## Psychological Distress is Common and Influences Hip Dysfunction in Young Adults: Efficient and Comprehensive Assessment with OSPRO-YF

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INTRODUCTION:

Psychological distress is extremely common in young adults. Despite the known negative impact of psychological distress on musculoskeletal dysfunction, comprehensive screening programs for mental health disorders are not commonly incorporated into orthopaedic clinical practice. A major challenge is the substantial question burden required to comprehensively assess mental health. Comprehensive evaluation of psychological distress requires specific, individual evaluations of each domain that can lead to survey fatigue. The Optimal Screening for Prediction of Referral and Outcome Yellow Flag (OSPRO-YF) is a screening tool that incorporates important psychological distress domains into a single questionnaire: negative mood (depression, anxiety, and anger), fear-avoidance (fear-avoidance beliefs, catastrophizing, kinesiophobia, and pain-anxiety), and positive affect/coping (i.e. pain self-efficacy, rehabilitation self-efficacy, and chronic pain acceptance). The OSPRO-YF has not been critically evaluated as a psychological distress screening tool in the young adult hip population.

## METHODS:

The 17-item OSPRO-YF and Patient Health Questionnaire–9 (PHQ-9) were administered to new patients aged 11–40 years old who presented to a Young Adult Hip Clinic from 1/19/2023 to 2/2/2024. The PHQ-9 is a gold standard instrument to assess for presence and severity of depressive symptoms that has established validity in adolescents and young adults. Additionally, patients completed the International Hip Outcomes Tool-11 (iHOT), a validated patient reported survey to quantify severity of hip pain and dysfunction in young adults. Demographics were collected including age, sex, body mass index (BMI), history of depression, anxiety, and post-traumatic stress disorder (PTOA), previous hip surgery, and primary hip diagnosis (hip dysplasia, hip impingement, avascular necrosis, labral tear, osteoarthritis, other/non-hip symptoms/unknown). Depression severity was classified as none (<5), mild (5-9), moderate (10-14), moderately-severe (15-19), and severe (≥20) using the PHQ-9. Psychologic distress was classified as non/mild (≤4 flags), moderate (5-8 flags), or severe (≥9 flags) using OSPRO-YF.

The presence or absence of moderate or greater depression was considered the primary outcome. Five potential risk factors, including categorical age (cutoff: 25 years), sex, BMI, hip diagnosis, and previous surgery (yes/no), were initially assessed for univariate logistic associations with the outcomes. Those showing significant or marginally significant associations were tested for collinearity and model fitness to build multivariate logistic models.

iHOT scores were compared within depression groups using the Wilcoxon rank-sum test. For yellow flag groups, patients were tested using the Kruskal-Wallis test, along with pairwise Wilcoxon rank-sum tests with Bonferroni correction. P-values less than 0.05 were considered statistically significant.

## **RESULTS**:

There were 534 new patients between the ages of 10 and 40 years old who completed surveys during the study period. The median age was 23 years (40.3% were older than 25 years) and 71.3% were female. The PHQ-9 survey found 25% without depression, 39% minimal, 22% mild, 10% moderate, 3% moderately-severe, and 2.3% severe depression. According to the OSPRO-YF, 41% were "flagged" for depression. The most common "flag" on OSPRO-YF was the Tampa Scale for kinesiophobia at 78%. The least common "flag" was the State-Trait Anger Expression Inventory at 30%.

There was a moderate correlation between PHQ-9 and the OSPRO-YF PHQ-9 (rho=0.67, p<0.001). The OSPRO-YF and PHQ-9 found similar rates of moderate or greater depression (18% vs 15% respectively).

Univariate logistic analyses revealed significant associations between age >25 and increased BMI with moderate or greater depression. In the multi-variate model, there was a statistically significant association between increased BMI and moderate or greater depression (p= 0.016).

For the group with 9 or more OSPRO yellow flags, participants aged 26- 40 years had a 1.80 times higher risk of having 9 or more yellow flags compared to those 10- 25 years old (p=0.030). Males exhibited a 0.47 times lower risk of having 9 or more yellow flags compared to females (p=0.007). Each 1 kg/m<sup>2</sup> increase in BMI was associated with a significant 1.05 times higher risk of having 9 or more yellow flags (p=0.033). Participants diagnosed with FAI showed a statistically significant 0.53 times lower risk of having 9 or more yellow flags (p=0.032).

Participants with moderate to severe depression had significantly lower iHOT scores (median (IQR) 20.0 (13-30) vs 38.0 (25.1-49.0), p<0.001). Additionally, more OSPRO yellow flags were associated with lower iHOT scores (4 or less yellow flags: 49.0 (38.0-66.3) vs 5-8 yellow flags: 32.2 (23.8-41.0) vs 9 or more yellow flags: 23.0 (14.5-33.2) (p<0.05 for all comparisons).

## DISCUSSION AND CONCLUSION:

We found that psychological distress and depression were common in the young adult hip population and that both predicted worse hip pain and dysfunction. Patients with elevated BMI were at greater risk of psychological distress and depression. Older patients, women, and non-FAI diagnosis was associated with greater psychological distress based on OSPRO-YF. Effective interventions are needed to reduce the impact of psychological distress on musculoskeletal dysfunction.