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The effect of postmenopausal symptoms on the quality of life in women belonging to Khyber Pukhtunkhwa. An observational study.

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ABSTRACT

Objective: Menopause can be defined as the permanent cessation of the menstrual cycle and can be a period of intense physical, psychosocial, and mental distress leading to an adverse quality of life. An assessment of the presence and severity of symptoms can lead to appropriate and timely intervention. The patients can have a better understanding of their symptoms, which can lead to good patient outcomes in terms of physical, mental, and social wellbeing. This study assessed the effects of menopause on the quality of life of postmenopausal women with respect to different age groups and parity.

Material and Methods: This cross-sectional survey was carried out in the Department of Diabetes and Endocrinology Mercy Teaching Hospital Peshawar, from January 2023 till June 2023. After approval from the ethical committee, the study was performed on patients diagnosed as having natural menopause diagnosed on basis of clinical features and laboratory parameters, recruited through nonprobability convenient sampling, and an informed verbal consent was obtained. After a brief history and physical examination, a translated version of MENQOL as a tool for assessing the effects of menopause on quality of life was used. A Kruskal-Wallis test was used to compare MENQOL item scores with respect to age groups and parity. A p value of less than 0.05 was considered statistically significant.

Results: The study findings showed that of 363 postmenopausal women, the majority of women fell within the 45 to 49.9 age range 159(43.8%), followed by those aged 50 to 54.9, 135(37.2%), and 69(19.0%) women were aged 55 to 60. Among the participants, vasomotor symptoms were present in 282(77.7%), and 81 (22.3%) participants. reported their absence. Psychosocial symptoms were prevalent in 333 (91.7%) participants, while 30(8.3%) reported their absence. Physical symptoms were largely present in 358(98.6%) participants, with only 5(1.4%) reporting their absence. Sexual symptoms were reported in 253(69.7%) participants, whereas 110(30.3%) reported their absence. However, mean sexual scores were 1.94 ± 0.71, 1.73 ± 0.70, and 1.64 ± 0.73 for different parity groups, with a significant association ($p = 0.009$), indicating an association between parity and sexual symptoms.

Conclusion: This study concluded that the menopause adversely effects the quality of life of women belonging to KPK, leading to high BMI, increased waist to hip ratios and symptoms of moderate to severe intensity related to vasomotor, physical, psychosocial and sexual domains of the MENQOL questionnaire.

Keywords:postmenopausal, symptoms, quality of life, survey

INTRODUCTION

Menopause can be defined as the permanent cessation of menstrual cycle [1]. For the purpose of discussion, it is divided into premenopausal, peri-menopausal, and postmenopausal stages. Average age of menopause is from 42 and 58 years worldwide. It can occur naturally or can induced by certain pathological conditions or treatments [1,2]. The menopausal symptoms can be varied and quite distressing. The four most frequently reported symptoms are vasomotor symptoms, insomnia, vaginal dryness and accompanying dyspareunia, or mood symptoms such as anxiety and depression. These symptoms can last for many years in the postmenopausal period. A significant negative correlation has been observed between these symptoms and quality of life in post-menopausal women of different ages both innational and international studies [3,4,5].

Many studies suggest that almost 85% of menopausal women experience at least one hot flash even though the frequency, severity, and duration of hot flashes may vary from person to person [3,4]. At the same time incidence of dyspareunia and sexual disorder are 60% and 87% respectively [4,5]. Mood symptoms are the most challenging part and studies suggest that these symptoms maybe present before any significant change in the cycle length or hormonal levels. These features adversely affect the quality of life. The age of menopause remains the same word wide however, the increasing life expectancy even in third world countries have increased the number of women living with menopause who may experience these symptoms differently according to their own social and physical and cultural circumstances. Understanding quality of life helps in the recognition and relief of symptomscare and appropriate rehabilitation. To alleviate the distressing symptoms in women with menopause several therapies ranging from medical, hormonal to complementary medicine have been tired with varying results [6,7]. In our population this important phase of a women's life is often ignored and as such most of them do not seek medical attention for easily remediable problems. In Pakistan there is limited data available about the actual prevalence of menopausal symptoms [8,9]. There has been poor insight in to this important subset of ageing population especially in KPK as there are many psychosocial barriers among the patients to the adequate understanding of these symptoms. As a result, women do not get timely medical assistance.

The goal of healthcare providers should be an improvement in the quality of life of these women to help them be a fully functional part of society. The aim of this study therefore is to highlight the importance of early recognition of menopausal symptoms using a simple

questionnaire and to assess their severity so that timely assistance can be to this important sect of population.

