CONTENTS

1 NECK PAIN DISORDERS

Neck pain is common. In the main it is not a catastrophic condition, but it can have a significant impact on a person's work, recreation and quality of life. Neck pain spares no age group, gender or culture.[1] Following a first episode of neck pain, there is a high chance of repeated episodes, which may extend over a lifetime.[2] Recovery from an acute episode is frequently incomplete.[3] Neck pain is a condition characterized by recurrence, or in some cases, persistent pain. Recent findings of the Global Burden of Disease Study indicated that neck pain along with low-back pain, ranked as number one of 310 chronic medical conditions in terms of years lived with a disability. Neck pain is a problem worldwide, it ranked as number one in the majority of the 195 countries surveyed.[1] The burden of neck pain for the individual manifests not only in the symptoms and physical complaints, but in its impact on their work and social participation and the related financial, family and emotional consequences.[4]

Neck pain disorders are heterogeneous in presentation.[5] Symptom intensities range from "nuisance value" to disabling pain, as evident in some cases of whiplash-associated disorder and cervical radiculopathy. In tandem, the impact on function is variable, ranging from a negligible impact, to a particular activity or action being difficult, to activity restriction to such an extent that it limits a person's participation in activities of daily living and work. Not all people with neck pain seek treatment and many self-manage either relying on time, over-the-counter medication or self-management strategies commonly gleaned from the internet. When treatment is sought from a health practitioner, conservative management is the first line of management. Recurrence is common whether the neck disorder begins as a minor or significant pain.[6] Clinicians and researchers across public health, medical and rehabilitation fields must assume the responsibility to further develop and deploy effective preventative and management strategies to assist and empower people to reduce the incidence, recurrence and consequent burden of neck pain globally.

BASIC TENETS OF NECK PAIN

Neck pain is a symptom of various origins. Musculoskeletal causes are by far the most common, but neck pain can also be a symptom of non-musculoskeletal sources such as infection, neoplasm, vascular disorders (carotid or vertebral arterial dissection), metabolic bone disease, inflammatory, neurological and visceral diseases, causes for which a clinician must always remain vigilant. From a musculoskeletal perspective, all structures of the cervical spine are innervated so all may be a source of peripheral nociception contributing to a primary neck pain disorder. Pain from a cervical musculoskeletal disorder is typically felt in the posterior neck. Depending on the segmental source and structure, it may spread to the head, shoulder, upper thoracic region or down the arm.[7] Although cervical musculoskeletal dysfunction usually underlies neck pain, there are other presentations. Neck pain and dysfunction may be secondary or comorbid features of pain syndromes in the craniomandibular complex, the shoulder or upper limb. Alternately, the neck itself may be a site of referred

pain, rather than a pain source, as encountered in disorders such as migraine,[8] cardiac disease[9] or cervical arterial dissections.[10] Such presentations emphasize the necessity for a skilled physical examination. Clinicians need to be able to identify the presence or absence of a cervical musculoskeletal source to neck pain and, when present, if it is a primary cause, a secondary cause or comorbid problem.

Neck pain of musculoskeletal origin initially arises from a nociceptive source such as a local injury or mechanical stress or strain, from inflammation, or from injury or irritation of nerve structures, i.e., a neuropathic pain. Very simply, signals from the periphery travel to the central nervous system and are processed and modulated in various regions of the spinal cord and brain. There is much contemporary interest in sensitization and neuroplasticity at all levels of the nervous system and their possible role in persistent pain.[11] It is well recognized that pain is not merely a sensory event but a multidimensional experience with emotional reactions or psychological moderators, which all input into the plastic nervous system. Likewise, there can be social drivers and moderators in work and lifestyle that can impact on the pain experience and the neck pain disorder. The necessity for a skilled and comprehensive clinical examination is again evident to ensure a broad consideration of the patient and their neck pain disorder to inform a best practice management program.

Pain is an important consideration and patients usually seek pain relief as a primary goal of treatment. As important as pain relief may be, it is but one consideration. Pain and injury to any region of the musculoskeletal system have profound effects on the neuromuscular system. The cervical region is no exception where changes in both muscle behaviour and structure have been clearly demonstrated.[12] There is no evidence that neuromuscular function will always automatically return to normal when an episode of neck pain resolves. Indeed, there is evidence to the contrary.[13–16] The burden of neck pain to many individuals is in its recurrent or persistent nature, with numerous years lived with pain and disability. Recurrent neck pain impacts on physical health related quality of life.[17] Although pain relief is an important outcome, best practice management must also focus on decreasing the recurrence rate. Rehabilitation to restore neuromuscular function is a logical component of the management program.

