

Workplace Factors Associated With Neck Pain Experienced by Computer Users: A Systematic Review

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ABSTRACT

Introduction: The purpose of this systematic review was to examine literature on workplace factors associated with neck pain or symptoms in computer users performing clerical functions.

Methods: A systematic search of the Cochrane, Medline, CINAHL, and EMBASE databases was conducted for observational and experimental studies published since 2000. This review applied the case definition of The Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders.

Results: Seven hundred twenty-nine studies were identified. Seven hundred and two studies were excluded. Twenty-seven studies fulfilled inclusion criteria and were assessed for risk of bias. Cross-sectional studies were commonly at risk from nonresponse bias and lack of adequate case definitions. Experimental studies were mostly at risk of bias due to confounding and participant recruitment methods.

Conclusions: Neck pain was not significantly associated with high job demands, low skill discretion, low decision authority, or low peer support. However, when these variables were combined with increased duration of computing tasks, or ergonomic demands, they reached significance. Supervisor support was found to be the only significant buffer capable of preventing these variables reaching significance in female office workers. (*J Manipulative Physiol Ther* 2018;xx:1-22)

Key Indexing Terms: *Neck Pain; Computers; Workplace; Occupational Injuries*

INTRODUCTION

Recurrent and chronic pain is responsible for a substantial degree of absenteeism, of which low-back and neck pain are the 2 most common complaints.¹ Workplace computer users have the highest incidence of neck pain among all workers, higher than is observed in the general population.²

Neck pain is the fourth highest cause of global disability, in years living with a disability, and the 21st in overall burden, expressed in disability-adjusted life years. Disability-adjusted life years increased from 23.9 million years in 1990 to 33.6 million years in 2010. Neck pain in the Australian population ranks third for years living with a disability and 10th for disability-adjusted life years out

of 291 conditions. The prevalence among males is 4.6% (95% confidence interval [CI], 3.4-6.1) and females is 6.7% (95% CI, 4.9-9.1).³ Prevalence is also greater in higher-income countries, compared to low and middle-income countries (0.4%-86.8% [mean 26.3%] vs 0.8%-80.0% [mean 17.5%]).⁴

Annual prevalence of absenteeism from work, or the phenomenon of presenteeism (in which the worker attends the workplace but performs at a suboptimal level) due to neck pain, in office workers who use computers is unknown. Both have the potential to negatively affect productivity and increase health care and insurance burdens.

The prolonged interaction of workers with computer workstations, monitors, keyboards, and other devices may be associated with the incidence or prevalence of neck pain. The prevalence of neck pain in office workers has been accompanied by an increase in workplace interventions. However, little, if any, relief has been provided by interventions targeting workers with neck pain, and no intervention has been found to offer a sustained benefit.¹

Studies of workplace factors associated with neck pain in computer users vary widely in methodology, data handling, and reported results. The purpose of this systematic review was to examine the literature on workplace factors associated with neck pain or symptoms in computer users performing clerical functions.

