Menopausal Symptoms and its relationship with Quality of Life among women in Lower and Upper Egypt

Sahar Fahmy Gawad [1] **& Hend Salah Eldin Mohamed** [2]

[1]*lecturer of Obstetrics & Gynecology Nursing- Faculty of Nursing- South Valley University (Kena),*[2]*Assistant prof. of Obstetrics and Gynecology Nursing- Faculty of Nursing -Zgazig University.*

Abstract:

Background: Menopause is normal transition associated with aging and loss of fertility. Women during menopause experience biological, psychological, social and cultural changes. Hormonal changes of menopause may induce numerous physical and psychological symptoms. **Aim of the study**: To investigate menopausal symptoms and its relationship to quality of life (QOL) among menopausal women attending two university hospitals in Upper and Lower Egypt.)**. Setting:** The study was conducted at gynecological outpatients clinics of Qena University Hospital, South Valley University at Qena city (Upper Egypt province) and Benha University Hospital, Benha University at Benha City (Lower Egypt province) **Subjects:** The study included 500 women had stopped menstrual cycle since 12 months. **Tools:** The data were collected by using (MRS) Menopausal Rating Scale (MRS) and (QOL) the World Health Organization quality of life brief questionnaire. **Results:** Lower Egypt women got menopause significantly earlier with significantly longer duration of menopause.. Among LE women, mean total MRS score was significantly higher and mean total QOL score was significantly lower compared to UE women. Total MRS and QOL scores in and in LE women showed a negative significant correlation, while in UE women the relation was negative non-significant. QOL evaluation showed a significantly higher number of women among good and very good scores in UE compared to LE group. Majority of women indicated moderate effect of menopause on their physical health with significantly higher frequency of UE women among lower scores. About, 39.2% of LE women, while 20.4% in UE indicated moderate effect of menopause on their psychological health with significantly higher frequency of UE women among less effect score. **Conclusion**: Menopause adversely affected QOL of women. This effect was more manifested in LE than in UE women. **Recommendation**: Provision of professional services for post-menopausal women in Upper Egypt is necessary.

Keywords: Menopause; Quality of Life (QOL); Upper Egypt (UE); Lower Egypt(LE)

Introduction:

With the increase in the life expectancy, a woman spends almost a third of her life in menopause. Menopause is a normal degenerative transition associated with aging and loss of fertility. The transition from the reproductive to the non-reproductive stage is the result of a reduction in the female hormonal production by the ovaries. This transition is normally not sudden or abrupt, it tends to occur over a period of years as a natural consequence of aging [1, 2].

The mean age of menopause in Egypt was 46.7 years, which is low compared to many countries, but this age has been rising in the past few years in the west [3]

Women during menopause experience not only biological changes but also social and cultural changes. However, for some women, the accompanying signs and effects that can occur during the menopause transition years can significantly disrupt their daily activities and their sense of well-being. Numerous physical and psychological symptoms

have been attributed to the hormonal changes of menopause. The overall health and well-being of middle-aged women have become a major public health concern around the world. More than 80% of the women experience physical or psychological symptoms in the years when they approach menopause, with various distress and disturbances in their lives, leading to a decrease in the quality of life [3-5]

However, physical and mental symptoms during menopause may be different between countries, a fact which indicate an impact of locality of residence and its associated believes and methods of knowledge obtaining on the effect of each of menopausal symptoms on women's quality of life. Chinese women report significantly lower psychosomatic and vasomotor symptoms during menopause than Caucasian and African-American and Chinese menopausal women have half the risk of depressive symptoms as white women. [6, 7]

Several studies reported the experience of menopausal women from different parts of the world and the significant impact of these symptoms on the QoL of menopausal women at different status of menopause.[9] The World Health Organization[7,8] defines QoL as an individual s perception of their position in life in the context of the culture and the value system in which they life and in relation to their goal ,expectation ,standards and concerns can be applied to menopausal women

Significance of study:
Menopausal women usually have physical and psychological symptoms during menopause may be different, which may affect their quality of life.[3] Menopausal women require special attention to identify their health needs to provide competent care especially in Lower Egypt.

Aim of study:
The current study aimed to identify menopausal symptoms and its relationship to quality of life (QOL) among menopausal women attending two university hospitals in Upper (UE) and Lower Egypt (LE).

Research questions:
- What are the most frequently reported menopausal symptoms (MS) perceived by both group of women in upper and Lower Egypt
- Are resident differences in women's self-reported menopausal symptoms (MS) affecting their quality of life?

Subjects and Methods:
Research design:
A descriptive comparative study design was used.
Setting:
The study was conducted at the gynecological outpatients clinics of Qena University Hospital, South Valley University at Qena city (Upper Egypt province) and Benha University Hospital, Benha University at Benha City (Lower Egypt province); both hospitals provide free services for all cases from rural and urban areas
Subjects:
A purposive sample of 500 women were recruited by utilization of non probability sampling technique .It included all women attending out patient and in patient gynecological department of the previously mentioned setting and who were fulfilling the inclusion criteria over 8 months of data collection.
Sample size:
The sample size was estimated according to the following equation:
Allocation of each hospital =
Sample size x n (women number)

N
Were Sample size = 500, (n) number of menopausal women in each hospital

=976, (N) the total number of menopausal women of both hospital=1952

Inclusion criteria:

The studied women recruited according to the following inclusion criteria, Age more than 45 years, stopped menstrual cycle since 12 months. No ovarctomy or hysterectomy .Willing to participate in the study.

