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Health-related Quality of Life in Midlife Women in Qatar: Relation to Arthritis and Symptoms of Joint Pain

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Abstract

Objective—The prevalence of osteoarthritis (OA) and rheumatoid arthritis (RA) has been poorly documented in the Middle East and North African region, including the State of Qatar. Given that musculoskeletal pain is commonly reported among midlife women, we evaluated the association between self-report of either OA or RA and health-related quality of life (HRQoL) among midlife women in Qatar. Additionally, HRQoL among women in Qatar was compared to that of women in the Study of Women Across the Nation (SWAN).

Methods—A cross-sectional study was conducted among 841 women 40–60 years recruited from primary-care centers in Qatar. Face-to-face interviews were conducted and included measures of self-reported OA and RA, health-related symptom experience, and HRQoL using the SF-36 health survey.

Results—Most women were obese (75.5%) and reported being bothered by aches and stiffness in joints (71.6%). Prevalence of self-reported OA and RA was 4.8% and 4.3%, respectively. OA was significantly associated with reduced physical function (adjusted OR, 2.97; p=0.003). RA was also significantly related to reduced physical function (adjusted OR, 2.94; p=0.01) as well as role physical (adjusted OR, 2.67; p=0.01). When compared to women from the SWAN, women from the current study had significantly lower mean scores for bodily pain (53.0 vs 68.9, p=0.0001) and for vitality (49.9 vs 54.8, p=0.0001).

Conclusions—Self-report of OA or RA was associated with significant disability in our sample. Since symptoms of aches and stiff joints were so frequently reported, arthritis may be under-diagnosed, especially given the high rates of obesity observed.

Keywords

Health-related quality of life; Arthritis; Menopause; Joint symptoms; Qatar

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Introduction

Changes experienced by women during midlife significantly impact their health-related quality of life (HRQol), in part by affecting their musculoskeletal health.[1] A growing body of evidence suggests that postmenopausal women may have an increased likelihood of developing certain forms of arthritis, particularly osteoarthritis (OA).[2] OA is one of the most prevalent forms of arthritis and involves chronic and progressive inflammation mostly of one joint that causes pain and stiffness and impacts a person's ability to perform activities of daily living.[3] Hip and knee joints are the most affected. Prevalence of OA increases with age, BMI, and is higher among females.[4] Another prevalent form of arthritis, rheumatoid arthritis (RA), is an autoimmune disorder that is systemic in nature and involves pain and swelling of multiple joints.[5] Reproductive hormones, along with genetic, lifestyle, and environmental factors have been associated with the development of RA.[6, 7] Damage to the joints as a result of arthritis can cause significant joint pain and impact functional disability.[5, 7] Compared to other regions of the world, the Middle East and North African (MENA) region is estimated to have some of the highest rates of OA among females compared to other areas of the world and some of the lowest rates of RA.[4, 8]

Little is known about musculoskeletal conditions in the MENA region, and few studies have been conducted in Qatar.[9–11] The Arab Gulf region has witnessed significant economic changes following the discovery of oil, which transformed lifestyle into one that is more sedentary and includes unhealthy dietary habits. Some of the highest rates of obesity have been reported in this part of the world in recent years,[12] thus predisposing its inhabitants to developing a number of diseases including arthritis. Unlike other diseases, the prevalence of both OA and RA in this region has been poorly documented, and there are no reports on the prevalence of these diseases in midlife women in Gulf countries or their influence on women's health-related quality of life (HRQoL).

Modeled on the US Study of Women's Health Across the Nation (SWAN), the Study of Women's Health in Qatar: Examining the physical, biological, psychological and social changes in women in their middle years (SWIQ) examined HRQoL among midlife women in Qatar, an oil producing country in the Arab Gulf that had an estimated prevalence of obesity among women of 55%.[12] Using data from the SWIQ, this study assesses the prevalence of OA, RA, and symptoms of aches and stiffness in joints and examines the association between self-report of either OA or RA and HRQoL. Additionally, HRQoL among midlife Arab women living in Qatar is compared to that of women in the SWAN.

