

Poster #69

# LOWER SOCIOECONOMIC STATUS ASSOCIATED WITH INCREASED SHOULDER PAIN FOLLOWING ROTATOR CUFF REPAIR

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# DISCLOSURES

- Caleb N. Morgan, Amanda Firoved, Samuel Kim, Kyle Deivert, William Kim- Nothing to Disclose
- Justin Griffin MD- Paid presenter or speaker for Arthrex Inc.; research support for Arthrex Inc.; paid consultant for Arthrex Inc.; publishing royalties for Springer; IP royalties for Arthrex Inc.; Board or committee member for American Shoulder and Elbow Surgeons, Arthroscopy Association of North America
- Kevin Bonner MD- Paid presenter or speaker for Depuy, A Johnson & Johnson Company and LifeNet Health; Research support for Aesculap/B.Braun and Orthofix Inc.; paid consultant for Depuy, A Johnson & Johnson Company and Embody; Stock for COVR Medical and Embody; Guest Editor Fees for Wolters Kluwer Health-Lippincott Williams & Wilkins. Board of Directors: LifeNet Health, Arthroscopy Association of North America and Leigh Orthopaedic Surgery Center



# OBJECTIVES

- Socioeconomic Status (SES) has been shown to impact various health outcomes, including patient reported outcome measures (PROMs)<sup>1-5</sup>
- Limited studies have directly investigated the impact of SES on PROMs following rotator cuff repair (RCR)
- We sought to determine if any such association existed between SES and PROMs following primary arthroscopic RCR, hypothesizing individuals with lower SES would have comparatively lower PROMs



# Methods

- Retrospective study including 273 individuals who underwent primary arthroscopic RCR by two surgeons
- Minimum of 2 years post-op before survey completion
- Stratified into SES groups: Low, Moderate, and High
  - Based on Area Deprivation Index (ADI) scoring of home address
  - ADI is based on US Census data pertaining to income, housing, education, and occupation
  - Sensitive to address location at the Census Block Level, also considered “neighborhood” level.



# Methods

- Survey
  - 10-point VAS for pain, satisfaction, met expectations
  - ASES, SST for shoulder function
  - Subjective responses: surgery again, complications, achieving full recovery
  - EQ5D-5L and EQ-VAS for general health
- Statistical analysis with multivariate analysis of variance (MANOVA) followed by one-way analysis of variance (ANOVA). Chi-squared used for demographics and subjective responses.



# RESULTS

- Significantly higher VAS shoulder pain for low SES group
- No significant difference in VAS satisfaction or met expectations
- Non-significant difference in SST and ASES

