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## MENOPAUSE AND ITS IMPACT ON PELVIC FLOOR DISORDERS, STRESS AND DEPRESSION

### Hypothesis / aims of study

Peri- and postmenopausal women may be affected by increased prevalence of disorders that have an adverse effect on quality of life. Pelvic floor disorders (PFD), depression, and global stress may be increased during this period. However, little is known about the impact of menopause on these entities. The aim of this study was to assess the relationship between menopause and pelvic floor function, as well as related entities such as depressive symptoms and perceived stress, using self-report validated questionnaires.

### Study design, materials and methods

A cross-sectional survey was administered to a community sample of 304 twin sister pairs. Participants completed demographics and self-report, validated questionnaires: the Utian Quality of Life (UQOL)- a menopause quality of life questionnaire, the Pelvic Floor Distress Inventory-20 (PFDI-20), Urgency Perception Scale (UPS)- a urinary urgency perception scale, the Beck Depression Inventory-II (BDI-II), short form of the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12), Modified Dysfunctional Voiding Scoring System (DVSS) for assessment of childhood voiding dysfunction, Global Assessment of Recent Stress (GARS) Scale (assessment of stress levels) and the Pain and Urgency/Frequency symptom scale (PUF) questionnaire. The UQOL scale is a validated instrument to quantify quality of life in peri- and postmenopausal women ages 45-65. It includes 23 items that reflects 4 domains: occupational, health, emotional and sexual QOL. Items are answered using a Likert-scale, with higher scores denoting better quality of life. Non-parametric Spearman correlation coefficients were calculated. UQOL total scores, along with subscale scores were correlated to scores from PFDI-20, PISQ-12, DVSS, BDI-II (scores > 13 indicative mild-to-severe depression), GARS, UPS and PUF questionnaires in women over 45. A z test was used to determine if the correlation coefficient was significantly different than zero at two-sided 0.05 level for n >30 otherwise, the Spearman test statistics was used. A correlation of 0.1, 0.3 and 0.5 is considered small, moderate and large respectively.[1] A mixed-effects model adjusting for correlations between twin pairs was applied for comparison between each group to the PISQ score.

### Results

Of 304 twin sister pairs, 31.6% (N=96) were > 45 years and comprised the study population of peri- and postmenopausal women. Mean age was 58.5 ± 8.5, 87.5% white, 57.4% BMI > 25, and 82% menopausal. There was no difference in demographics between the study group and women < 45 years, with the exception of age, BMI and employment status. After adjustment for covariates, UQOL scores (higher quality of life scores) were found to be inversely associated with perception of stress (GARS scores) in the health and emotional domains of the UQOL, respectively (Table 1). Depression was significantly inversely associated with UQOL in all domains. Women with mild to severe depression (BDI-II >13) had inversely associated total quality of life scores, r = -0.98, p < 0.019. Furthermore, women without depression (BDI-II scores of < 13) had significant higher total UQOL scores in all domains, r = -0.512, p < .0001. In women with urinary frequency, and bladder control symptoms (subscales of the UPS), an inverse association was found with total scores, and the sexual and health domains of the UQOL. Similarly, women with urinary urgency symptoms also had an inverse correlation found with the sexual domain of the UQOL and total UQOL, r = -0.383, p = 0.001 and r = -0.237, p = 0.037, respectively.

**Table 1: Adjusted Spearman correlation between Global Stress, Depression & Pelvic Floor Entities**

Self-Report Questionnaires	Spearman Correlation Coefficient				
	UQOL total score	UQOL occupational	UQOL health	UQOL emotional	UQOL sexual
<b>BDI-II Total (N=85) *</b>	<b>-0.539</b> <.0001	<b>-0.410</b> 0.0001	<b>-0.464</b> <.0001	<b>-0.393</b> <.0001	-0.216 .0625
<b>BDI-II Total (&gt;13) (N=79) *</b>	<b>-0.981</b> 0.019	<b>-0.971</b> 0.029	<b>-0.964</b> 0.036	-0.849 0.151	-0.286 0.713
<b>BDI-II Total (&lt;=13) (N=6) *</b>	<b>-0.512</b> <.0001	<b>-0.402</b> 0.0004	<b>-0.464</b> <.0001	<b>-0.393</b> 0.0005	-0.216 0.063
<b>GARS: Total score (N=85) †</b>	-0.218 0.052	0.0050 0.966	<b>-0.259</b> 0.020	<b>-0.338</b> 0.002	-0.215 0.056
<b>UPS: how often do you get a sudden urge (N=66) †</b>	<b>-0.237</b> 0.037	-0.068 0.553	-0.165 0.149	-0.103 0.371	<b>-0.383</b> 0.001
<b>UPS: how often do you get to the bathroom in time (N=66) †</b>	<b>-0.293</b> 0.010	-0.154 0.180	<b>-0.268</b> 0.018	-0.060 0.606	<b>-0.315</b> 0.005
<b>UPS: how good is your bladder control (0-10) (N=66) †</b>	<b>-0.265</b> 0.019	-0.108 0.346	<b>-0.290</b> 0.010	-0.484 0.674	<b>-0.233</b> 0.040

Correlation Coefficient is presented on first row with corresponding p value presented beneath. Significant correlations are presented in bold.

\* adjusted for age, race, hysterectomy and BMI among age >45

† adjusted for age, race, hysterectomy, BMI and depression among age >45

### Interpretation of results

Peri- and menopausal women with mild to severe depression have significantly reduced quality of life scores in nearly all aspects of life as measured by the UQOL. Other entities related to PFD, e.g., stress and bothersome urinary urgency and bladder control symptoms also remained significantly inversely associated with UQOL scores after adjustment for covariates.

### Concluding message

Reduced quality of life scores in peri-and postmenopausal women are significantly associated with bothersome urinary urgency symptoms, depression and increased levels of perceived stress. The UQOL is a useful validated tool to identify peri- and menopausal women with reduced QOL, which will facilitate treatment and ultimately, lead to improved functionality.

Future work: Use the UQOL to identify women with reduced QOL scores and improve diagnosis and treatment of specific entities impairing quality of life in this age group.

### References

1. Cohen, J. Statistical Power Analysis for the Behavioral Sciences. 2nd edition. 1988. Lawrence Erlbaum Associates, Inc., Publishers. Hillsdale, New Jersey

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<b><i>Is this a clinical trial?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Evanston Internal Review Board</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>No</b>