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


Background

- Kidney stones are common in the U.S. with an estimated lifetime prevalence of 8.8%.1
- 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.ii,iii,iv,v
- 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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate</th>
<th>Multivariate</th>
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</thead>
<tbody>
<tr>
<td>Income (Ref. = White)</td>
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<tr>
<td>Lower income***</td>
<td>Lower income**</td>
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<td>Gender (Ref. = Male)</td>
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<td>Female gender***</td>
<td>Female gender**</td>
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<td>Race (Ref. = White)</td>
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<tr>
<td>Non-White race***</td>
<td>Non-White race**</td>
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<tr>
<td>Occupation (Ref. = Mgmt./Prof.)</td>
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<td>Sales/Service**</td>
<td>Sales/Service</td>
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<td>Homemaker/Caregiver***</td>
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<td>Retired/Unemployed*</td>
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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