Lower Preoperative Educational Attainment is a Risk Factor for Worse Postoperative Outcomes After Hip Arthroscopy: A Longitudinal Study with Minimum 8-Year Follow-Up

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INTRODUCTION: Socioeconomic disparities have significant impacts on orthopaedic patient functional outcomes. Previous studies have shown patients with lower preoperative educational attainment (PEA) had significantly worse functional outcomes following total knee arthroplasty and surgical management of non-union fractures. However, there is limited longitudinal data examining the impact of preoperative educational attainment (PEA) on long-term post-operative functional outcomes following hip arthroscopy. The objectives of this study are (1) to evaluate the relationship between patient PEA and long-term patient reported outcome measures (PROMs) after hip arthroscopy, and (2) understand the relationship between patient PEA and sociodemographic factors.

METHODS: A retrospective cohort study was conducted involving patients who underwent hip arthroscopy at our institution from 2010 to 2018. Patients ≥18 years old with minimum 8-year follow-up PROMs undergoing primary ipsilateral hip arthroscopy for treatment of symptomatic labral tears secondary to femoroacetabular impingement were included in our study. They were divided into two cohorts based on their PEA: low PEA (high school or college education) and high PEA (graduate level or beyond education). The primary outcome measures included modified Harris Hip Score (mHHS), Non-Arthritic Hip Score (NAHS), Hip Outcome Score-Activities of Daily Living (HOS-ADL), Hip Outcome Score-Sport Specific Subscale (HOS-SSS), and International Hip Outcome Tool (iHOT). Secondary outcomes included achieving Patient Acceptable Symptom State (PASS) for PROMs. Sociodemographic data, including area deprivation index (ADI), smoking status, income level, and insurance status were collected.

A total of 164 patients met inclusion criteria, with 82 patients in the low PEA cohort and 82 patients in the high PEA cohort (Table 1). Low PEA patients had a significantly higher ADI score and lower average income level (Table 2). Compared to low PEA patients, high PEA patients demonstrated significantly higher scores for 4 out of 5 PROMs: mHHS (mean: 89.5 vs. 82.8, p=0.002), NAHS (mean: 86.7 vs. 82.5, p=0.039), HOS-ADL (mean: 90.9 vs. 87.0, p=0.030), and iHOT (mean: 77.5 vs. 69.4, p=0.021) (Table 3). Additionally, the high PEA cohort had significantly greater rates of achieving patient acceptable symptom state (PASS) for mHHS (71% vs. 51%, p=0.006) and NAHS (70% vs. 54%, p=0.021) (Table 3). Multivariate logistic regression, controlling for demographic differences, indicated high PEA patients had 2.1 times greater odds of reaching long-term PASS for mHHS compared to those with low PEA (OR: 2.09, 95% CI: 1.01-4.31, p=0.046) (Table 4).

DISCUSSION AND CONCLUSION: Patients with higher educational levels consistently reported higher PROMs. Furthermore, low PEA was an independent risk factor for reaching long-term PASS. These findings suggest the importance of considering educational and sociodemographic factors in preoperative evaluations and postoperative care plans to optimize long-term patient functional outcomes.

