

The Impact of Mental Health on Postoperative Outcomes for Adolescents Undergoing Posterior Spinal Fusion for Idiopathic Scoliosis at Tertiary Care Children's Hospital in Underserved Region

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INTRODUCTION:

In recent years, the orthopaedic community has strived to better understand the impact of psychosocial variables on musculoskeletal conditions. This is in part due to the rising awareness and prevalence of psychosocial variables and their impacts, particularly within the pediatric population. In the United States alone, one in five patients aged 13-18 has experienced or are currently experiencing a mental or substance use disorder. These disorders are often influenced by factors such as anxiety, resilience, and self-esteem. Within the field of orthopaedic surgery, studies in adult patients have shown that presurgical depression or anxiety can lead to postoperative pain and new-onset mental illnesses. In this retrospective study, we seek to evaluate this association in pediatric patients with adolescent idiopathic scoliosis who underwent posterior spinal fusion (AIS-PSF) and identify correlations between preoperative mental health and postoperative well-being.

METHODS:

We analyzed the records of 258 AIS-PSF patients (mean age 14.9±2.09, 75.9% female), at the Children's Hospital at Montefiore from 2013-2019. Patients were asked to complete disease-specific surveys (SRS-30 or SRS-22) throughout their pre- and postoperative course. Survey responses were synthesized into composite scores for function, pain, self-image, mental health, and care satisfaction. Pearson bivariate correlations identified correlations between pre- and postoperative survey domains.

RESULTS:

Bivariate analyses demonstrated associations at the 0.01-significance level between: preoperative mental health and preoperative pain ($r=0.518$); preoperative mental health and 6-week postoperative mental health ($r=0.476$); 6-week postoperative mental health and 6-month postoperative mental health ($r=0.765$); and 6-month postoperative mental health and 6-month postoperative self-image ($r=0.705$). Additionally, 6-week postoperative mental health was significantly associated with 6-month postoperative pain at $p=0.05$ ($r=0.605$). Of note, it was discovered that between preoperative and 6-week postoperative assessments, 28.8% of patients had worse mental health scores (while 55.8% reported improved mental health and 12.5% reported no change) figure (1), and between preoperative and 6-month postoperative assessments, 32.3% of patients had worse mental health scores (while 55.9% reported improved mental health and 11.8% had no change) figure(2).

DISCUSSION AND CONCLUSION:

Predictive factors such as mental health status and perception of pain for postoperative outcomes have been demonstrated in the literature as key risk factors to medical treatment adherence, participation, rehabilitation, and surgical outcomes. AIS-PSF patients with low preoperative mental health scores were more likely to have worse mental health, self-image, and pain scores postoperatively. Furthermore, nearly one-third of patients reported worsened mental health following surgery. Our results support the growing literature on the interconnectedness of physical disease, mental health, and general well-being. These results will serve as a foundation from which we plan to develop a comprehensive, multidisciplinary program to identify and address psychosocial stressors faced by our patients both pre- and postoperatively, with the goal of improving long-term outcomes.

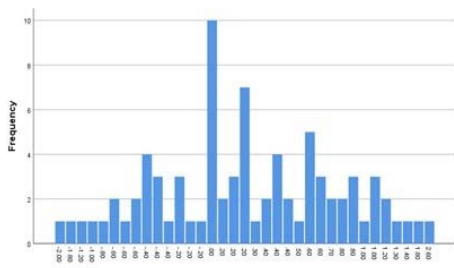


Figure1.Mental Health score difference between Preoperative and 6 months post-operative

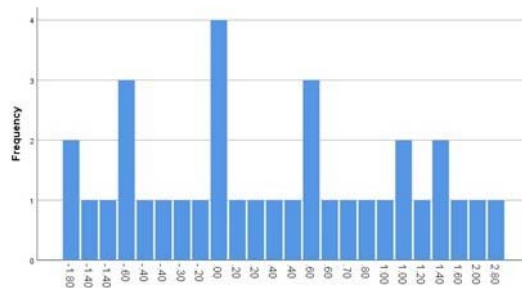


Figure2. Mental Health score difference between Preoperative and 6 months post-operative