.



Implementing ergonomic workstations, promoting regular breaks, and incorporating physical activity into daily routines are crucial strategies for preventing and managing neck pain during and beyond the pandemic. Moreover, the severity of neck pain symptoms and their impact on functional disability during the lockdown period cannot be understated. The review reveals the moderate to severe levels of neck mobility restrictions, sleep disturbances, and limitations in everyday activities experienced by computer professionals with cervical radiculopathy. These findings underscore the importance of early intervention and tailored rehabilitation programs to address symptom severity and improve functional outcomes. Telehealth and virtual physical therapy services emerge as valuable resources for delivering timely and accessible care to individuals with neck pain, especially in the context of social distancing measures. Moving forward, a multidisciplinary approach that integrates ergonomic modifications, physical therapy interventions, and psychosocial support is essential for effectively managing cervical radiculopathy and promoting the well-being of computer professionals in the post-lockdown era.

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