Impact of Cumulative Environmental Effects on Short-Term Outcomes for Hip Arthroscopy Patients

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Introduction: There is a limited amount of research on how environmental factors can affect outcomes after hip arthroscopy. The purpose of this study is to evaluate the cumulative impacts of environmental burden on Patient Reported Outcome Measures (PROM) and rates of achieving MCID and PASS.

Methods: Patients who underwent hip arthroscopy for symptomatic labral tears were prospectively enrolled in this study. Patients were excluded if they were < 18 years of age, had radiographic evidence of hip dysplasia (LCEa < 20°) or Tönnis grade ≥ 2, or had prior ipsilateral hip surgery. The study population was divided into EJI_{Low} (0-30%), EJI_{Mid} (30-60%), and EJI_{High} (60-100%) cohorts according to the CDC's Environment Justice Index Percentile Rank (EJI), with the EJI_{High} indicating a poor built environment. Study participants completed PROM surveys before and at 3, 6, 12, and 24 months after surgery. This study was IRB approved.

Results: 203 patients (108 male and 95 female) met the inclusion criteria and were stratified into three cohorts: EJI_{Low}(mean EJI: 18.6% ± 8.35), EJI_{Mid}(mean EJI: 43.1% ± 7.09), and EJI_{High}(mean EJI: 75.2% ± 9.87). At baseline, there were no significantly different scores (P< 0.05) in mHHS, HOS ADL, HOS SSS, NAHS, and iHOT scores across all cohorts. At 24 months, the Low cohorts reported significantly higher scores for HOS-ADL, NAHS, and iHOT when compared to the High cohorts (P > 0.05). At 24 months, the Medium cohorts reported significantly higher scores for all PROMS when compared to the High cohorts (P > 0.05). All cohorts achieved similar rates of achieving MCID and PASS thresholds at 12 and 24 months. After adjusting for BMI, sex, age, and Tönnis Grade, there were no statistical differences among all cohorts in achieving MCID and PASS thresholds at 12 and 24 months after surgery.

Discussion: Hip arthroscopy patients, regardless of their environment, reported similar preoperative baseline scores. However, at 24 months, patients in the most disadvantaged environment reported worse PROM scores when compared to low and high cohorts. Further studies with larger sample sizes could solidify these findings.

Significance/Clinical Relevance: The findings suggest that although environmental factors may not influence patient pre-operative scores, they can impact recovery after surgery. This highlights the need for targeted interventions to improve outcomes in disadvantaged populations whose recovery could be limited.