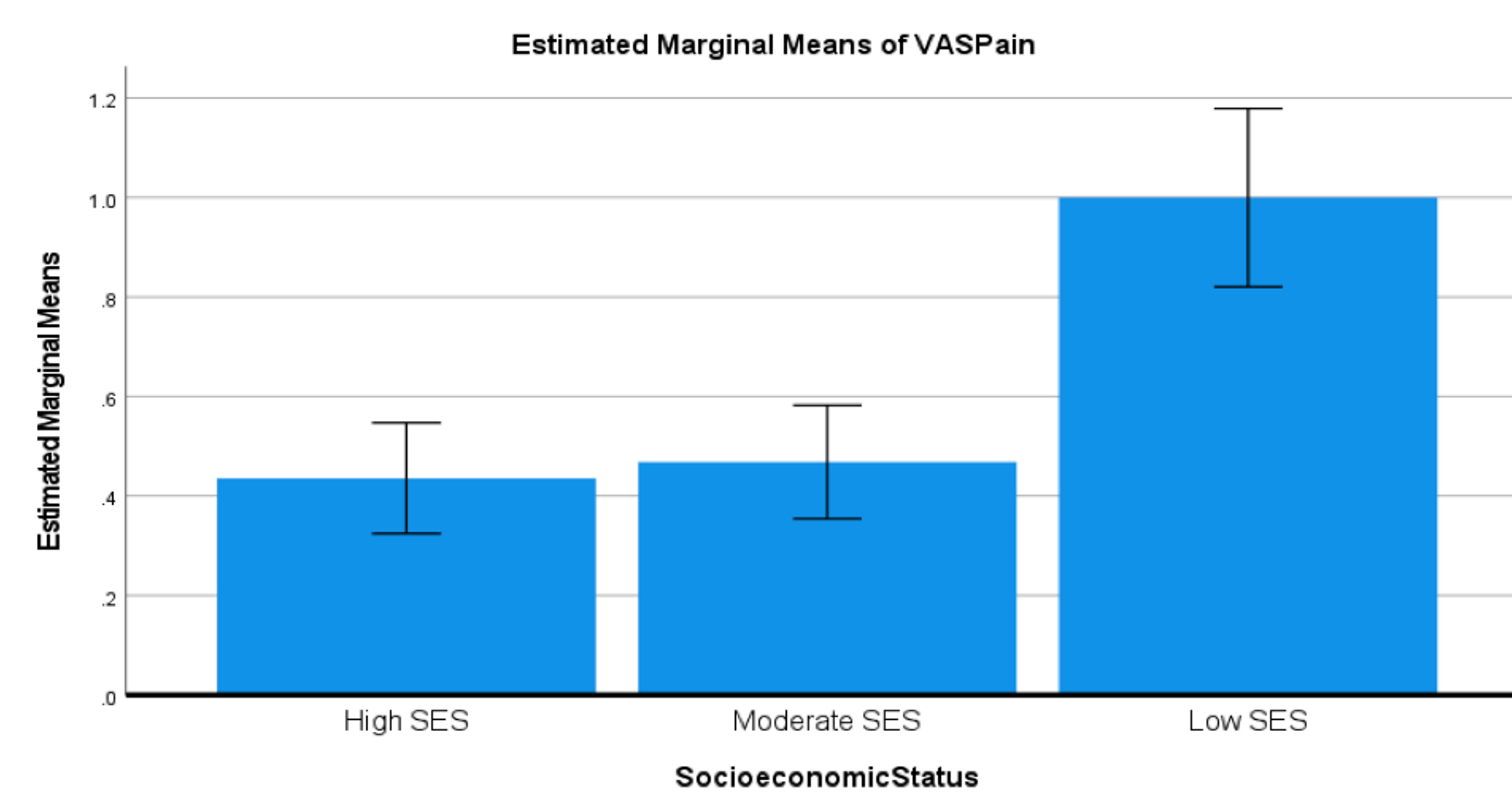


Figure 1. Mean VAS Score for shoulder pain

	High SES (n=117)	Moderate SES (n=111)	Low SES (n=45)	p-value	Pairwise Comparison p- value
Pain <sup>a</sup>	0.44± 0.093 [0.26, 0.62]	0.47± 0.122 [0.23, 0.71]	1.00± 0.216 [0.57, 1.42]	.021*	L to H: .024* L to M: .039*
Expectations <sup>a</sup>	9.28± 0.196 [8.90, 9.66]	9.43± 0.176 [9.09, 9.78]	9.16± 0.254 [8.66, 9.41]	.694	
Satisfaction <sup>a</sup>	9.37± 0.186 [9.00, 9.73]	9.40± 0.176 [9.22, 9.75]	9.24± 0.251 [8.75, 9.73]	.901	
SST <sup>b</sup>	11.21± 0.183 [10.85, 11.57]	11.10± 0.167 [10.77, 11.43]	10.42± 0.323 [9.79, 11.05]	.064	
ASES <sup>c</sup>	94.61± 1.01 [92.63, 96.59]	94.44± 1.22 [92.05, 96.83]	90.24± 2.14 [86.04, 94.44]	.105	

Table 1. Visual Analog Scale (VAS) and Shoulder Function PROMs.

<sup>a</sup>Mean visual analog scale (VAS, 0-10) ±SE, 95% CI [LL, UL] for pain, met expectations, and outcome satisfaction.

