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Factors associated with disability for low back pain based on the biopsychosocial model.
(生物心理社会モデルに基づく腰痛の障害に関連する因子の検討)

This dissertation aimed to clarify the elements influencing disability in low back pain (LBP) and emphasized the essential role of the biopsychosocial (BPS) model in comprehensive treatment for LBP. This dissertation consisted of three studies.

Study 1: The first study, a systematic review and meta-analysis, highlighted the marked effectiveness of biopsychosocial interventions over traditional methods, signaling a fundamental shift in LBP management by endorsing an approach that integrates psychological and social factors with biological considerations. The results supported the view that physical therapist-led interventions based on the BPS model were more effective than non-BPS model-based interventions in improving pain and disability.

Study 2: The second study examined how psychological factors affects disability in non-specific low back pain (NSLBP). This segment of the research focused on a robust analysis of 235 patients, segmented into acute (n= 124) and non-acute groups (n= 111). The study measured disability levels, correlating them with various factors such as pain intensity and psychosocial elements, notably pain catastrophizing, fear of movement, and pain self-efficacy. The study utilized a hierarchical multivariate regression analysis. Those significant relations to disability were pain self-efficacy ($\beta = -0.361$; $p < 0.01$), pain intensity ($\beta = 0.280$; $p < 0.01$) and pain catastrophizing ($\beta = 0.209$; $p < 0.05$) for acute group. Only pain self-efficacy having the most significant association on disability of the non- acute group ($\beta = -0.416$; $p < 0.01$). In conclusion, the factors associating with disability differed depending on the duration of the disease, and pain self-efficacy might be one of the factors associating with disability of patients with NSLBP.

Study 3: The third study investigated psychological factors in pre-surgical assessments for

LBP, exploring factors related to disability in post-surgical LBP. This exploration was anchored in a retrospective longitudinal study involving 176 participants, meticulously assessing the interplay between various preoperative factors and post-surgical disability outcomes. Data on pain intensity, disability, and a spectrum of psychosocial factors were collected pre-surgery, with follow-up assessments conducted more than a year post-surgery. The study employed a nuanced hierarchical multivariate regression analysis, with the disability as the dependent variable. This analysis was multifaceted, considering preoperative scores, participant demographics, pain scales, and a range of psychological assessments, including the Pain Catastrophizing Scale, Tampa Scale for Kinesiophobia, and Hospital Anxiety and Depression Scales. Preoperative fear of movement, quantified by the Tampa Kinesiophobia Scale, emerged as a strong predictor of postoperative disability (B = –0.107; p < 0.05). As a result of this study, the research highlighted the critical impact of preoperative psychological factors, particularly fear of movement, on postoperative outcomes.

Discussion: The findings from the three studies collectively highlight that LBP is a condition with various causes, not a uniform one. The BPS model is an effective approach in this area because of its consideration of many different factors. It allows for the integration of a wide range of factors – biological, psychological, and social – that play a crucial role in the patient's experience of pain and disability. The studies underscore the importance of not only addressing the physical aspects of LBP but also considering the psychological and social dimensions that significantly impact the patient's recovery and quality of life. This approach is especially relevant given the findings that psychological factors such as pain self-efficacy and fear of movement can have a profound influence on the outcomes of both non-surgical and surgical treatments for LBP.

Conclusion: This dissertation reveals that disability in LBP varies greatly, influenced by the condition's type and stage. It highlights the need for personalized treatment approaches, recognizing the unique challenges each patient faces. The BPS model proves effective, integrating diverse factors affecting LBP.