MATERIALS AND METHODS

This cross-sectional survey was carried out in the Department of Diabetes and Endocrinology Mercy Teaching Hospital Peshawar, from January 2023 till June 2023. After approval from the ethical committee, the study was performed on patients diagnosed as having natural menopause diagnosed on basis of clinical features and laboratory parameters, recruited through nonprobability convenient sampling and an informed verbal consent was obtained. A total of 363 women with a history of natural menopause as per the definition of WHO were included. Those with history of cyclical irregularity due to exogenous steroid use, or with history of premature ovarian failure, non-classical CAH, hyper-prolactinemia and those with hyper or hypothyroidism were excluded from the study.

After a brief history and physical examination, a translated version of MENQOL as a tool for assessing the effects of menopause on quality of life was used. A series of 29 questions were asked that were further subdivided into four domains. Vasomotor (4 questions), Physical (14), Psychological (7) and sexual (4). Answers were recorded as present or absent. The symptoms severity was assessed on a scale of 0 to 6 and recorded as mild (0-2) moderate (3-4) or severe (5-6). BMI and waist circumference were recorded using a standard equipment, and waist to hip ratio was calculated.The findings were recorded on a structured Performa.

Data wasanalyzed using SPSS version 23. Means and SD's were calculated for continuous variables while frequencies and percentages were calculated for categorical variables. Kruskal-Wallis test was used to compare MENQOL item scores with respect to age groups and parity. A p value of less than 0.05 was considered statistically significant.

RESULTS

A total of 363 postmenopausal women were interviewed using a standard-translated version of the MENQOL questionnaire. Regarding age distribution, the majority of women fell within the 45 to 49.9 age range 159(43.8%), followed by those aged 50 to 54.9,135(37.2%), and 69(19.0%) women were aged 55 to 60. Parity indicated that nearly half of the participants had 1 to 4 children 177(48.8%), with 158(43.5%) having 5 to 8 children, and only 28(7.7%) reporting more than 8 children. Body Mass Index (BMI) categorization revealed a varied

distribution, with the majority of the participants 105(28.9%) falling within the 30 to 34.9 range, while a smaller percentage fell below 18.5 or above 40. Waist circumference ratios showed a slight majority 221(60.9%) with measurements > 80. Similarly, waist/hip ratios were predominantly >0.85 in 224(61.7%) participants. The MENQOL domain scores indicated that the mean vasomotor score was 2.12 ± 0.61, and the mean psychosocial and physical domains were 2.18 ± 0.55 and 2.39 ± 0.56, respectively, and comparatively lower scores in the sexual domain1.83 ± 0.72, as depicted in Table I.

Among the participants, vasomotor symptoms were present in 282(77.7%), and 81 (22.3%) participants. reported their absence. Psychosocial symptoms were prevalent in 333 (91.7%) participants, while 30(8.3%) reported their absence. Physical symptoms were largely present in 358(98.6%) participants, with only 5(1.4%) reporting their absence. Sexual symptoms were reported in 253(69.7%) participants, whereas 110(30.3%) reported their absence, as depicted in Table II.

The severity of symptoms within each domain of the MENQOL questionnaire showed that in the vasomotor domain, 49 (13.5%) participants reported a score 0 to 1, 223 (61.4%) reported scores 2 to 4, and 91 (25.1%) reported scores 5 to 6. For the psychosocial domain, 28 (7.7%) reported scores 0 to 1, 241 (66.4%) reported scores 2 to 4, and 94 (25.9%) reported scores 5 to 6. Regarding the physical domain, most of the participants,192 (52.9%) reported scores between 2 and 4, and 156 (43.0%) reported scores between 5 and 6. Additionally, within the sexual domain, 130 (35.8%) participants reported scores 0 to 1, 165 (45.5%) reported scores 2 to 4, and 58 (18.7%) reported scores 5 to 6, as depicted in Table III.

The association between age groups and MENQOL domains showed that in the vasomotor domain, individuals aged 45 to 49.9 years had a mean score of 2.14 ± 0.66, those aged 50 to 54.9 years had a mean score of 2.19 ± 0.53, and individuals aged 55 to 60 years had a mean score of 1.91 ± 0.58, with a statistically significant difference among them (p =0.009). Similarly, in the psychosocial domain, mean scores were 2.26 ± 0.55, 2.19 ± 0.56, and 1.97 ± 0.45 for the respective age groups, with a significant association among them (p =0.001). However, in the physical and sexual domains, a statistically insignificant association was observed among the mean scores of domains with respect to different age groups (p >0.05), as depicted in Table IV.

