# Comorbidities affect the health-related quality of life of patients with urolithiasis: cross-sectional analysis from the North American stone quality of life consortium

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## Introduction & Objective

### INTRODUCTION

- Patients with kidney stones have decrements in their health-related quality of life (HRQOL)
- The Wisconsin Stone QOL questionnaire (WISQOL) was developed at the UW-Madison after patient focus groups and structured interviews as described previously *(Penniston & Nakada, J Urol 2013)*.
- Questionnaire items query about problems related to:
  - *Sleep & sleep quality; family life & intimacy, urinary frequency & urgency; work, travel, & social function; physical pain; and feelings about health and therapeutic preventive regimens*

### OBJECTIVE

To test the hypothesis that the presence of certain comorbidities reduces patients' stone-related quality of life

## Methods & Approval

### METHODS

- A consortium of academic urology sites across North America was assembled:
  Ohio, Pennsylvania, New Hampshire, North Carolina, Florida, Texas, California, Vancouver (Canada)
- Adult patients were recruited at a urology clinic appointment (97%) or at a surgical stone procedure (3%)
- Patients were asked to complete the questionnaire at enrollment and agree to longitudinal surveys to capture stone-related changes in HRQOL thereafter
- Relevant medical and surgical data were gathered; comparisons between those with and without stones and between other factors were made

### LOCAL IRB APPROVAL

Study sites obtained and maintained local approval. **The University of Wisconsin-Madison is the coordinating center.**

## Subjects

### SUBJECT CHARACTERISTICS

Data are from **2,344** patients (1186 M, 1158 F); enrollment ongoing

Race/ethnicity:
- White-not Hispanic (85%); White-Hispanic/Spanish/ Latino (5.2%)
- Black/ African American (3.8%); Asian (4.8%); Other/ mixed (1.2%)

Stone composition from 796 subjects:
- Contained any calcium, 92% (average amount 54%)
- Contained any calcium oxalate, 82% (average amount 76%)
- Contained any calcium phosphate, 51% (average amount 43%)
- Contained any uric acid, 13% (average amount 81%; 64% were men)
- Contained any struvite, 3% (average amount 49%; 85% were women)

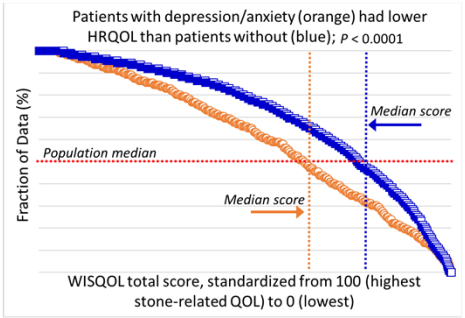
**TABLE.** *Additional patient characteristics.*

| | ALL | MEN | WOMEN |
|---|---|---|---|
| Retired or unemployed, % | 28% | 31% | 22% |
| Age at enrollment, y (min-max) | 53.4 (18-95) | 56.4 (18-93) | 51.4 (18-95) |
| Age at onset, y (min-max) | 41.6 (5-93) | 42.8 (5-93) | 40.4 (5-93) |
| Estimated number of lifetime stone events, *n* (min-max) | 7.3 (1-200+) | 8.1 (1-200+) | 6.3 (1-170) |
| Estimated number of lifetime events not including 1st time stone formers, *n* | 9.6 (median 3) | 10.5 (median 3) | 8.6 (median 3) |
| First-time stone former, % | 27% | 22% | 25% |
| Bilateral stone involvement, % | 53% | 53% | 53% |
| Family history for stones, % | 67% | 65% | 69% |
| Stone removal, ever, % | 68% | 67% | 69% |
| Passed a stone(s), ever, % | 53% | 59% | 47% |
| Body mass index, kg/m$^2$ (min-max) | 30.2 (12-74) | 30.1 (10-69) | 30.2 (12-74) |
| **Comorbidities** | | | |
| Obesity (BMI ≥30.0) | 43% | 43% | 43% |
| Hypertension | 35% | 40% | 29% |
| Dys/hyperlipidemia | 22% | 26% | 17% |
| Depression/ anxiety | 21% | 15% | 27% |
| Diabetes Type 2 | 17% | 18% | 16% |
| Gastroesopohageal reflux | 14% | 16% | 11% |
| H/o urinary tract infections | 9% | 3% | 15% |
| Gout | 5% | 9% | 1% |
| Bowel disease | 8% | 7% | 11% |
| Joint or skeletal disease | 8% | 6% | 9% |
| Hypothyroidism | 7% | 4% | 11% |
| Osteoporosis/ osteopenia | 7% | 3% | 11% |

## Results

- Patients' major comorbidities are shown (**Table**)
- Other comorbidities we assessed for had prevalence rates of <5%; these were:
  - Cystinuria
  - Diabetes Type 1
  - Diagnosis of lower urinary tract symptoms independent of kidney stones
  - History of or current pancreatitis
  - History of or current hyperparathyroidism
  - Chronic renal insufficiency or failure
  - Renal tubular acidosis
- Mean number of comorbidities per patient was 1.8 (range, 0-11)
  - Females, 1.9 (range, 0-11)
  - Males, 1.7 (range, 0-11)
- Of the comorbidities we assessed, 75% of patients had at least 1, and 50% had >1
- Overall, the number of comorbidities did not correlate with total WISQOL score (R = -0.08)
- But patients with ≥2 comorbidities had significantly lower scores than those with ≤1 comorbidity ($P$ = 0.001)
- **Having depression and/or anxiety was significantly associated with lower stone-related quality of life** (Figure)

**Figure**




- When controlling for the presence of a stone or for stone-related symptoms (i.e., symptomatic stones) at enrollment, **patients with diabetes type 2 or borderline diabetes; bowel disease; or depression and/or anxiety scored worse for HRQOL** than patients without those comorbidities ($P$ < 0.035, MANOVA)
- Patients with depression/anxiety but **not taking anti-depressive or anti-anxiety medication had lower HRQOL** compared to patients on anti-depressive or anti-anxiety medication when controlling for the presence of a stone at enrollment ($P$ = 0.014, MANOVA)
- **Having bowel disease** did not adversely influence patients' HRQOL when they had no stone(s) or symptoms **but did when patients had a stone and/or symptoms** ($P$ < 0.0001 and $P$ = 0.003, MANOVA, respectively)

## Discussion

Certain comorbidities adversely impact the health-related quality of life of patients with urolithiasis

Comorbidities associated with lower HRQOL:
- Bowel disease
- Diabetes type 2/ borderline diabetes
- Depression/anxiety

Untreated depression/anxiety further reduced stone-related QOL

**Efforts to treat or manage these comorbidities or to encourage patients to increase their own self-efficacy** may enhance patients' stone-related HRQOL and potentially improve traditional stone outcomes