Pain is not the only symptom of neck disorders. Other symptoms may include feelings of light headedness and unsteadiness, visual disturbances and cognitive difficulties such as problems concentrating.[18] The cervical spine is an important proprioceptive sensory organ. Together with input from the vestibular and ocular systems and somatosensory input from the rest of body, proprioceptive input from the neck muscles plays an important role in the control of posture, locomotion and oculomotor control. When cervical afferentation is disturbed, the mismatch in information processed in the central nervous system from all component systems is reasoned to underlie symptoms. Together with symptoms, deficits in cervical joint position and movement sense, balance, eye movement control and eye-head, trunk-head coordination are variously present. Symptoms of light headedness and unsteadiness, visual disturbances and cognitive difficulties can be functionally debilitating. Management must also focus on addressing these symptoms and sensorimotor deficits when present. There are many treatments that may help symptoms, but again, decreasing symptoms does not automatically mean the somatosensory impairment has resolved.[19] Best practice management should include specific rehabilitation of the impairments if sights are on decreasing recurrence rates as well as alleviating symptoms.

The biopsychosocial model

Neck pain disorders are multidimensional. Some 30 years ago, Waddell[20] adapted Engel's[21] biopsychosocial model for the field of psychiatry to apply it to low-back pain. Consideration of biological features in the traditional medical approach could not alone explain the disability associated with low-back pain and it was not logical to separate the person from their condition. Subsequently, the biopsychosocial model was adopted for neck pain and other musculoskeletal disorders. The biopsychosocial model, as its names implies, encourages simultaneous consideration of all potential biological, psychological and social determinants of a patient's neck pain presentation. The model accords with other frameworks such as the International Classification of Functioning, Disability and Health (ICF). It promotes consideration and assessment not only of multiple

domains, but also of the potential moderating and mediating characteristics of features within and between the different domains. The model has limitations. It does not indicate which features should be evaluated in any domain and consequently cannot inform or guide selection of interventions. It is not an interventional model.[22]

The biopsychosocial model is often depicted as three symmetrical circles suggesting "equal" contributions of biological, psychological and social domains to every person's neck pain disorder. This is an inaccurate picture. The contribution of each domain varies between patients (Fig. 1.1). Even within a patient, the contribution of each domain is likely to change throughout the course of their disorder. The model provides a philosophy underpinning a comprehensive consideration of a patient's neck pain disorder in assessment and management. Lack of appreciation of the variable contribution of each domain in the individual patient, and relative importance of each domain at initial and subsequent time points will negate or compromise patient-centred management. It leads to the erroneous belief of a "one size fits all" treatment.

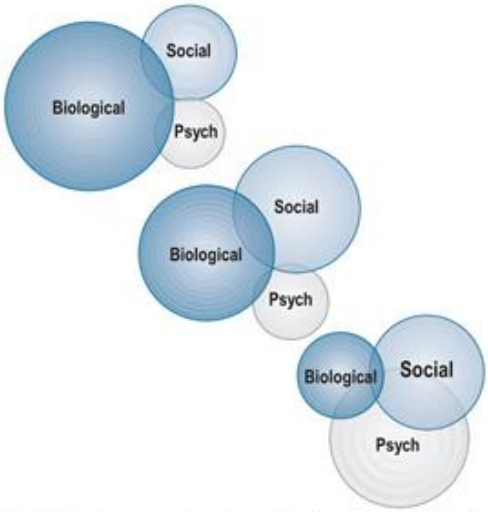

Fig. 1.1 ■ The three domains of the biopsychosocial model are fluid and will vary in their contribution between different patients and in different stages of a patient's neck pain disorder. Three examples of relative contributions of domains are presented in order of their probable frequency based on contemporary evidence.

CONTEMPORARY ISSUES

No approach whether medical, physiotherapeutic, chiropractic, psychological, educational or any alternate or complementary therapy has as yet met the idealist challenge of successful primary and secondary prevention of neck pain. Controversies continue around the management of neck pain disorders. Although conservative physical therapies are not proving the answer for all with a neck pain disorder, there are positives. The majority of individual patients gain some if not considerable relief from physical therapies. The challenges are in selecting appropriate interventions and identifying likely responders and non-responders so that inappropriate treatment is not delivered. Although not a pure science, progress is being made to meet these challenges. This text will overview and explore neck pain disorders from the basic and applied clinical sciences in a biopsychosocial context. It will overview our and others research, which is increasing the understanding of neck pain disorders and which is informing patient assessment, management and prognosis. A research informed, comprehensive management and rehabilitation approach will be presented, which will emphasize the indications for and application of individualized multimodal management and, as relevant, multidisciplinary management. However, in the first instance, some of the issues and debates in the field of neck pain disorders will be presented to stimulate thought as the reader progresses through the text.

Classification of neck pain

Classification is a popular topic in physiotherapy research and clinical practice. It is well recognized that neck pain disorders as with most musculoskeletal disorders, have great variety in their presentations. Classification aims to group similar individuals. Its main purposes are to define diseases, to help direct management or to allocate resources to provide care. There are many criteria on which neck pain has been and may be defined. It would be ideal to have one classification system that could define neck pain disorders and direct appropriate management. Towards such an ideal, it is relevant to briefly overview some of the current criteria on which