

SOCIAL DETERMINANTS OF HEALTH IMPACTS ACCESS TO CARE FOR PATIENTS WITH OSTEOCHONDRITIS DISSECANS OF THE KNEE AMONG YOUNG PATIENTS – A PROSPECTIVE MULTI-CENTER INVESTIGATION

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Background:

Reduced barriers to care is associated with more equitable health outcomes across various pediatric orthopedic sub-specialties. Limited evidence exists surrounding the impact of Social determinants of health (SDOH) in patient populations with osteochondritis dissecans of the knee (OCD-Knee), an acquired lesion of cartilage and subchondral bone. The current investigation aims to evaluate the relationship between the Child Opportunity Index – COI (a composite measure of 29 neighborhood-level indicators) and baseline clinical presentation characteristics (providers seen, pain, and patient reported outcome measures – PROMs) among young patients with OCD-Knee.

Methods:

Patients ≤ 21 years with OCD-Knee were queried from a prospective multicenter research database established by the ROCK (Research on Osteochondritis Dissecans of the Knee) study group from 2015-2023. SDOH was aggregated and categorized into five quintiles of COI ranging from very low to very high. Demographic and baseline clinical presentation characteristics were collected and analyzed using Bi-variate statistics and Multinomial regression analysis. Sub-group analyses were also performed on surgical and non-surgical cohorts.

Results:

Of 651 patients who met inclusion criteria for COI categorization, (51.5% very high; 19.5% high), 71% were in the very high/high group versus 19.2% in the low/very low (9.5% low; 9.7% very low) COI groups and 9.8% in moderate group. At bivariate analysis, COI groups differed by race ($p=0.001$), geographic region ($p=0.001$), and athletic status ($p=0.001$). Overall, a higher proportion of very high COI group patients saw ≥ 3 providers (24.5% vs 4.3%, $p=0.005$) and had a higher mean Pedi-FABS Score (18.7 vs 15.1, $p=0.023$) versus those in the very low group with no difference in pain or other PROM's across COI groups ($p>0.05$) (Table 1). In the surgical cohort, at least 25% of patients had access to ≥ 3 providers among the very high (25.8%) and high COI (37.5%) COI groups compared to very low (0%), low (53.8%) and moderate (31.3%) groups ($p=0.023$) while other presenting factors were similar ($p>0.05$). No differences were noted in presenting factors for the non-surgical cohort ($p>0.05$). Using multinomial analysis, significance by different COI groups was noted for white race, athletic status, and northeast geographical region ($p<0.05$).

Conclusion:

Our findings indicate that socioeconomic status impacts access to care among patients with OCD-Knee as evidenced by higher COI primarily comprised of white ethnicity, from the northeastern region, being athletes and having seen more providers with a slightly higher baseline function. Prior to surgery, patients with very low COI are less likely to have access to ≥ 3 providers versus the higher COI patients creating disparities in treatments for OCD-Knee.

Table 1: Overall Baseline Clinical Presentation Characteristics by Child Opportunity Index in Knee OCD lesions of Young Patients

Patient Presentation Characteristics		Statistic	Total Cases*	Child Opportunity Index (COI) Group					p	
				Very Low	Low	Moderate	High	Very High		
Providers Seen (Pre-presentation)	Number		349	23 (6.6)	29 (8.3)	38 (10.9)	67 (19.2)	192 (55)	0.005	
	0-2	n (%)	257 (73.6)	22 (95.7)	15 (51.57)	29 (76.3)	46 (68.7)	145 (75.5)		
	3+	n (%)	92 (26.4)	1 (4.3)	14 (48.3)	9 (23.7)	21 (31.3)	47 (24.5)		
Pain	Present		591	52 (8.8)	56 (9.5)	58 (9.8)	116 (19.6)	309 (52.3)	0.2	
		Yes	n (%)	445 (75.3)	39 (75.0)	49 (87.5)	40 (69.0)	88 (75.9)		
		No	n (%)	146 (24.7)	13 (25.0)	7 (12.5)	18 (31.0)	80 (25.9)		
	Duration (Months)		432	36	46	39	86	225	0.743	
		Mean (SD)	12.6 (16.5)	13.3 (20.2)	15.2 (20.2)	10 (9.8)	15.3 (20.1)	11.3 (14.2)		
		Median	6	6.5	7.5	6	7.5	6		
		Min, Max	0,120	0,108	1,96	0,48	1,120	0,108		
Patient Reported Outcome Measures	VAS Score		386	23	40	36	76	211	0.248	
		Mean (SD)	19.8 (24)	16.7 (24.6)	14 (20.6)	19.5 (24.6)	17.6 (22.6)	22.1 (24.7)		
		Median	10	0	2.5	4	5	13		
		Min, Max	0,91	0,80	0,80	0,90	0,87	0,91		
	IKDC score		515	45	46	55	99	270	0.642	
		Mean (SD)	61.1 (20.6)	60.7 (21.3)	63.8 (19.4)	59.6 (20.3)	60.1 (20.4)	61.4 (20.9)		
		Median	60.9	57.6	64.1	57.6	60.9	62.0		
		Min, Max	6.5,100	18.5,100	20.7,97.8	14.1,98.9	10.9,100	6.5,100		
	KOOS sub-score	Sports		574	49	56	56	109	304	0.208
			Mean (SD)	55.1 (30.8)	63.7 (28.9)	56.7 (28.5)	53.1 (31.4)	51.5 (30)	55.2 (31.7)	
			Median	55	65	55	47.5	50	55	
			Min, Max	0,100	0,100	0,100	0,100	0,100	0,100	
		Quality of life		583	51	56	58	111	307	0.073
			Mean (SD)	42.4 (23.9)	48.9 (25.4)	46.9 (24.1)	41.1 (22.4)	42.7 (22.6)	40.6 (24.1)	
			Median	43.8	50	50	37.5	37.5	37.5	
			Min, Max	0,100	0,100	0,91.7	0,100	0,100	0,100	
		Symptoms		581	49	56	57	112	307	0.137
			Mean (SD)	74.7 (18.9)	76.9 (19.8)	72.9 (18.8)	70.7 (19.5)	73.1 (18.6)	76 (18.7)	
			Median	75	82.1	85	71.4	75	78.6	
			Min, Max	0,100	28.6,100	17.9,100	17.9,100	17.9,100	0,100	
	Pedi-FABS Score		514	39	50	56	97	272	0.023	
		Mean (SD)	17.7 (10.4)	15.1 (10.5)	15.3 (10.5)	16.7 (10.3)	18 (10.2)	18.7 (10.4)		
		Median	22	16	17.5	18.5	22	23		
		Min, Max	0-30	0-29	0-29	0-30	0-30	0-30		
	MARS Score		17	1	-	-	6	10	0.215	
		Mean (SD)	10.8 (5.5)	-	-	-	11 (5.5)	11.8 (4.8)		
		Median	12	-	-	-	12.5	12		
Min, Max		0-16	-	-	-	1-16	3-16			

VAS: Visual analogue scale; **IKDC:** International Knee Documentation Committee; **KOOS:** Knee injury and Osteoarthritis Outcome Score; **Pedi-FABS:** Pediatric Functional Activity Brief Scale; **MARS:** Marx Activity Rating Scale

*Only patients with data were included from the total N=651.