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Case Report

The Implementation of The Biopsychosocial Model on A Fear Avoidant Patient

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Abstract

Introduction: The biopsychosocial model is an essential component of modern musculoskeletal care. Knowledge of this model allows clinicians to identify psychological components of the patient's pain syndrome that may be limiting progress.

Discussion: We document the use of the biopsychosocial model in the case of a 19-year-old patient who presented with 10/10 back pain. This patient suffered from high levels of fear avoidance to movement and an overall reluctance to perform rehabilitation exercise.

Conclusion: Over the course of three visits the patient was presented with elements of the biopsychosocial model to break her fear avoidance behaviors. Use of this model was largely responsible for her final 0/10 pain reporting. Her success was attributed to this model as only a total of 10 repetitions of exercise were performed over three sessions. This allowed minimal time for any physiological or mechanical changes to take place. Such outcomes can benefit the practicing rehab practitioner in their management of the complex pain patient.

Introduction

The use of the biopsychosocial model in clinical practice has been steadily gaining popularity in recent years. However, despite its gaining popularity, many practitioners still struggle with its implementation. The goal of this paper is to show how the implementation of the biopsychosocial model and how it was used to effectively treat a young female who was exhibiting fear avoidant behavior with flexion of the spine. The biopsychosocial approach can be defined by the clinician taking in to account the biological, psychological, and social factors that may be influencing the patient's pain experience [1]. All these components play an active role in the patient's perception and presentation of their condition as they create mental hurdles they must overcome. Furthermore, fear avoidant behavior is the avoidance of a particular activity due to a real or perceived threat to one's body. This type of behavior has been shown to potentially be a better predictor for disability and chronic pain levels than pathophysiological factors [2,3]. In this paper we discuss how the use of this model benefited the patient in question. In doing so we will examine the imaging and exam findings along with the therapeutic interventions that made this case study a valuable addition to the growing evidence on the effectiveness of the biopsychosocial approach in a rehab setting.

Discussion

A 19-year-old female presents to clinic with 10/10 Spinal pain that was described to be dull and achy in nature. She explained that she has dealt with this pain for years and believes that her injury is related to being dedicated towards competitive gymnastics. Due to the association between adolescent gymnastics and spondylosis and a positive stork test, the patient was then x-rayed to rule out spondylolisthesis as a potential pain generator [4]. The x-ray report was unremarkable. The physical exam found that the patient experienced extreme discomfort only during active flexion and extension of the thoracic & lumbar spine. All other orthopedic exams were within normal limits. To finish, the patient was given two questionnaires to screen for potential psychosocial factors that may be contributing to her pain experience. The first questionnaire was the PHQ-2 (2015 edition). This questionnaire is used to screen and monitor signs of depression [5]. The patient reported that she showed little interest or pleasure in doing things for more than half the days & she that feels depressed for several days out of a two-week span. The second questionnaire that was given to the patient was a yellow flags form. The yellow flags questionnaire (YF) is designed to assess potential perpetuating factors that could generate and intensify one's pain experience [6]. The following

perpetuating factors are screened for throughout questionnaire; Fear-avoidance, catastrophizing, self-efficacy, depressive symptoms and more. The results of the questionnaire showed that the patient was high risk for chronic pain and disability. Prior to reporting to the rehabilitation center, the patient only saw minimal and non-lasting improvements during the first two weeks with full spine Chiropractic manipulation therapy and myofascial release.

Upon arrival it is protocol for each patient to be screened utilizing the selective functional movement assessment (SFMA). The SFMA screening is an assessment tool designed to identify dysfunctional movement patterns that may be influencing the participant's pain [7]. All movements were provocative to the patient, thus rendering the screening ineffective. The patient was given entry level core stabilizing exercises recommended by workings of Stuart McGill. Exercises included were Modified curl up, side bridge and the bird dog [8]. The patient was instructed to complete these exercises daily and report back to the rehabilitation center in one week's time. Upon revisitation, the patient reported that her pain levels have not improved from her initial evaluation. The patient's YF form into consideration when crafting the patient's rehabilitation plan. The patient was asked "What movements provoke your pain and why do you think that's happening". The patient explained that she was fear avoidant of flexion and extension of the lower back because she believed that there was damage in that region. She also explained that her sleep has been affected due to high levels of stress. This allowed the patient to be educated on how pain, structural damage or degeneration are poorly correlated with one another [9]. Furthermore, it was explained how one's pain experience can be influenced by biological, psychological, and social factors [10]. This was followed up by a suggestion to see a mental health counselor if she needed help managing these psychological factors. The patient appeared to be receptive and was ready for the treatment plan crafted by the rehabilitation team.

Treatment 1

The Patient was instructed to attempt to touch her toes and pause in the position that gives her the discomfort level of 6/10 on the VAS scale. Once this stage has been reached, the intern instructed the patient to use deep breathing to solicit a relaxation response and potentially reduce her levels of perceived discomfort [10]. The patient was then instructed to return to an upright position slowly once she felt she could not go any lower. She completed three repetitions in a 15-minute window. Between each repetition the intern continued to remind the patient that her spine was strong and healthy. She was able to reach just below her knees before having to return to baseline.

Treatment 2

The patient reported to her visit with a slight improvement in pain and a noticeable improvement within her willingness to move. The patient was once again asked to touch her toes but this time she will be holding two small three pounds. balls. She was instructed to follow the same protocol but once she felt like she cannot go any lower, to drop one of the balls and return to baseline. The protocol was implemented due to the patient expressing that she feels more discomfort when slowly returning to standing than when folding forward. The implementation of the balls served as variable form of graded exposure. It allowed for the patient to work with higher loads within the range of motion she felt confident in, while still accommodating the load for a range of motion that was provocative.

Treatment 3

The patient reported to her visit with noticeable improvements in her perceived pain and willingness to move. She expressed that she has been improving her sleep and stress coping behaviors. The patient was instructed to place a 40lb resistance band between her feet and to hold it to her hip while standing. She was then instructed to allow the band to pull her into the forward folded position and to slowly return to baseline against the variable resistance created by the band. The band was implemented for two reasons; 1) The patient would not be aware how much tension she was working with. 2) The elastic properties of the band supplied the ideal tension within the target range of motion. Upon completion of the protocol, the patient was able to touch the floor pain free and was excited to learn that she was working with 30+lbs more than she was working with last week. Patient reported levels 0/10 pain on subsequent visits.

Conclusion

This case study supports the growing body of evidence for implementation of the biopsychosocial approach in the rehabilitation setting. It is essential for the clinician to analyze and interpret all factors that may be influencing the patient's pain experience. In the absence of a true pain generator and the findings of reported yellow flags, the clinician must be prepared to educate and motivate their patients to address potential lifestyle factors that could be perpetuating their pain. Over the course of the three treatment days, that patient approximately completed 10 repetitions in total with submaximal loads. Thus, being a working volume that is much too low to cultivate strength or hypertrophy in an active 19-year-old female. In this context exercise was not used to enhance tensile strength nor motor recruitment. It was an intervention that allowed the patient to build confidence in a movement they were once fearful of. All while allowing the patient to be educated and to feel their concerns are genuinely heard.

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