Study tools:

A structured questionnaire sheet was prepared by the researchers including three parts:

- **First part** is pertaining Socio-demographic, obstetrics and gynecological characteristics of studied women. Socio-demographic data including: residence; either in rural or urban locality and age.
- ✓ Current marital status, level of education, and current employment status were recorded.
- ✓ Menstrual history data including age of menarche, description of menstrual period as regards; frequency, duration and regularity.
- ✓ Obstetric data included number of pregnancies and its outcome, number of living offspring.
- **Second part: Menopausal Rating Scale (MRS):** The MRS consists of 11 items assessing menopausal symptom, divided to three subscales: Somatic subscale includes hot flushes, heart discomfort, sleep problems, muscle and joint problems. Psychological subscale includes depression, irritability, anxiety, and physical and mental exhaustion. Urogenital subscale includes sexual problems, bladder problems and dryness of vagina. Each item was graded on 5-point scale with 0: not present, 1: mild, 2: moderate, 3: severe and 4: very severe. [9] For recent study the MRS English versio Menopausal data including duration of

menopause defined as the duration since last menstrual period (LMP), age at which menopause started and whether diagnosis of menopause was made by physician or not. Postmenopausal women who attained menopause ≤5 years were classified as the early post-menopausal group, while those who had attained menopause >5 years were classified as the late postmenopausal group. All women were asked to comment on meaning of menopause and effects in their opinion.was translated into local language in order to facilitate analysis and interpretation of the results.

Scoring system:

Total score in each area were 56.Those who obtained scores less than 11 were considered to have no symptoms, 12-35 were mild symptoms and more than 36 were considered to have sever symptoms.

- **Third part: Health-related quality of life assessment using the World Health Organization quality of life (WHOQOL) brief questionnaire in Urdu version** [10]: The brief WHOQOL questionnaire consists of 26 items included in 4 main domains: Physical, Psychological, Social and Environmental domains. Each item was evaluated using 5-point scale ranging from 1: never, or not at all to 5: extremely.

Scoring system:

Total score of each domain were 130. The higher score indicating good quality of life, a lower score indicating a poor quality of life and high effect of menpousal symptoms on quality of life .Those women who obtained a score less than 65 were considered poor quality of life. From 65-<91 were considered average quality of life , and more than 91 were considered good

quality of life Higher scores indicate good QOL, while lower score indicated poor QOL.

Overall total scores of MRS and WHOQOL were compared between both study groups of women. The correlation between both scores was assessed for the total study population to assess the relationship between menopause and QOL and for each group individually to assess the effect of residence on such relationship.

Content validity and reliability:

The reliability of the MRS questionnaire was approved by several previous studies wherein**.** [11] evaluated menopause-associated disorders and fertile life span in women with celiac disease using MRS, [12] used MRS for evaluation of menopausal symptoms in 400 community-dwelling elderly women aged >65 years recruited from 6 geriatric social clubs in Cairo The internal structure of the MRS across countries was similar to conclude that the scale really measures the same phenomenon in symptomatic women. The sub-scores and total score correlations were high (0.7-0.9) but lower among the sub-scales (0.5-0.7). [10]

The validity and reliability of the WHOQOL brief questionnaire: the psychometric properties of the WHOQOL brief questionnaire were analyzed using cross-sectional data obtained from a survey of adults carried out in 23 countries (n = 11,830). Analyses of internal consistency, item-total correlations, discriminant validity and construct validity through confirmatory factor analysis, indicate that the WHOQOL-BREF has good to excellent psychometric properties of reliability and performs well in preliminary tests of validity. These results indicate that overall, the WHOQOL-BREF is a sound, cross-culturally valid assessment of QOL, as reflected by its

four domains: physical, psychological, social and environment. [12]

Pilot study:

It was carried on 10% of the subject to test applicability and clarity of the tool and to estimate the time required completing the questionnaire sheet .Based on the finding of the pilot study ,few words and statements were rephrased and reconstructed.

Field work:

The study was conducted during the period of 6 months from December 2013 to June 2014. Each woman was interviewed individually using a previously mentioned sheet. The time for each interview ranged 30-45 minutes. The first researcher collect the data from Upper Egypt and the second researcher collect the data from the Lower Egypt. Each researcher attended the hospital 4 days per week (two days for each unit) to collect the data from 9am to 12 am in outpatient and from 10-4 pm in patient.

Administrative and ethical considerations:

An official permission to conduct the study was obtained by the researcher from the head of the gynecological department from both hospitals. The inclusion in the study was voluntary and information about the aim of the study was explained in a local language to participants .Informed consent was obtained from the participant women. All women were informed that they were be free to withdraw from the study .They assured that the information obtained will be confidential and used for the research only.

Statistical analysis:

Obtained data were presented as mean±SD, ranges, numbers and ratios. Results were analyzed using Wilcoxon; ranked test for unrelated data (Z-test) and Chi-square test (X2 test). Possible relationships were investigated using

Pearson linear regression. Statistical analysis was conducted using the SPSS (Version 15, 2006) for Windows statistical package. P value <0.05 was considered statistically significant.

Results:

Table (1): The study included 500 women; 250 women were collected at Qena University Hospital (Upper Egypt group; UE group) and another 250 at Benha University Hospital (Lower Egypt group; LE group). Out of enrolled women 275 were from rural areas, while 225 women were from urban areas with non-significantly (p>0.05) higher frequency of rural women among UE group compared to LE group. Women of UE group were non-significantly (p>0.05) older than those of LE group. The majority of enrolled women (n=390; 78%) were still married, 54 women (10.8%) were widow, 56 women (11.2%) were divorced with non-significant (p>0.05) difference between both groups. The frequency of educated women was significantly (p<0.05) higher among LE group, while the frequency of farmers was significantly (p<0.05) higher among women of UE group.

Table (2): Interestingly, women of LE group were significantly (p<0.05) obese with significantly (p<0.05) higher body weight and BMI and frequency among overweight and obese strata compared to women of UE who significantly (p<0.05) taller than those of LE.

Table (3): Despite the non-significantly (p>0.05) higher age of menarche in LE group, UE women showed significantly (p<0.05) higher frequency among those had younger age of menarche. Concerning period descriptive data, there was non-significant (p>0.05) difference among studied women. Mean number of pregnancy times and number of living offspring was significantly (p<0.05) higher in UE group compared to LE

group with significantly (p<0.05) higher frequency of women had high pregnancy times and more living offspring among UE women. On contrary, the number of neonatal and/or childhood deaths was significantly (p<0.05) lower in LE group compared to UE group.