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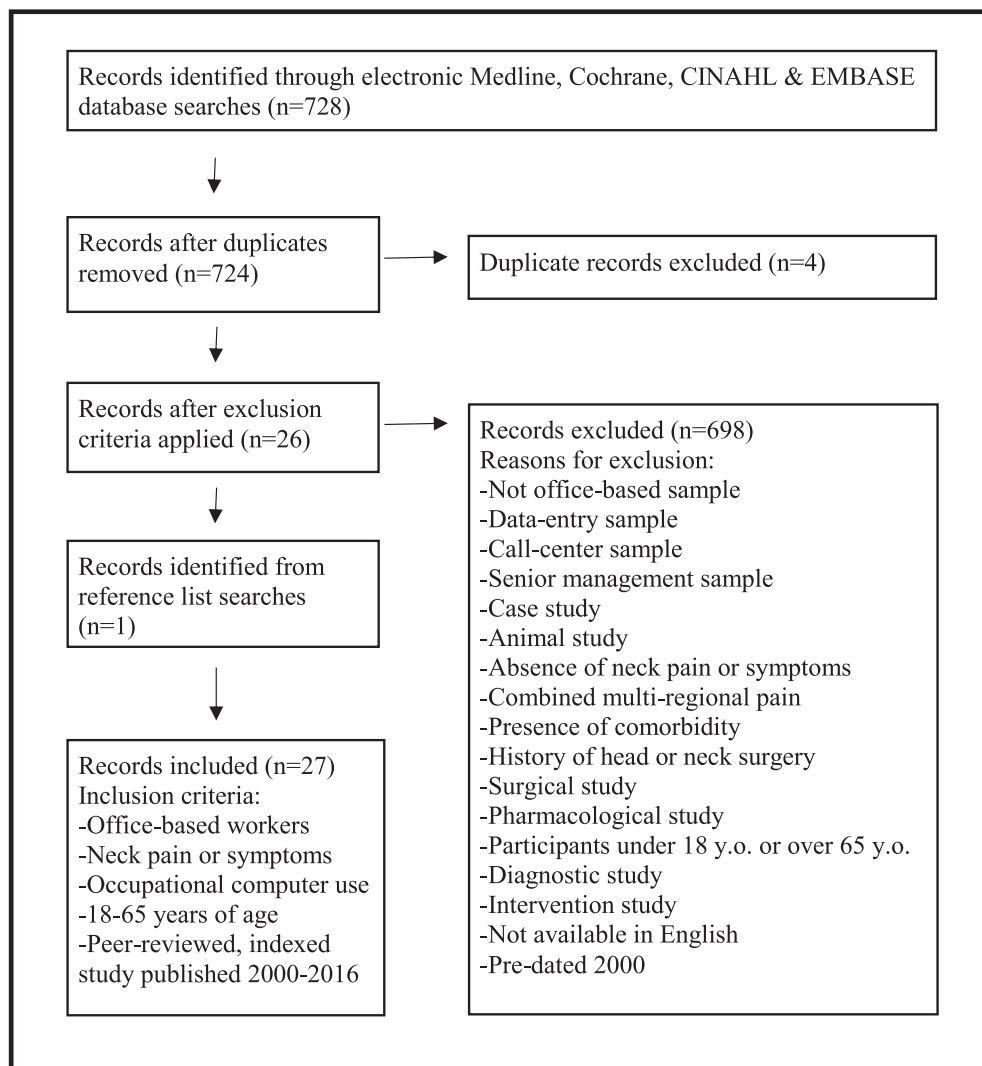


Fig 1. Flow chart of included studies.

METHODS

Great variation exists in the anatomic definitions of the neck, with many studies reporting neck pain data based upon pain from combined anatomic regions, such as the neck and shoulder. This review focused on neck pain and excluded studies that combined shoulder, upper limb, and thoracic anatomic regions with the neck.

A protocol for this review does not exist. Study designs to be included, along with inclusion and exclusion criteria, were determined before the literature search commenced. These criteria are summarized in [Figure 1](#).

Inclusion and Exclusion Criteria

An inclusion criterion was that studies had to be original research and not based upon synthesis of research, such as reviews. Observational study designs were included, such

as case-control, cross-sectional, and cohort studies, but case studies and case-series designs were excluded. Experimental study designs were also included, such as randomized, nonrandomized, controlled, uncontrolled, blinded, and unblinded studies. Length of follow-up, if conducted, was not used as an inclusion or exclusion criterion. Studies were included regardless of whether data were statistically analyzed at conclusion of the period of intervention or after a period of follow-up. Reviews, including systematic, meta-analysis, literature, and narrative, were included in the literature search, but not in this review. Case definitions varied among reviews (if provided) and among the studies cited in reviews. This resulted in a risk of bias (ROB) and potentially inaccurate reports of synthesized data. Results reported in reviews were manually traced back through the cited references to the original study. These original studies were included if they met the inclusion criteria of this

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