Methods

Study Population

SWIQ is a two-phase, mixed methods study conducted in Doha, in the State of Qatar. Data for this study were derived from a cross-sectional study conducted from July 2011 through May 2012. Women were recruited from nine primary health centers. The health centers were selected to represent geographically, East, West, North, South and Central locations of the population in Qatar. Participants were eligible for inclusion if they were between 40 and 60 years of age, were either of Qatari nationality or other Arab National, and were either Arabic

or English speaking. Participants were excluded if they had a history of bilateral oophorectomy.[13] A total of 951 Qatari and non-Qatari women were screened to determine eligibility. Of those, 96.8% (394/407) of Qatari nationality and 90.6% (493/544) of non-Qatari nationality were found to be eligible. Only 46 women (14 of Qatari nationality and 32 of non-Qatari nationality) declined to participate in the study, yielding participation rates of 96.4% and 93.5% for Qatari and non-Qatari women, respectively. The protocol and consent form were approved by the institutional review committees at Weill Cornell Medical College-Qatar and at Hamad Medical Corporation, Qatar.

Survey Instrument

The survey instrument was developed using the existing SWAN survey as a foundation, was piloted by a trained moderator and assistant moderator, who were both culturally and linguistically matched to the focus group participants. The survey instrument was first developed in English, translated into Arabic and then back-translated into English to confirm the quality of the translation. Face-to-face interviews were conducted by specially trained female interviewers.

Measures

Health-related quality of life (HRQoL)—We assessed HRQoL using the RAND short form 36 (SF-36) health status instrument. The SF-36 is a widely used generic health survey comprised of 36 questions.[14–16] Eight subscales were calculated from the responses to the 36 questions and they are: physical function, role physical, role emotional, bodily pain, general health, vitality, social function and mental health. The physical functioning subscale assesses limitations to physical activities because of health. The role physical subscale measures interference with work or daily activities because of physical health. The role emotional subscale evaluates impact of emotional health on work or daily activities. The bodily pain subscale assesses the effect of pain intensity on work in and out of the home. The general health subscale provides an overall evaluation of health. The vitality subscale measures how full of energy the patient feels. The social functioning subscale indicates how much health interferes with social interactions. Finally, the mental health subscale assesses the person's overall emotional and psychological status.

Scores for each of the subscales range from 0 to 100, with 100 being the best health status. As previously evaluated by SWAN investigators, each subscale score was dichotomized at the 25th percentile in order to relate predictors to reduced functioning.[1, 17]

Medical History—Participants were asked to self report whether or not they suffer from any of 13 illnesses including RA and OA as separate response options. Responses were coded as yes or no for each. Self-report of arthritis has been used both in the SWAN[1] and in United States National Health and Nutrition Examination Survey.[18]

Symptom experience—To assess the presence or absence of 22 health-related symptoms, women were asked "Thinking back over the past two weeks, how often have you been bothered by any of the following?[19, 20] The severity of each symptom was assessed by reporting how often the women were bothered by the symptom on a 4-point scale, including

not at all, a little, quite a bit, and intense. Each symptom, including that of reported aches/stiffness in joints, was also given a binary categorical variable (yes/no).

Anthropometric measurements—Height and weight were measured twice by physical examination by a technician. The average of each pair of assessments was used. Body mass index (BMI) was calculated as weight (in kilograms) divided by the square of height (in meters).

Statistical Methods

Group differences were tested using chi-square test, Wilcoxon ranked-sum test, t-test, or ANOVA, as appropriate. When data were skewed, ANOVA analysis was based on the rank transformation of data. Multivariable logistic regression analyses were used to evaluate the independent associations between age, nationality, BMI, presence or absence of OA and RA, education, and being in the less than 25th percentile in each SF-36 domain. The odds ratios, 95% confidence intervals, and p values of the covariates were reported. In order to further compare SF-36 results obtained in this study to those in the SWAN, and to have the women's characteristics as comparable as possible, this analysis included only women between the ages of 42 and 52 who were either premenopausal or perimenopausal. All statistical tests were 2-sided, and $p<0.05$ was considered statistically significant. Analyses were performed using SAS version 9.2 software (SAS Institute, Inc.).