<sup>b</sup>Mean Simple Shoulder Test (SST, 0-12) ±SE, 95% CI [LL, UL].

<sup>c</sup>Mean American Shoulder and Elbow Surgeons Shoulder score (ASES, 0-100) ±SE, 95% CI [LL, UL].



# RESULTS

- Significant difference in race among the groups
  - Increased proportion of non-white participants in low and moderate groups
- Significant difference in general health scores
  - Lower EQ5D-5L and EQVAS for low SES group

	High SES (n=117)	Moderate SES (n=111)	Low SES (n=45)	p-value
Age <sup>a</sup>	62.8± 0.811 [61.2, 64.4]	62.7± 0.796 [61.1, 64.2]	62.0± 1.29 [59.5, 64.5]	.865
Gender % (n) <sup>b</sup>				
Male	53.8 (63)	55.9 (62)	48.9 (22)	.731
Female	46.2 (54)	44.1 (49)	51.1 (23)	
Race % (n) <sup>b</sup>				
White	95.7 (112)	84.7 (94)	86.7 (39)	.008*
Black	2.6 (3)	8.1 (9)	13.3 (6)	
Other	1.7 (2)	7.2 (8)	0 (0)	

Table 2. Sociodemographics: Age, Gender, Race.

<sup>a</sup>Mean age ±SE, 95% CI [LL, UL]

<sup>b</sup>Gender and race distribution. Other includes races other than White or Black.

-SES=socioeconomic status

\*Denotes significance  $p < .05$

	High SES (n=117)	Moderate SES (n=111)	Low SES (n=45)	p-value	Pairwise Comparison
EQ-5D-5L <sup>a</sup>	.902± 0.011 [.880, .924]	.858± 0.013 [.832, .884]	.828± 0.023 [.784, .870]	.003	L to H: .005* M to H: .039*
EQ-VAS <sup>b</sup>	86.32± 1.00 [84.36, 88.28]	84.87± 1.57 [81.79, 87.95]	75.82± 3.11 [69.72, 81.92]	<.001	L to H: <.001* L to M: .003*

Table 3. General health scores.

<sup>a</sup>Mean EQ-5D-5L score (0-1) ±SE, 95% CI [LL, UL]

<sup>b</sup>Mean EQ-VAS score (0-100) ±SE, 95% CI [LL, UL]

\*Denotes significance  $p < .05$ ; pairwise comparison  $p$ -value from Bonferroni post-hoc analysis.



# RESULTS

- No significant difference among groups for reported:
  - Complications
  - Achieving full recovery
  - Willingness to have the surgery again if they could go back in time

	High SES (n=117)	Moderate SES (n=111)	Low SES (n=45)	p-value
Complications %(n) <sup>a</sup>				
Yes	8.5 (10)	7.2 (8)	15.6 (7)	.250
No	91.5 (107)	92.8 (103)	84.4 (38)	
Full Recovery %(n) <sup>a</sup>				
Yes	88.9 (104)	91.9 (102)	91.1 (41)	.733
No	11.1 (13)	8.1 (9)	8.9 (4)	
Surgery Again %(n) <sup>a</sup>				
Yes	97.4 (114)	99.1 (110)	95.6 (43)	.368
No	2.6 (3)	0.9 (1)	4.4 (2)	

Table 4. Distribution of subjective PROMs.

<sup>a</sup>Patient-reported rates of complications, achieving full-recovery following surgery, and if they would have the surgery again if they could go back in time.

-SES=socioeconomic status, PROMs= patient-reported outcome measures



# CONCLUSION

- Individuals with lower SES have report increased shoulder pain following RCR
- Relatively comparable levels of satisfaction and met expectations regardless of SES
- Trend for lower shoulder function scores in low SES group, though not significant



# CONCLUSION

- Low SES group did report lower general health scores on EQ5D-5L and EQ-VAS
- This study suggest RCR is a beneficial surgery overall regardless of SES as evidenced by high satisfaction, met expectations, and willingness to have the surgery again among all groups



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