Table (4): One hundred and seventy-two women (34.4%) had medical problems with non-significant (p>0.05) difference between studied groups as regards the frequency of presence of medical problems. The frequency of women had >1 medical problem was significantly (p<0.05) higher in LE women compared to those of UE. The frequency of medical problems categorized according to its type was non-significantly (p>0.05) higher among LE women with diabetes mellitus and joint pain were the most frequent problems in both groups.

Table (5): As regards age of menopause, LE women got menopause significantly (p<0.05) earlier compared to UE women with significantly (p<0.05) higher frequency of LE women among earlier age strata. Duration of menopause was significantly (p<0.05) longer in LE women compared to UE women despite the non-significantly (p>0.05) higher frequency of women among earlier menopause. The frequency of women had diagnosis by medical professional was significantly (p<0.05) higher among LE women compared to UE women. The majority of UE women consider menopause as either the end of reproduction (37.2%) or as the end of feminine practice (27.2%), while about 37% of LE women consider it as just stoppage of period and 31.2 % consider it as end of reproduction, but only 14.4% consider it as end of feminine practice with significant difference between both groups regarding the meaning of menopause (X^2=3.175, p<0.05). About

50% of studied women got their knowledge from their relatives or friends, 21.6% got their knowledge from radio and TV, while the remaining through reading books, journals or exploring websites with significantly higher frequency of those getting knowledge through reading or exploring websites in LE compared to UE group (X^2=3.112, p<0.05). Opinion about this age period was varied but considering it as age to get free of period problems was the most frequent opinion (30%), followed by to get free of the possibility of getting pregnant (19.6%), but 14.4% of UE women consider it as the age of end of sexual life compared to only 4% in LE group with significant (X^2=6.15, p<0.05) difference in favor of LE group.

Table (6): On menopause rating scale (MRS), women of UE showed significantly (p<0.05) lower frequency of hot flushes, sleep problems, depressive mood, irritability, anxiety, physical and urological problems and complaining of dryness of vagina compared to LE women. However, the frequency of heart discomfort, joint and muscular complaints and sexual problems were non-significantly (p>0.05) lower among UE women compared to LE women. Overall, the scoring of the majority of UE women was in range of mild to moderate, while was in range of mild to severe in LE women and those had very severe complaint were mostly in LE group

Figure (1): Mean total MRS score of LE women (15±4.3) was significantly (p<0.05) higher compared to UE women (11.1±4.7).

Figure (2): Overall QOL evaluation showed a significantly higher number of women among good and very good scores in UE compared to women of LE. The majority of studied women indicated moderate effect of menopause on their physical

health with significantly higher frequency of women among lower effect scores in UE group compared to LE group. On contrary, 39.2% of UE women, while 20.4% indicated moderate effect of menopause on their psychological health with significantly higher frequency of UE women among less effect score compared to LE women. There was non-significant (p>0.05) difference between women of both groups as regards social relationship and environmental scoring between women of both groups despite being in favor of UE group.

Table (7): Collectively, the mean overall QOL scoring in UE women (54±7.5) was significantly (p<0.05) higher compared to LE women (36.3±10.4).

Figure (3): There was negative significant correlation between determined MRS and QOL scores in the whole study population.

Figure (4): Differentially, in LE women, the correlation between both scores was negative and significant; thus signified a higher effect of menopausal symptoms on QOL of LE women,

(Table 8, Fig. 5): On contrary, in UE women, the correlation between both scores was negative but non-significant; thus signified an effect but not significantly affecting their QOL,

Discussion:

Menopause refers to the end of menses and is determined when the women experience no menstrual period for 12 months. [13,14] Menopause is a condition that every women faces in later life and can have many associated effects which might disrupt the quality of life. [15] The timing of menopause as well as women experience of menopausal symptoms varies between populations and within population.[16] The current study relied on the menopausal rating scale (MRS) for evaluation of the prevalence of

menopausal symptoms and its relationship to women's quality of life

Reproductive and menopausal status was determined from a question about a change in menstrual status asked. Women were deemed to be postmenopausal when there had been amenorrhea for at least 12 months. The most important menopause-specific symptoms described in our article were hot flushes, night sweats, dry vagina, and trouble sleeping.2Variables measured during the study included height and weight (body mass index [BMI], calculated as weight in kg/height in m2). Women of LE group were significantly (p<0.05) obese with significantly (p<0.05) higher body weight and BMI and frequency among overweight and obese strata compared to women of UE who significantly (p<0.05) taller than those of LE.

The current study findings revealed that the the mean age of menopausal women among upper Egypt women was 55±4.3 years and 54.7±4 years among lower Egypt women (x2= 0. 7131,p= 0.05). Reported that the mean age of menopause in Egypt was 46.7 years[17], which is low compared to many countries ,but this age has been rising in the past few years in the west. In Mansoura, the mean age among menopausal women was 46.56±5.04years. [18] Similar study conducted by Hassan [19] found the mean age of menopausal women in Zgazig city was 54.0 ±7.9 years. Another study reported that the mean age among Singapore women was 51.14±2.11 years. [20] However by comparing our findings with previous research findings, ours still fall between normal range. The possible explanations for differences in the mean age in menopause were the differences in the population sample and methodology.

Throughout the study ,it was found menopause rating scale (MRS), women of UE showed significantly (p<0.05) lower frequency of hot flushes, sleep problems, depressive mood, irritability, anxiety, physical and urological problems and complaining of dryness of vagina compared to LE women. With a mean total MRS score of LE women (15±4.3) was significantly (p<0.05) higher compared to UE women (11.1±4.7). Sleep complaints increase from the early to late menopausal transition, and in our study hot flushes were an explanatory factor for a change in sleep problems. Other researchers have suggested that hot flushes do not cause sleep disturbances even though women often have a flush after waking. Further research is needed to clarify the mechanisms responsible These results are congruent with Hassan [19] conducted a study to investigate menopausal symptoms and quality of life among pre\post menopausal women from rural area in Zagazig city ,and reported that the women in post menopausal period suffered from severe different menopausal symptoms such as : hot flushes and sweating ,sexual problems and bladder problems .These finding were also noted by Palacios et al., [21] showed that night sweats ,hot flashes and muscles pain are the most common symptoms associated with menopause women in Iranian women. However these findings of menopausal symptoms were shared by studies done in other Asian countries menopause symptoms among UE women could be attributed to the low socioeconomic status, low educational level and unavailability of motivations and sources to get better knowledge about menopause. In line with this attribution, Gharaibeh, AL Obeisat and Hattab [22] assessed quality of life of rural menopausal women with systemic arterial hypertension and

found the predominant patient characteristics were: women between the age of 60 and 70, married, four to eight years of formal education, income of one minimum wage, living with their partners and the time of diagnosis was associated with lower quality of life in the physical domain. The differences of these researches findings may be attributed to differences genetic, environmental and culture factors. Further research is needed to clarify the mechanisms responsible.