The association between parity and MENQOL domains showed that in the vasomotor domain, participants with 1 to 4 children had a mean score of 2.18 ± 0.64, those with 5 to 8 children had

a mean score of 2.08 ± 0.52, and those with more than 8 children had a mean score of 1.96 ± 0.79, with an insignificant difference among them (p= 0.127). Similarly, in the psychosocial and physical domains, an insignificant difference was observed among different parity groups (p >0.05). However, in the sexual domain, mean scores were 1.94 ± 0.71, 1.73 ± 0.70, and 1.64 ± 0.73 for different parity groups, with a significant association (p= 0.009), indicating an association between parity and sexual symptoms, as depicted in Table V.

Table 1:Demographic details and anthropometric assessment of postmenopausal women (n= 363).

Variables		Mean ± SD n (%)
Age (years)	**45 to 49.9**	159(43.8%)
	50 to 54.9	135(37.2%)
	55 to 60	69(19.0%)
Parity	**1 to 4**	177(48.8%)
	5 to 8	158(43.5%)
	>8	28(7.7%)
BMI (kg/m^2)	**<18.5**	7(1.9%)
	18.5 to 24.9	67(18.5%)
	25 to 29.9	96(26.4%)
	30 to 34.9	105(28.9%)
	35 to 39.9	62(17.1%)
	> 40	23(6.3%)
Waist/ circumference ratio	**< 80**	142(39.1%)
	> 80	221(60.9%)
Waist/Hip ratio	**< 0.85**	136(37.5%)
	> 0.85	224(61.7%)
MENQOL domains	**Vasomotor**	2.12 ± 0.61
	Psychosocial	2.18 ± 0.55
	Physical	2.39 ± 0.56
	Sexual	1.83 ± 0.72

Table 2: The frequency of MENQOL domains.

Variables		**n (%)**
Vasomotor	**Absent**	81(22.3%)
	Present	282(77.7%)
	Total	363(100.0%)
Psychosocial	**Absent**	30(8.3%)
	Present	333(91.7%)
	Total	363(100.0%)
Physical	**Absent**	5(1.4%)
	Present	358(98.6%)
	Total	363(100.0%)
Sexual	**Absent**	110(30.3%)
	Present	253(69.7%)
	Total	363(100.0%)

Table 3: Severity of Symptoms.

Severity of Symptoms		**n (%)**
Vasomotor domain score		
	0 to 1	49(13.5%)
	2 to 4	223(61.4%)
	5 to 6	91(25.1%)
Psychosocial domain score		
	0 to 1	28(7.7%)
	2 to 4	241(66.4%)
	5 to 6	94(25.9%)
Physical domain score		
	0 to 1	15(4.1%)
	2 to 4	192(52.9%)
	5 to 6	156(43.0%)
Sexual domain. Score		
	0 to 1	130(35.8%)
	2 to 4	165(45.5%)
	5 to 6	58(18.7%)

Table IV: The association of age groups with MENQOL domains.

MENQOL domains	**Age groups (years)**			
	45 to 49.9 Mean±SD	**50 to 54.9Mean±SD**	**55 to 60 Mean±SD**	**p value**
Vasomotor	2.14 ± 0.66	2.19 ±0.53	1.91 ± 0.58	0.009
Psychosocial	2.26 ± 0.55	2.19 ± 0.56	1.97 ± 0.45	0.001
Physical	2.33 ± 0.59	2.47 ± 0.53	2.35 ± 0.56	0.117
Sexual	1.84 ± 0.75	1.79 ± 0.69	1.90 ± 0.68	0.549

Table V: The association of parity with MENQOL domains.

MENQOL domains	Parity			
	1 to 4 Mean±SD	**5 to 8 Mean±SD**	**>8 Mean±SD**	**p value**
Vasomotor	2.18 ± 0.64	2.08 ±0.52	1.96 ± 0.79	0.127
Psychosocial	2.21 ± 0.57	2.15 ± 0.53	2.21± 0.49	0.526
Physical	2.39 ± 0.57	2.41 ± 0.55	2.29 ± 0.63	0.117
Sexual	1.94 ± 0.71	1.73 ± 0.70	1.64 ± 0.73	0.009

DISCUSSION

Menopause is an important milestone in a woman's life. This marks an important opportunity to appraise the numerous issues related to the physical and psychological wellbeing of women [10]. Our study population showed that only a small no. of the participants was able to maintain a healthy BMI. Weight management becomes challenging after menopause because of the hormonal variation. The high BMI coupled with a Waist to Hip ration of >0.85 increases the risk of Diabetes, Hypertension and adverse cardiovascular outcomes [11].