Results

The characteristics of the sample by arthritis status are presented in Table 1. The mean age of the participants with neither OA nor RA was 49.2 years and did not differ from that of women with arthritis. OA and RA were reported by 4.8% and 4.3% of women, respectively. Qatari nationality was significantly associated with OA with 70% of women with OA being of Qatari nationality compared with 30% in women of other nationalities (p=0.001). The prevalence of obesity was high in all groups, ranging from 74.6% in women with neither OA nor RA to 87.5% in women with OA. Most women (71.6%) reported being bothered by aches and stiffness in joints within the past two weeks. Half of women reported that these symptoms were either quite bothersome or intense. Women with RA reported that their pains were significantly more bothersome compared with women without OA or RA (p=0.0002).

Table 2 presents the SF-36 scores for each domain by arthritis status. Women with OA and RA had poorer scores on physical function than women without OA or RA ($p<0.0001$ and 0.0002, respectively). Those with RA also had significantly reduced functioning for role physical (p=0.001) and bodily pain (p=0.004).

Selected characteristics and SF-36 scores are compared by nationality within Qatar in Table 3. Qatari nationals had a significantly greater prevalence of OA compared to non-Qatari women (7.4% vs 2.6%, p=0.001). Women of Qatari nationality reported lower mean scores on physical function than non-Qatari women (73.3 vs 80.0, $p<0.0001$).

Table 4 shows odds ratios and 95% confidence intervals for the associations of OA and RA on reduced function, after adjusting for the effect of age, nationality, and BMI. OA was significantly related to reduced physical function (adjusted OR, 2.97; 95% CI, 1.46–6.05, p=0.003), and was moderately related to vitality (p=0.10) and role emotional (p=0.05), after adjustment. RA was also significantly related to reduced physical function (adjusted OR, 2.94; 95% CI, 1.37–6.32, p=0.01) as well as role physical (adjusted OR, 2.67; 95% CI, 1.34–5.33, p=0.01), and was moderately related to bodily pain (p=0.08). Older age, higher BMI, being of Qatari nationality, and having less than a secondary education were also significantly related to reduced physical function. Qatari nationality was significantly associated with better mental health (adjusted OR, 0.62; 95% CI, 0.44–0.89, p=0.001).

Table 5 compares the SF-36 scores by domain for women from the SWIQ who were between the ages of 42 and 52 years and those in the SWAN.[17] Most scores were lower for women in the current study where women in Qatar had significantly lower mean scores than women in the SWAN for bodily pain (53.0 vs 68.9, p=0.0001) and for vitality (49.9 vs 54.8, p=0.0001).

Discussion

This study is the first to characterize the HRQoL of midlife women in Qatar and one of a handful to describe HRQoL in the MENA region.[9] Few other studies have assessed health status in countries in the Gulf, Near East and Iran using the SF-36.[21–23] These studies have been conducted among people aged 65 years and older,[21] those with epilepsy,[22] or patients on dialysis.[23] In the multi-country study of the impact of epilepsy on quality of life, data were included from 248 people living in Qatar. Mean scores among those respondents were better on physical functioning compared to those found among individuals with or without arthritis in the current study. For bodily pain, among midlife women in the current study, mean scores were strikingly lower, indicating a poorer level of health and functioning, regardless of self-reported arthritis status.[22]

Women who reported having OA or RA in the current SWIQ were found to have lower health status on physical function while those with RA also had reduced functioning for role physical and bodily pain, compared with women who did not report having either OA or RA. In this cohort, 74.3% of women with OA or RA reported that aches or stiffness of joints were either quite a bit bothersome or intense; 48.2% of women without OA or RA also reported this degree of severity of symptoms. Women of Qatari nationality also had lower scores on physical function than women of other nationalities living in Qatar. Reporting of OA and RA continued to be significantly related to poorer physical function after controlling for the other significant predictors of age, nationality, BMI, and education.

The high rates of reporting aches/stiffness in joints is consistent with other studies on symptom frequencies among midlife women. Joint pain has been found to be among the most commonly reported symptoms among women of menopausal age in studies conducted in Australia,[24, 25] Singapore,[26] Mexico,[27] and in the comparative Decisions at Menopause Study (DAMES).[28] Although reporting of symptoms does not necessarily predict arthritic disease,[24] the low prevalence of self-reported OA and RA that is paralleled by high rates of

reporting joint pain and aches among women who did not report having arthritis may indicate that musculoskeletal diseases are undiagnosed in Qatar, especially among midlife women. This is a plausible explanation given the high prevalence of two main risk factors for arthritis, obesity and metabolic syndrome, among the population living in Qatar.