On menopause rating scale (MRS), women of UE showed significantly lower frequency of hot flushes, sleep, psychological, physical and urological problems with less frequent complaining of dryness of vagina compared to LE women. Moreover, overall scoring of the majority of UE women was in range of mild to moderate, while was in range of mild to severe in LE women and those had very severe complaint were mostly in LE group with significantly higher mean total MRS score of LE women compared to UE women. These data indicated less interest of UE women in the symptoms accompanying the menopause and this could be attributed to the following; firstly, UE women as shown had early menarche, multiple children and late menopause so they considered other life stresses are more important and affecting their QOL more than simply to be menopause; secondly, as shown in results, UE women consider menopause is the end of their dealing as a female, so their interest in sexual life was lessened and the frequency of getting intercourse was decreased so they found the complaint of vaginal dryness was meaningless. Moreover, being mostly of low economic status, so they are manual workers and still working and manual work allowed getting lower BMI and lessened their physical

complaints with lower frequency of cardiovascular and musculoskeletal complaints.

In line with these findings, Skevington [23] studied 131 middle-aged female medical teaching staff for the relationship between experience of the menopause transition and work and found poor working environment and work policies and conditions, functioning as sources of work stress which aggravated their menopausal symptoms. Chou, Wun and Pang [24] found a greater frequency of menopausal symptoms in urban than in rural women with less severe symptoms in rural women with higher prevalence of cardiovascular and osteoporosis risk factors in urban than rural women, although this was not statistically significant. Marcellini et al. [25] assessed differences in symptoms between rural and urban diabetic postmenopausal women and found psychological problems and inability to concentrate were significantly more frequent in urban versus rural women.

Hammam, Abbas and Hunter [26] surveyed menopausal symptoms in a sample of 442 Chinese women aged 40-60 years using MRS. In support of its validity and reliability, it was used to evaluate the outcome of post-menopausal symptoms where Martínez et al., [27] evaluate the effects of acupuncture and Chinese herbal medicine on hot flushes and quality of life in postmenopausal women using MRS to assess the severity of menopausal symptoms and the therapeutic outcome of acupuncture. Interestingly, women of LE group were found to be significantly obese with significantly higher frequency among overweight and obese strata compared to women of UE who significantly taller than those of LE. This finding could be attributed to the difference of life style where UE women were mostly manual workers in farms or

factories, so their energy expenditure is higher than housewives and officers whose life style is most probably of sedentary style which favor positive weight balance. In line with these data, BMI increased the most for both sexes through at least age 54 and the BMI-slope was higher for women compared with men, but the BMI-slopes were lower for individuals who increased activity and concluded that increased physical activity may reduce the BMI-slope. [28] BMI was associated with age and education, socio-economic status and psychological factors in both genders.As far as possible we attempted to determine a direction for each relationship. When this direction was uncertain, results were not significantly different, we assuming evidence of relationships of unknown direction. . Further research is needed to clarify the mechanisms responsible for the relationship. [29]

documented that the menopause related symptoms had a negative effect on the quality of life of the peri- and post-menopausal women, however, the least frequent symptoms were increase in facial hair and feeling of dryness during intimacy, while scores of vasomotor domain were significantly more in menopause transition group and scores of physical domain were significantly more in late postmenopausal group.[30] More than a half of the investigated peri-menopausal women lived in the country (60%), with the remainder coming from villages (40%), about 66% of women had completed college education, the majority stated that their financial situation was bad, or average, only every fifth woman showed an appropriate weight, only every fifth woman regularly had a gynecological check-up each year, signs of anxiety or a depressive mood appeared to depend essentially on the professional status of the women and the majority of rural women hardly took care of their health or well-being. [31]

Reduction in physical function within the first five years after menopause and education level, physical activity, cigarette smoking, and chronic disease history were associated with more worse QOL tried to determine the relationship between socio-demographic, reproductive and lifestyle factors and the severity of menopausal symptoms among Saudi women using MRS and found severe urogenital symptoms were more common among housewives compared to working women and in women living in apartments or small houses compared to women living in villas and women who exercised regularly were less likely to experience severe somatic and urogenital symptoms and obese women experienced more severe psychosomatic symptoms compared to those of normal BMI. Psychosocial and lifestyle factors had a significant effect on these outcomes. A higher than average BMI and an increase in BMI had a strong influence on CHD risk and abdominal fat, whereas aging and partner factors affected sexual function. [32]

Conclusion:

It could be concluded that getting menopause adversely affected Quality of life of Egyptian women in Upper Egypt and Lower Egypt. These adverse effects were more manifested in Upper Egypt women .The concept that menopause means end of both reproductive and sexual life had affected the frequency of menopausal symptoms in Upper Egypt women.

