

Low Income and Non-White Race are Strongly Associated with Poorer Quality of Life for Nephrolithiasis Patients

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Background

- Kidney stones are common in the U.S. with an estimated lifetime prevalence of 8.8%.ⁱ
- Pain from kidney stones can be severe and recurrence rates are as high as 50%.ⁱⁱ
- Stone formers have been shown to have significantly lower quality of life (QOL) compared to healthy adults.^{iii,iv}
- The link between socioeconomic status (SES) and general health is known: The lower one's income and education, the greater the likelihood of disease and death.^v
- While the impact of SES on health-related QOL (HRQOL) has been shown in a variety of diseases, it has not been studied in stone formers.

Objectives

- To understand the association between SES, measured by income and occupation, and HRQOL among stone formers.
- To explore other demographic and clinical factors that may impact HRQOL in stone disease, such as race and BMI.

Methods

- Who** | Patients at 10 U.S. stone centers presenting for stone evaluation.
- What** | Participants completed WISQOL, a 28-item HRQOL survey specific for stone disease. They also provided their ZIP codes, which were used to estimate income using Census data.
- How** | Simple linear regression for univariate analyses. Mixed-effects regression, with ZIP as the random effect, for the income analysis and multivariate model.

Study Cohort

- n = 2,057
- mean age = 53 years
- 48% female
- \$56,909/year average household income
- 75% overweight/obese
- 45% had recurrent stones (2-5) and 29% had severe recurrent stones (>5)

Conclusions

- Lower income and non-White race were strongly associated with poorer kidney stone disease-specific HRQOL, even in a multivariate model accounting for demographic and clinical covariates.
- Clinical characteristics such as elevated BMI and multiple comorbidities were associated with poorer HRQOL, as was female gender. This is consistent with prior research in urolithiasis and other diseases.^{iii,iv,vi,vii}
- Income and race may be as important as clinical factors in a stone former's HRQOL.
- Our study provides a starting point to ground patient-centered care for kidney stone patients. Potential areas of study include strategies to tailor care to patients with unique socioeconomic needs, such as telehealth for follow-up and surgical planning sensitive to SES factors.

Results

Regression of socioeconomic and demographic variables on HRQOL

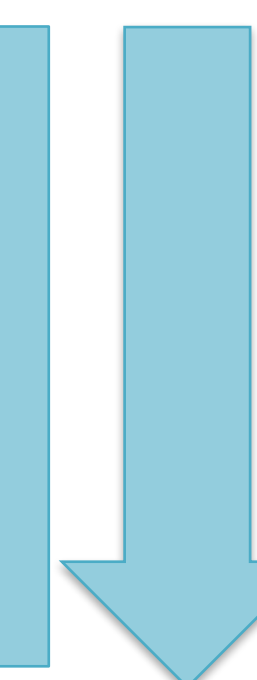
	Univariate	Multivariate
Income	Lower income ^{***}	Lower income ^{**}
Gender (Ref. = Male)	Female gender ^{***}	Female gender ^{**}
Race (Ref. = White)	Non-White race ^{***}	Non-White race ^{**}
Occupation (Ref. = Mgmt./Prof.)	Sales/Service ^{**} Manual Labor* Homemaker/Caregiver ^{***} Retired/Unemployed*	Sales/Service Manual Labor Homemaker/Caregiver Retired/Unemployed*

Variables shown are predictors of **lower** HRQOL. Asterisks indicate p-value: * < 0.05, ** < 0.01, *** < 0.001.

Other variables associated with lower HRQOL in the multivariate model include: younger age^{**}, super obese BMI^{***}, 5+ comorbidities^{**}, and >5 stone events.^{***}

Average HRQOL by domain

Social 4.1/5
Symptoms 3.7/5
Emotional 3.6/5
Vitality 3.5/5



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ⁱScales et al. *Eur. Urol.* 2012; 62: 160, ⁱⁱPearle et al. *J Urol.* 2005; 173: 848, ⁱⁱⁱPenniston et al. *J Urol.* 2007; 178: 2435, ^{iv}Bensalah et al. *J Urol.* 2008; 179: 2238, ^vBraveman et al. *Am J Public Health.* 2010; 100: 186, ^{vi}Gijsberts et al. *Open Heart.* 2015; 2: e000231, ^{vii}Hou et al. *Am. J. Crit. Care.* 2004; 13: 153