The prevalence of obesity, in particular, was extremely high among the women in this sample and may be damaging the joints and causing arthritis. A high prevalence of metabolic syndrome has also been noted among residents of Qatar because of the high prevalence of cardiovascular disease, obesity, and diabetes, which together constitute important components of this disease.[29, 30] Metabolic syndrome has been linked to developing arthritis, by inducing inflammation in the joints.[31] Midlife women, specifically, may be more vulnerable than others in Qatar since research findings suggest that hormonal changes post-menopause are associated with an increased risk of developing osteoarthritis.[2, 32] Under-reporting of musculoskeletal diseases has been recently documented in other areas of the Arab world.[9] Our findings have important public health implications, especially given the negative impact these diseases may have on health and HRQoL. They highlight the need for further investigation to allow for early diagnosis, treatment and prevention of these diseases in Qatar.

To our knowledge, this is the first study that has incorporated many of the survey items used in the SWAN and applied them in the Gulf region to enable international comparisons among midlife women on HRQoL. The finding that midlife women from the SWIQ had lower health status scores for pain and vitality than those reported from the SWAN study is interesting and sheds light on women's perception of their health status in this region of the world. This may be due to the higher prevalence of reported joint pain among women in Qatar and the accompanying fatigue, particularly in RA patients, compared to the US. The observed differences may also be related to the potential influence of cultural experiences around pain and vitality perceptions with regard to reporting;[33] however, more work is needed in this area.

This study has several limitations. Both OA and RA status were self-reported and were not clinically diagnosed and thus likely influenced the estimates of prevalence of these diseases in midlife women. Participants were recruited from primary health centers and may not be representative of the general population of women of similar ages.

A further potential limitation of the study is the small number of women who reported having either OA or RA. The study may have been underpowered to detect all significant associations between OA and RA and reduced function. However, for many of the OA and RA p-values that are less than 0.20, the confidence intervals show a trend towards an association since the CIs barely cross 1.0. These data should provide the basis on which to design larger confirmatory studies. Finally, since this was a cross-sectional study, we are limited to reporting only the association between arthritis and reduced HRQoL.

Conclusion

In conclusion, this study highlights the potential under-reporting of arthritis in midlife women who acknowledge significant amount of joint pain. The association of lower scores on physical function for women with either OA or RA and reduced functioning for role physical and bodily pain among women with RA underscore the importance of addressing these issues. Given the high and increasing rates of obesity, and its significant association with reduced physical function and bodily pain, public health concerns are warranted.

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Table 1

Participant Characteristics by Arthritis Status (Total N = 841)[≠]

	OA[*] (N=40)	RA[*] (N=36)	All Others (N=767)	OA vs All Others p-value[+]	RA vs All Others p-value[+]
Age, y, mean ± SD	50.9 ± 5.4	50.8 ± 5.2	49.2 ± 5.6	0.056	0.092
Nationality					
Qatar	28 (70.0)	20 (55.6)	333 (43.4)	0.001	0.15
Non-Qatari	12 (30.0)	16 (44.4)	434 (56.6)		
Education[◊]					
Illiterate	9 (22.5)	5 (13.9)	34 (5.9)	0.003	0.30
Primary	5 (12.5)	4 (11.1)	57 (7.4)		
Elementary	2 (5.0)	3 (8.3)	94 (12.3)		
Secondary	9 (22.5)	9 (25.0)	217 (28.3)		
University graduate& above	15 (37.5)	15 (41.7)	353 (46.1)		
BMI[◊]					
<25	0	0	29 (3.8)	0.23	0.47
25–29.9	5 (12.5)	8 (22.2)	165 (21.5)		
30–34.9	14 (35.0)	10 (27.8)	262 (34.2)		
≥ 35	21 (52.5)	18 (50.0)	310 (40.5)		
Menopause Status					
Premenopausal	11 (27.5)	6 (16.7)	180 (23.5)	0.74	0.57
Perimenopausal	14 (35.0)	14 (38.9)	325 (42.4)		
Postmenopausal	13 (32.5)	15 (41.7)	239 (31.2)		
Hysterectomy	2 (5.0)	1 (2.8)	23 (3.0)		
Aches/stiffness in Joints					
Not at all	8 (20.0)	4 (11.1)	227 (29.6)	0.07	0.0002
Little	5 (12.5)	2 (5.6)	170 (22.2)		
Quite a bit	15 (37.5)	16 (44.4)	239 (31.2)		

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	OA* (N=40)	RA* (N=36)	All Others (N=767)	OA vs All Others p-value+	RA vs All Others p-value+
Intense	12 (30.0)	14 (38.9)	131 (17.1)		

*OA = osteoarthritis, RA = Rheumatoid arthritis

≠Total N = 841, with 2 women with both RA and OA.