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|---|------------------|------------------|---------|--|------------------|------------------|-----------|-----------------------------------|---|------------------------|------------|---|--|
| Table 1. Patient Characteristics and Labral Treatment | | | | Table 2. Socioeconomic Demographic Factors | | | | Table 3. Rate of Conversion to TE | Table 3. Rate of Conversion to THA, Revision, and PROMs | | | Table 4. Multivariate Logistic Regression of PASS Achievement | |
| | LE Cabort (n=82) | HE Cohort (n=82) | P-value | | LE Cohort (n=82) | HE Cobort (n=82) | P-value | | LE Cohort (n=82) | HE Cohort (n=82) | P-value | Market Ander State Ander States | |
| Age at surgery, years | 36.8 ± 11.2 | 38.1 ± 11.03 | 0.239 | Insurance Status | | | 0.140 | Conversion to THA | 16 (19 5%) | 15 (19 20) | 0.500 | Research of the second | |
| Length of follow-up, years | 11.1 ± 2.4 | 11.2 ± 2.6 | 0.344 | | | | | Time to THA sears | 59+44 | 66+55 | 0.334 | howard and "EXTRACT Advanced Description of the second and the second and the second and the second and the second and the | |
| BMI ke/m ² | 264+43 | 25.5 + 4.0 | 0.073 | Unknown (reference) | 7 (9.5%) | 2 (2.4%) | | Revision | | | | 1000-000 | |
| Ser a (%) | | | 0.438 | Privato/Commercial | 65 (79.3%) | 70 (85.456) | | Revision Surgery, n (%) | 8 (9.8%) | 6 (7.3%) | 0.391 | 101 Mitry (Kindems) Mitry (Kindems) Mitry (Kindems) Mitry (Kindems) Mitry (Kindems) | |
| Mole | 41 (\$0.050) | 10 (47.6%) | | Government | 10 (12.25) | 10 (12.356) | | Time to Revision, years | | | | *Data are reported as mean ± standard deviation or No. of patients (%). Boldface denotes statistical significance | |
| Franc | 41 (50.0%) | 49 (69 481) | | Area Deprivation Index | 23.1 ± 16.0 | 13.9 ± 13.6 | -0.001 | PROMs | | | | (p=0.05). Abbreviations: LE, low education; HE, high education; ADI, Area Deprivation Index. | |
| - | 41 (2009)0 | 45 (22476) | | e 11 e | | | | mHHS | 82.8 ± 15.8 | 89.5 ± 12.9 | 0.002 | | |
| 1566 | | | 0.505 | Smoking Status, n (%) | | | 0.425 | NAHS | 82.5±15.2 | 86.7 ± 14.7 | 0.039 | | |
| White | 79 (96.3%) | 78 (95.1%) | | Current | 5 (6.1%) | 7 (8.5%) | | HOS-ADL | 87.0 ± 14.1 | 90.9 ± 11.7 | 0.030 | | |
| Black/African American | 0 (0.0%) | 2 (2.4%) | | Former | 16 (19.5%) | 12 (14.6%) | | HOS-SSS | 72.3 ± 27.4 | 78.8 ± 22.9 | 0.054 | | |
| Asian | 1 (1.2%) | 1 (1.2%) | | Never | 62 (74.450) | 63 (76 850) | | iHOT-33 | 69.4 ± 25.8 | 77.5 ± 22.0 | 0.021 | | |
| Other | 2 (2.4%) | 1 (1.2%) | | payar. | 02 (747474) | 03 (70.876 | | PASS mHHS, n (%) | 12 (81 290) | 68 (70 70) | 0.006 | | |
| LCEa, degrees | 35.4 ± 5.2 | 36.1 ± 6.5 | 0.221 | Employment Status | | | 0.227 | No | 40 (49.8%) | 24 (29.3%) | | | |
| Tônnia grade, n (%) | | | 0.146 | Yes | 60 (73.256) | 65 (80.2%) | | Unknown/Not Reported | 0 (0.0%) | 0 (0.0%) | | | |
| 0 | 62 (75,6%) | 67 (83,1%) | | No | 22.026.850 | 17 (19.8%) | | Yes | 44 (53.2%) | 57 (69.5%) | 0.021 | | |
| | 20 (24 450) | 15 (19.2%) | | Income Local | | | 0.007 | No | 38 (46.3%) | 24 (29.3%) | | | |
| Chandral Involument or (80) | | | 0.176 | Income Lawa | | | 4,467 | Unknown/Not Reported | 0 (0.0%) | 1 (1.2%) | 0.074 | | |
| Martine Commence (199 | 10 (14 (94)) | 0.00.000 | | >\$250,000 | 4 (5.1%) | 12 (15%) | | Yes | 62 (75.6%) | 73 (89.0%) | 0,014 | | |
| Micromiciare | 13 (13.9%) | 8 (9.6%) | | \$150,000-249,000 | 17 (21.856) | 16 (20%) | | No | 16 (8.5%) | 9 (11.0%) | | | |
| rease | 09 (84.1%) | 74 (91.256) | | \$10,000-150,000 | 14 (17.959) | 28 (35%) | | PASS HOS-SSS, n.(%) | 4 (4.9%) | 0 (0.0%) | 0.241 | | |
| Labral treatment, n (%) | | | 0.106 | 510,050,140,000 | 26.02.200 | 14 02 80 | | Yes | 38 (46.3%) | 45 (54.9%) | | | |
| Repair | 36 (43.9%) | 45 (54.9%) | | 200/00-10(00 | 20 (37.374) | 14(112)0 | | No Liebencer Net Reported | 41 (50%) | 37 (45.1%) | | | |
| Debridement | 46 (56.1%) | 37 (45.1%) | | <\$50,000 | 17 (21.850) | 10 (12.5%) | | PASS iBOT-33, n (%) | 3(3.7.4) | 0 (0.076) | 0.183 | | |
| CSI before Surgery | | | 0.065 | | | | | Yes | 31 (37.8%) | 39 (47.6%) | | | |
| Yes | 54 (65.9%) | 43 (52.4%) | | | | | | No Linknown/Not Reported | 48 (58.5%) | 43 (52,4%) 0 (0.0%) | | | |
| No | 27 (32.9%) | 37 (45.1%) | | | | | | Classific repaired | 3 (3.759) | 0 (0.070) | | | |
| Unknown/Net Reported | 1 (1.2%) | 2 (2.4%) | | | | | | | | | | | |
| CSI after Survey | | | 0.200 | | | | | | | | | | |
| Var | 20.024.490 | 14 (17,185) | | | | | | | | | | | |
| No. | (24,44) | (1,1,1,1,1) | | | | | | | | | | | |

*Dan ne reported as mean ± standard deviation or No. of patients (%), Boldface denotes statistical significance (p=0.05), Abbreviations: LE, low education; HE, high education; LCE, lateral center-edge angle; BMI, body mass