Recommendations:

The provision of professional services for post-menopausal women especially in upper Egypt is necessary. An integrated program in the form of combined health education, provision of capacity building of local providers and breaking down of socio-cultural

barriers especially in Upper Egypt for disclosure of the menopausal status and its effects is recommended. Further research to study the effect of daily habits on menopausal symptoms.
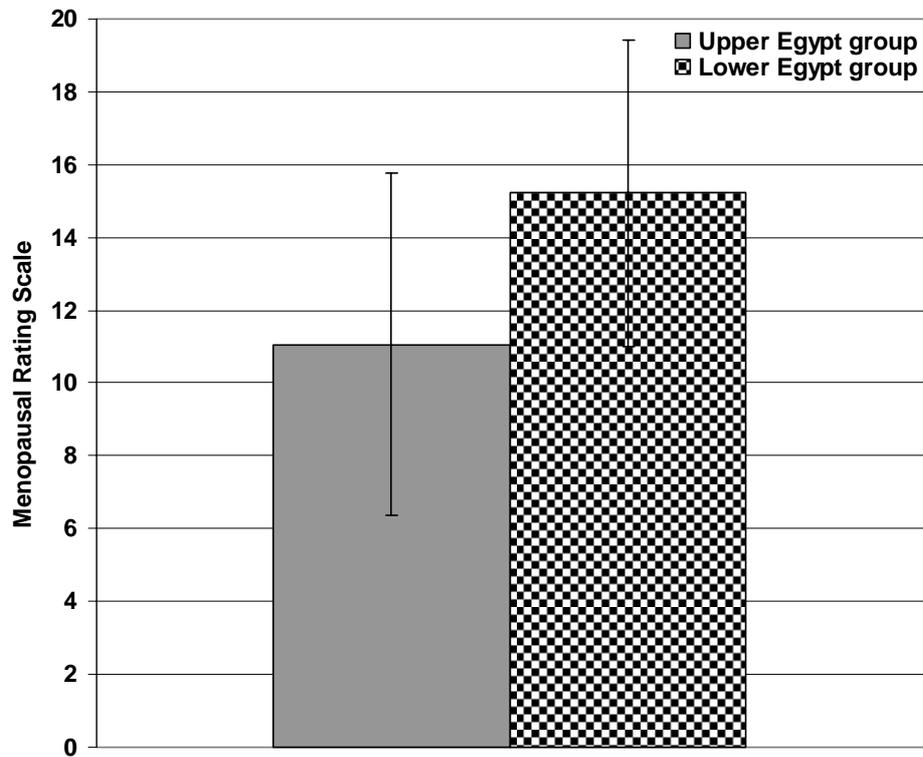
Fig. (1): Mean (+SD) total Menopausal Rating Scale scoring of studied women
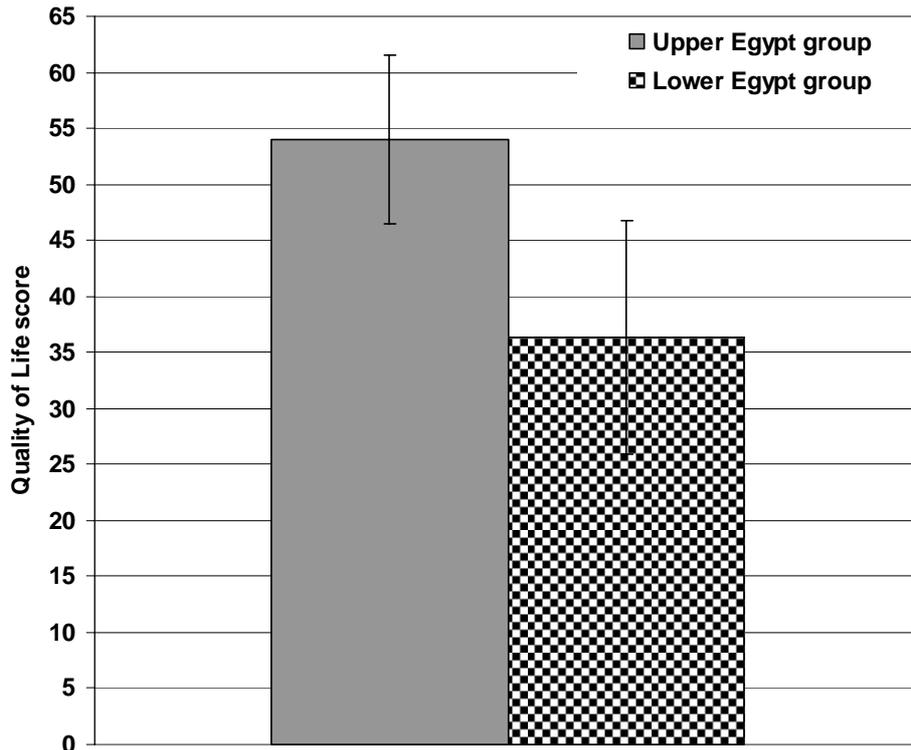
Fig. (2): Mean (+SD) total Quality of life scoring of studied women
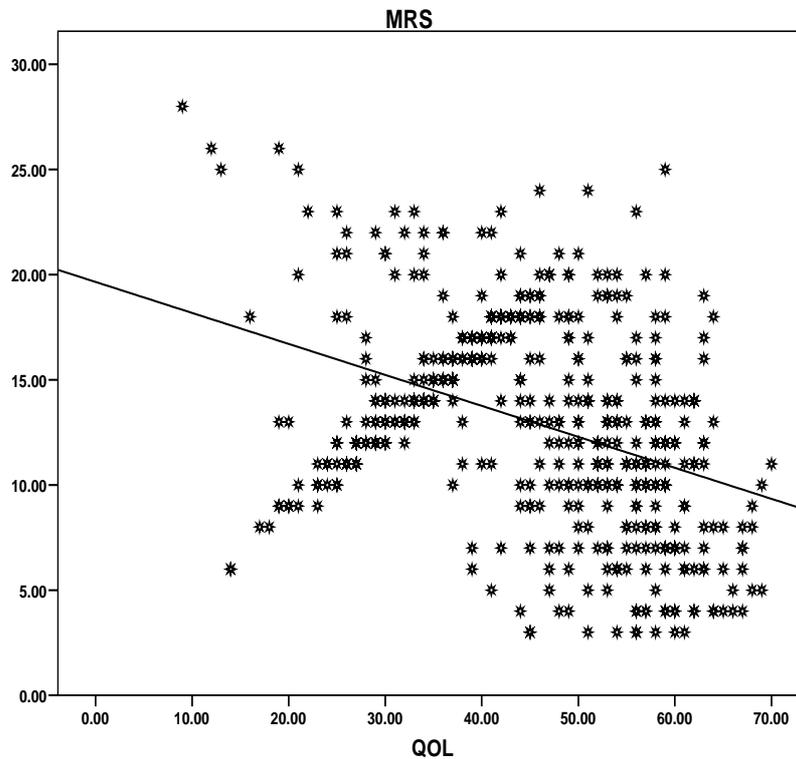
Figure (3): Correlation between Menopausal Rating Scale (MRS) and quality of life (QOL) scoring of studied population
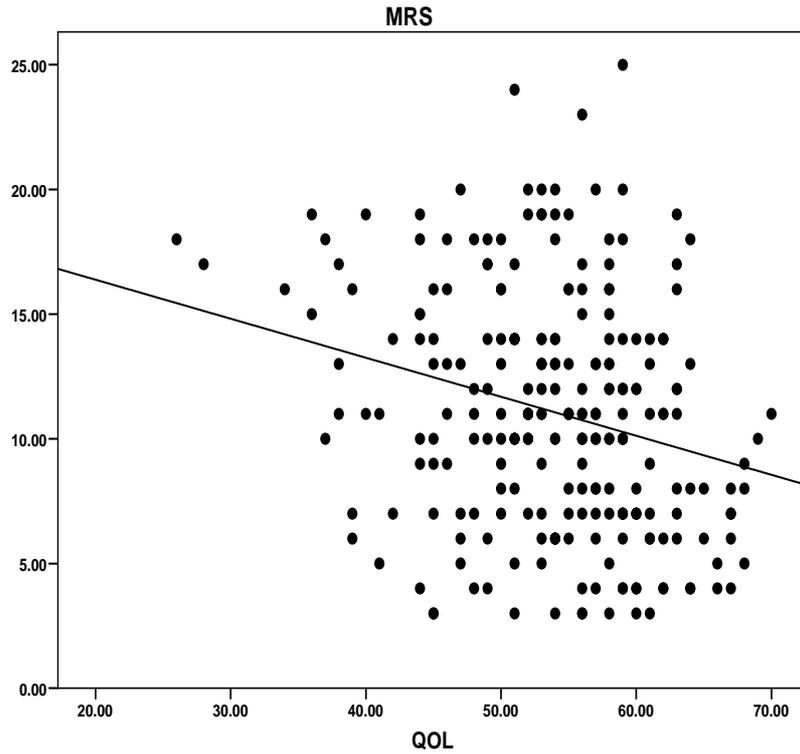
Figure (4): Correlation between Menopausal Rating Scale (MRS) and quality of life (QOL) scoring of Lower Egypt women
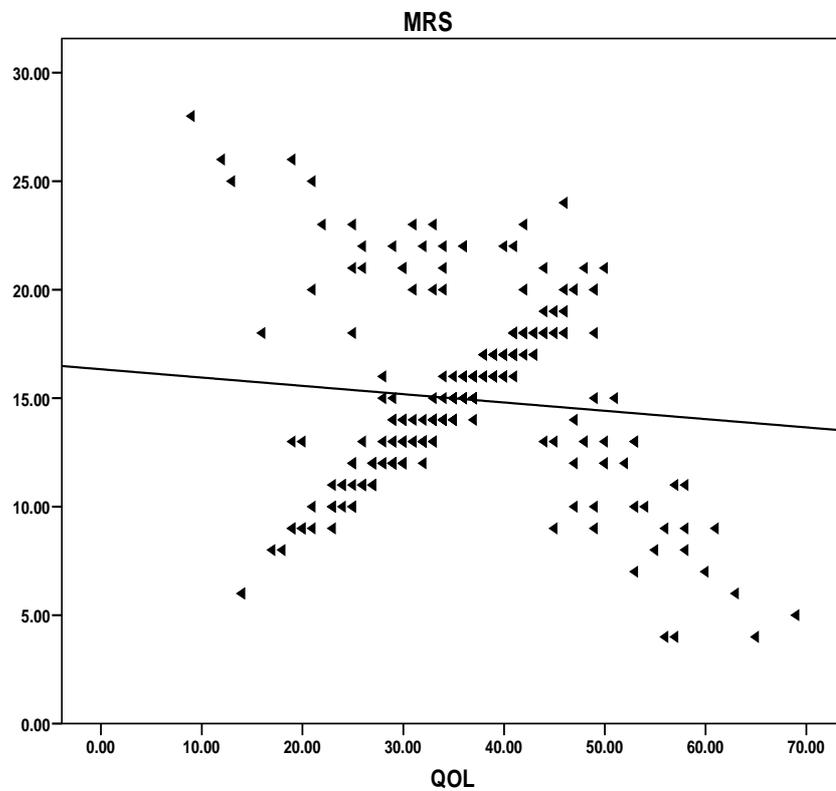
Figure (5): Correlation between Menopausal Rating Scale (MRS) and quality of life (QOL) scoring of Upper Egypt women