◊1 participant had missing education, and 1 participant had missing BMI

+p-value was reported as raw p-value without the Bonferonni correction. If considering the multiple testing, significant p-values are highlighted in yellow.

Table 2

SF-36 Scores, by Domain and Arthritis Status

	Total Raw Score (0–100)					
	OA (N=40) Mean (SD) Median(Q1–Q3)	**RA (N=36) Mean (SD) Median(Q1–Q3)**	**All Others (N=767) Mean (SD) Median(Q1–Q3)**	**OA vs RA p-value[+]**	**OA vs All Others p-value[+]**	**RA vs All others p-value[+]**
Physical Function	62.9 ± 20.5 65 (45–75)	66.4 ± 24.5 70 (47.5–87.5)	78.2 ± 17.7 85 (70–90)	0.40	<.0001	0.0002
Role Physical[*]	57.5 ± 48.8 100 (0–100)	34.7 ± 47.2 0 (0–100)	62.8 ± 47.9 100 (0–100)	0.05	0.48	0.001
Bodily Pain	53.3 ± 31.5 52(22–76)	38.3 ± 26.5 32 (22–56.5)	53.7 ± 31.0 51 (22–84)	0.04	0.93	0.004
General Health	53.8 ± 10.2 55 (47–60)	54.1 ± 10.2 55 (47–62)	53.0 ± 10.2 52 (47–60)	0.90	0.65	0.54
Vitality	46.6 ± 20.4 47.5(27.5–60)	44.0 ± 18.4 45 (30–57.5)	50.1 ± 19.9 50 (35–65)	0.57	0.29	0.08
Social Functioning[*]	77.8 ± 29.9 100(56.3–100)	74.7 ± 27.5 81.3 (62.5–100)	80.6 ± 27.2 100 (62.5–100)	0.29	0.73	0.08
Role Emotional[*]	90.0 ± 30.4 100(100–100)	81.5 ± 38.6 100 (100–100)	77.7 ± 41.2 100 (100–100)	0.35	0.05	0.57
Mental Health	61.3 ± 19.5 64 (50–76)	60.7 ± 21.4 64 (44–82)	66.1 ± 19.9 68 (52–84)	0.89	0.14	0.11

[+] p-value was calculated from post-hoc comparisons in ANOVA without correcting for multiple comparisons. If considering the multiple comparisons, the sig. p-value will be 0.05/(3 comparisons within each domain×8 domains) = 0.0021; therefore, yellow highlight were sig.

[*] since data were skewed, ANOVA analysis was based on the rank transformation of data.

Table 3

Participant Characteristics and SF-36 Scores, by Nationality

Characteristic	Qatari (N=380)	Non-Qatari (N=460)	P-value
Type of Arthritis, N (%)			
OA	28 (7.4)	12 (2.6)	0.001
RA	20 (5.3)	16 (3.5)	0.20
BMI, N (%)			
<25	13 (3.4)	16 (3.5)	0.32
25–29.9	71 (18.7)	106 (23.0)	
30–34.9	127 (33.4)	159 (34.6)	
≥ 35	169 (44.5)	179 (38.9)	
SF-36 Domain (mean ± SD)			
Physical Function	73.3 ± 20.2	80.0 ± 16.5	<.0001
Role Physical*	58.2 ± 49.0	63.8 ± 47.5	0.12
Bodily Pain	51.7 ± 31.1	54.1 ± 31.0	0.26
General Health	53.3 ± 9.6	53.0 ± 10.6	0.67
Vitality	49.7 ± 19.1	49.6 ± 20.6	0.90
Social Function*	78.9 ± 27.4	81.2 ± 27.4	0.11
Role Emotional*	79.4 ± 40.1	77.6 ± 41.3	0.56
Mental Health	66.8 ± 19.4	64.6 ± 20.5	0.11

* p-value was calculated by Wilcoxon ranked-sum test.

Table 4

Multivariable Logistic Regression of Reduced Function (<25th percentile) on SF-36 Scales

	Physical Function	Role Physical	Bodily Pain	General Health	Vitality	Social Functioning	Role Emotional	Mental Health
	P-value Odds Ratio (95% Confidence Interval)							
Age	0.01 1.05 (1.01–1.08)	0.47 0.99 (0.97–1.02)	0.85 1.00 (0.97–1.03)	0.78 1.00 (0.97–1.04)	0.67 1.01 (0.98–1.04)	0.29 1.02 (0.99–1.04)	0.23 0.98 (0.95–1.01)	0.95 1.00 (0.97–1.03)
Nationality (Ref = Non-Qatari)	0.02 1.58 (1.08–2.33)	0.23 1.20 (0.89–1.61)	0.34 1.21 (0.88–1.65)	0.22 0.81 (0.57–1.14)	0.31 0.84 (0.59–1.18)	0.53 1.11 (0.81–1.52)	0.54 0.89 (0.63–1.26)	0.001 0.62 (0.44–0.89)
BMI*	<.0001 1.07 (1.04–1.11)	0.14 1.02 (0.99–1.04)	0.002 1.04 (1.02–1.07)	0.10 0.98 (0.95–1.01)	0.13 1.02 (0.99–1.05)	0.03 1.03 (1.00–1.05)	0.02 1.03 (1.01–1.06)	0.96 1.00 (0.97–1.03)
Osteoarthritis (Ref=No)	0.003 2.97 (1.46–6.05)	0.99 1.00 (0.51–1.93)	0.84 0.93 (0.46–1.87)	0.72 1.15 (0.53–2.49)	0.10 1.79 (0.90–3.57)	0.48 1.28 (0.65–2.52)	0.05 0.35 (0.12–1.01)	0.58 1.24 (0.58–2.62)
Rheumatoid Arthritis (Ref=No)	0.01 2.94 (1.37–6.32)	0.01 2.67 (1.34–5.33)	0.08 1.84 (0.92–3.65)	0.51 0.74 (0.30–1.82)	0.14 1.72 (0.83–3.54)	0.13 1.70 (0.85–3.40)	0.67 0.83 (0.36–1.95)	0.22 1.59 (0.76–3.32)
Education (Ref=Univ and above)								
< secondary	<.0001 3.49 (2.23–5.45)	0.21 1.26 (0.88–1.80)	0.02 1.56 (1.07–2.27)	0.06 1.50 (0.98–2.30)	0.01 1.70 (1.13–2.57)	0.05 1.45 (0.99–2.10)	0.01 1.70 (1.12–2.60)	0.04 1.56 (1.02–2.38)
secondary	0.06 1.60 (0.99–2.61)	0.97 1.01 (0.71–1.42)	0.49 1.14 (0.79–1.64)	0.26 1.26 (0.84–1.88)	0.21 1.30 (0.87–1.93)	0.56 0.89 (0.61–1.30)	0.02 1.62 (1.09–2.40)	0.04 1.49 (1.01–2.20)

* 1 participant missing BMI data, *1 participant missing education

Table 5

Comparison of HRQoL measures between SWIQ and SWAN

SF-36 Domain	SWIQ* Mean±SD 25th percentile, Median, 75th Percentile	SWAN+ Mean±SD 25th percentile, Median, 75th Percentile
Role physical	60.3 ± 48.3 0, 100, 100	74.9 ± 36.8 50, 100, 100
Bodily pain	53.0 ± 30.9# 22, 51, 84	68.9 ± 22.5 51, 72, 84
Vitality	49.9 ± 20.1# 35, 50, 65	54.8 ± 20.5 40, 60, 70
Social functioning	80.4 ± 27.1 62.5, 100, 100	80.0 ± 22.4 62.5, 87.5, 100
Role emotional	76.7 ± 41.9 100, 100, 100	76.9 ± 36.4 66.7, 100, 100

*SWIQ subsample (N=440) includes women between 42 and 52 years of age who are either premenopausal or perimenopausal.

+from Avis et al, 2003

#p <0.0001 compared with SWAN sample by t-test; other domains could not be statistically compared because the scores were skewed with many respondents scoring 100.