Table (1): Socio-demographic data of studied women categorized according to locality of collection

Data			UE group (n=250)	LE group (n=250)	Statistical significance
Residence	Rural		157 (62.8%)	118 (47.2%)	X^2=2.178, p>0.05
	Urban		93 (37.2%)	132 (52.8%)	
Age (Years)	Strata	<50	22 (8.8%)	20 (8%)	X^2=0.731, p>0.05
		50-55	126 (50.4%)	138 (55.2%)	
		>55-60	51 (20.4%)	53 (21.2%)	
		>60-65	36 (14.4%)	28 (11.2%)	
		>65	15 (6%)	11 (4.4%)	
	Mean		55±4.3	54.7±4	Z=1.604, p>0.05
Marital status	Married		191 (76.4%)	163 (65.2%)	X^2=0.124, p>0.05
	Widow		31 (12.4%)	25 (10%)	
	Divorced		19 (7.6%)	45 (18%)	
	Single		9 (3.6%)	17 (6.8%)	
Educational level	Illiterate		73 (29.2%)	48 (19.2%)	X^2=6.831, p<0.05
	1ry school graduate		49 (19.6%)	21 (8.4%)	
	2ry school graduate		42 (16.8%)	46 (18.4%)	
	High school graduate		57 (22.8%)	72 (28.8%)	
	Collage graduate		29 (11.6%)	63 (25.2%)	
Employment	Farmer		129 (51.6%)	78 (31.2%)	X^2=3.105, p<0.05
	Manual		36 (14.4%)	61 (24.4%)	
	HW		60 (24%)	67 (26.8%)	
	Employee		25 (10%)	44 (17.6%)	

Data are presented as mean±SD & numbers; percentages are in parenthesis; UE: Upper Egypt;
LE: Lower Egypt; p<0.05: significant difference; p>0.05: non-significant difference

Table (2): Body weight and height and calculated body mass index of studied women categorized according to locality of collection

Data		UE group (n=250)	LE group (n=250)	Statistical significance
Weight (kg)		80.4±9.7	84.4±10.7	Z=5.986, p<0.001
Height (cm)		168.7±1.7	168±1.6	Z=3.89, p<0.001
BMI (kg/m^2)	Underweight	7 (2.8%)	0	X^2=5.247, p<0.05
	Normal weight	42 (16.8%)	32 (12.8%)	
	Overweight	146 (58.4%)	114 (45.6%)	
	Obese	55 (22%)	104 (41.6%)	
	Mean	28.3±3.4	29.9±3.8	Z=6.654, p<0.001

Data are presented as mean±SD & numbers; percentages are in parenthesis; UE: Upper Egypt;
LE: Lower Egypt; BMI: Body mass index; p<0.05: significant difference

Table (3): Menstrual and reproductive data of studied women categorized according to locality of collection

Data			UE group (n=250)	LE group (n=250)	Statistical significance
Age of menarche (years)		<12	43 (17.2%)	24 (9.6%)	
		12-14-	183 (73.2%)	180 (72%)	X^2=6.831, p<0.05
		>14	24 (9.6%)	46 (18.4%)	
		Total	13±1.2	13.2±1.4	Z=1.694, p>0.05
Period descriptive data	Regularity	Regular	209 (83.6%)	187 (74.8%)	
		Irregular	41 (16.4%)	63 (25.2%)	X^2=1.427, p>0.05
	Frequency	<21	32 (12.8%)	49 (19.6%)	
		21-25	154 (61.6%)	132 (52.8%)	X^2=1.815, p>0.05
		25-35	45 (18%)	41 (16.4%)	
		>35	19 (7.6%)	28 (11.2%)	
	Duration	3 days	23 (9.2%)	38 (15.2%)	
		5 days	147 (58.8%)	139 (55.6%)	X^2=0.115, p>0.05
		7 days	80 (32%)	73 (29.2%)	
	Amount	Mild	35 (14%)	51 (20.4%)	
		Moderate	170 (68%)	163 (65.2%)	X^2=0.153, p>0.05
		Heavy	45 (18%)	36 (14.4%)	
	Pain	No	120 (48%)	98 (39.2%)	
		Mild	83 (33.2%)	67 (26.8%)	X^2=2.132, p>0.05
		Moderate	26 (10.4%)	51 (20.4%)	
		Severe	21 (8.4%)	34 (13.6%)	
	Spotting between periods	Yes	67(26.8%)	94 (37.6%)	
		No	183 (73.2%)	156 (62.4%)	X^2=1.258, p>0.05
Reproductive data	Number of pregnancies	One	15 (6%)	34 (13.6%)	
		Two	32 (12.8%)	51 (20.4%)	X^2=8.181, p<0.01
		Three	49 (19.6%)	86 (34.4%)	
		Four	87 (34.8%)	52 (20.8%)	
		Five	43 (17.2%)	18 (7.2%)	
		Six	12 (4.8%)	5 (2%)	
		Seven	12 (4.8%)	4 (1.6%)	
		Average	3.8±1.4	3±1.3	Z=13.75, p<0.001
	Number of living offspring	One	46 (18.4%)	51 (20.4%)	
		Two	61 (24.4%)	88 (35.2%)	X^2=3.895, p<0.05
		Three	64 (25.6%)	56 (22.4%)	
		Four	43 (17.2%)	41 (16.4%)	
		Five	28 (11.2%)	9 (3.6%)	
		Six	8 (3.2%)	5 (2%)	
		Average	2.9±1.4	2.5±1.2	Z=9.274, p<0.001
	Pregnancy outcome	Abortion	82 (8.7%)	71 (9.5%)	
		Neonatal &/ or childhood mortality	143 (15.1%)	45 (6%)	X^2=3.615, p<0.05
		Living offspring	720 (76.2%)	634 (84.5%)	
		Total number of pregnancies	945 (100%)	750 (100%)	

Data are presented as mean±SD & numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt; p<0.05: significant difference; p>0.05: non-significant difference

Table (4): Data of medical problems documented by studied women categorized according to locality of residence

Domain		UE group (n=250)	LE group (n=250)	Statistical significance
Frequency of medical problems	No	176 (70.4%)	152 (60.8%)	X^2=1.493, p>0.05
	Yes	74 (29.6%)	98 (39.2%)	
Number of medical problems	One	43 (58.1%)	41 (41.8%)	X^2=5.149, p<0.05
	Two	20 (27%)	47 (48%)	
	>two	11 (14.9%)	10 (10.2%)	
Type of medical problems	Heart	8 (10.8%)	13 (13.3%)	X^2=1.969, p>0.05
	Chest	6 (8.1%)	5 (5.1%)	
	DM	26 (35.1%)	44 (44.9%)	
	Joint	37 (50%)	51 (52%)	
	Hypertension	14 (18.9%)	26 (26.5%)	
	Hepatic	19 (25.7%)	17 (17.3%)	
	Other	6 (8.1%)	9 (9.2%)	

Data are presented as numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt; DM: Diabetes mellitus; p<0.05: significant difference; p>0.05: non-significant difference

Table (5): Menopausal data of studied women categorized according to locality of collection

Data			UE group (n=250)	LE group (n=250)	Statistical significance
Age of menopause (years)	42-43		55 (22%)	98 (39.2%)	X^2=5.384, p<0.05
	44-45		127 (50.8%)	117 (46.8%)	
	>45		68 (22.2%)	35 (11%)	
	Total		44.6±1.4	43.9±1.3	Z=5.713, p<0.001
Duration of menopause	Early (≤5 years)		160 (64%)	145 (58%)	X^2=0.572, p>0.05
	Late (>5 years)	>5-10	7 (2.8%)	12 (4.8%)	
		>10-15	49 (19.6%)	52 (20.8%)	
		>15	34 (13.6%)	41 (16.4%)	
	Total (years)		6.1±6.3	7.7±6	Z=9.126, p<0.001
Diagnosis was made by	Medical professional		93 (37.2%)	159 (63.6%)	X^2=8.409, p<0.01
	No medical professional		157 (62.8%)	91 (36.4%)	

Data are presented as mean±SD & numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt; p<0.05: significant difference; p>0.05: non-significant difference

Table (6): Distribution of studied women, categorized according to locality of collection, according to scores of individual items of MRS

Items		None (0)	Mild (1)	Moderate (2)	Severe (3)	Very severe (4)	Statistical significance
Hot flushes & night sweet	UE	44 (17.6%)	87 (34.8%)	71 (28.4%)	35 (14%)	13 (5.2%)	X^2=3.130, p<0.05
	LE	18 (7.2%)	67 (26.8%)	89 (35.6%)	55 (22%)	21 (8.4%)	
Heart discomfort	UE	97 (38.8%)	105 (42%)	36 (14.4%)	12 (4.8%)	0	X^2=0.188, p>0.05
	LE	81 (32.4%)	97 (38.8%)	56 (22.4%)	16 (6.4%)	0	
Sleep problems	UE	65 (26%)	124 (49.6%)	43 (17.2%)	18 (7.2%)	0	X^2=5.9, p<0.05
	LE	37 (14.8%)	102 (40.8%)	51 (20.4%)	31 (12.4%)	29(11.6%)	
Joint and/or muscle problems	UE	102 (40.8%)	73 (29.2%)	40 (16%)	18 (7.2%)	17 (6.8%)	X^2=0.8, p>0.05
	LE	95 (38%)	65 (26%)	46 (18.4%)	23 (9.2%)	21 (8.4%)	
Depressive mood	UE	91 (36.4%)	77 (30.8%)	46 (18.4%)	23 (9.2%)	13 (5.2%)	X^2=6.301, p<0.05
	LE	45 (18%)	62 (24.8%)	71 (28.4%)	43 (17.2%)	29 (11.6%)	
Irritability	UE	113 (45.2%)	78 (31.2%)	38 (15.2%)	14 (5.6%)	7 (2.8%)	X^2=3.130, p<0.05
	LE	84 (33.6%)	66 (26.4%)	48 (19.2%)	34 (13.6%)	18 (7.2%)	
Anxiety	UE	149 (59.6%)	76 (30.4%)	21 (8.4%)	4 (1.6%)	0	X^2=11.551, p<0.05
	LE	104 (41.6%)	86 (34.4%)	51 (20.4%)	9 (3.6%)	0	
Physical and mental exhaustion	UE	113 (45.2%)	79 (31.6%)	44 (17.6%)	14 (5.6%)	0	X^2=3.377, p<0.05
	LE	46 (18.4%)	89 (35.6%)	60 (24%)	41 (16.4%)	14 (5.6%)	
Sexual problems	UE	123 (49.2%)	78 (31.2%)	38 (15.2%)	11 (4.4%)	0	X^2=0.179, p>0.05
	LE	78 (31.2%)	111 (44.4%)	45 (18%)	16 (6.4%)	0	
Bladder problems	UE	52 (20.8%)	84 (33.6%)	87 (34.8%)	21 (8.4%)	6 (2.4%)	X^2=8.44, p<0.01
	LE	67 (26.8%)	97 (38.8%)	69 (27.6%)	13 (5.2%)	4 (1.6%)	
Dryness of vagina	UE	89 (35.6%)	100 (40%)	47 (18.8%)	14 (5.6%)	0	X^2=3.130, p<0.05
	LE	42 (16.8%)	65 (26%)	98 (39.2%)	35 (14%)	10 (4%)	

Data are presented as numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt;
p<0.05: significant difference; p>0.05: non-significant difference

Table (7): Distribution of studied women, categorized according to locality of collection, among domains and scores of the WHOQOL brief questionnaire

Domain		1	2	3	4	5	Statistical significance
Overall QOL evaluation	UE	43 (17.2%)	23 (17.2%)	16 (6.4%)	86 (34.4%)	82 (32.8%)	X^2=3.557, p<0.05
	LE	67 (26.8%)	39 (15.6%)	26 (10.4%)	49 (19.6%)	69 (27.6%)	
Physical health	UE	54 (21.6%)	113 (45.2%)	52 (20.8%)	17 (6.8%)	14 (5.6%)	X^2=5.938, p<0.05
	LE	27 (10.8%)	58 (23.2%)	91 (36.4%)	51 (20.4%)	23 (9.2%)	
Psychological health	UE	74 (29.6%)	53 (21.2%)	98 (39.2%)	14 (5.6%)	11 (4.4%)	X^2=3.373, p<0.05
	LE	38 (15.2%)	106 (42.4%)	51 (20.4%)	36 (14.4%)	19 (7.6%)	
Social relationships	UE	45 (18%)	79 (31.6%)	82 (32.8%)	21 (8.4%)	23 (9.2%)	X^2=1.706, p>0.05
	LE	64 (25.6%)	56 (22.4%)	70 (28%)	31 (12.4%)	29 (11.6%)	
Environmental	UE	49 (19.6%)	85 (34%)	73 (29.2%)	24 (9.6%)	19 (7.6%)	X^2=0.142, p>0.05
	LE	62 (24.8%)	73 (29.2%)	54 (21.6%)	38 (15.2%)	23 (9.2%)	

Data are presented as numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt;
p<0.05: significant difference; p>0.05: non-significant difference

Table (8): Pearson's correlation coefficient "r" between total MRS and QOL scoring of studied women

Data	"r"	P
Total study population (n=500)	-0.381	=0.0005
LE group (n=250)	-0.250	=0.0009
UE group (n=250)	-0.143	=0.093

Data are presented as mean±SD & numbers; percentages are in parenthesis; UE: Upper Egypt; LE: Lower Egypt; BMI: Body mass index; p<0.05: significant difference

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