Among the MENQOL domains, vasomotor symptoms were common and mostly included hot flashes and night sweats and they were reported to be of moderate to severe in nature in most of the participants.

Psychosocial domain was also an important aspect of this study and most participants reported poor memory and concentration, anxiety and depression leading to poor sleep quality. This is an often-overlooked aspect of women's health and often leads to social isolation and relationship difficulties [12].

The physical domain included symptoms like backache, skin changes, Hirsutism, musculoskeletal pain and decrease exercise capacity. The study showed almost universal presence of these symptoms among the study participants which is an important factor to consider. The changing appearance leads to negative self-imaging and low self-esteem, while physical symptoms limits exercise capacity leading to difficulties in weight management [13].

This strengthens the need for balanced well maintained diets, regular physical activity and appropriate relaxation opportunities [14,15]. This becomes challenging in our social setup because of social and cultural norms limiting women's participation in such activities.

Perhaps the most neglected aspect of this transition is the sexual health of these women. Symptoms such as frequent urination, changes in libido, dyspareunia, and avoidance of intimacy were reported by 70 percent of the participants with worse psychosocial outcomes.

Unfortunately, in our setup Menopause and the numerous symptoms it produces is often disregarded due to social and cultural norms. The results of our study showed results that were consistent with the findings of studies done in other countries with similar socioeconomic background [16]. A study carried out in west Bengal India suggested frequent physical symptoms among post-menopausal women [17]. A similar finding was also seen among Chinese women although they were ethnically and socially distinct from our population [18]. This suggests that hormone deficiencydriven bone loss is universal and suggests prompt action in the early years to prevent complications like osteoporosis. In numerous studies mood changes and decline in cognitive function has been found.Exercise and leisure activities among postmenopausal women have been associated with improved cognition, better moods and good bone health [19, 20].

A cross-sectional study evaluated the impact of menopausal symptoms on the quality of life among 350 postmenopausal Egyptian women. The MENQOL domains indicated that the mean vasomotor (3.01 ± 1.78), mean psychological (3.08 ± 0.98), mean physical (3.18 ± 0.92), and mean sexual (3.12 ± 1.66) domains had the greatest impact on quality of life [21]. These findings were not corroborated with the present study and revealed that the MENQOL domain scores indicated that the mean vasomotor score was 2.12 ± 0.611, the mean psychosocial and physical domains were 2.18 ± 0.551 and 2.39 ± 0.567 respectively, and comparatively lower scores in the sexual domain were 1.83 ± 0.720, low scores indicated a better QOL of postmenopausal women.

Likewise, 932 women who participated in the Minnesota study completed a menopausal-specific quality-of-life (MENQOL) questionnaire to evaluate their vasomotor, somatic, sexual, and psychosocial problems in the years after menopause. Women between the ages of 50 and 54.9 had the highest mean total MENQOL scores. Within each domain, as well as overall, there was a pattern of decreasing symptom severity as age increased. Women in the 50–54.9 age

range experienced more intense sweating during the night and hot flashes than women in other age groups ($p<0.001$) and ≤ 60 years of age ($p<0.001$). There were no age-group variations in the mean score for the sexual domain.Study participants aged 60–64.9 and ≥ 65 years showed lower MENQOL scores in the psychosocial domain ($p=0.029$ and $p<0.001$) compared to women aged 50.0–54.9 years. Compared to women over 65, women aged 50–54.9 exhibited more severe symptoms associated with depressive mood ($p\leq 0.009$) [22].The present study was inconsistent with the above-reported study and indicated that vasomotor and psychosocial domains had a significant relationship among different age groups of menopausal women ($p < 0.05$). Conversely, in the physical and sexual domains, a statistically insignificant association was observed among the mean scores of domains with respect to different age groups ($p >0.05$).

A community-based cross-sectional study was carried out on the quality of life (QOL) of 70 menopausal women aged 40–64 and its correlation with their socio-demographic features. It is evident that the physical and vasomotor domains exhibited the greatest mean scores among all participants, whereas the psychosocial and sexual domains displayed the lowest mean values. Lower scores were associated with higher QOL. Just 33.3% of subjects reported experiencing sexual symptoms, compared to 61% who experienced vasomotor symptoms [23]. These findings were partially similar to the present study and revealed that the vasomotor and sexual domains showed the lowest mean scores (2.12 ± 0.61, and 1.83 ± 0.72), respectively, whereas the psychosocial and physical domains showed the highest mean scores (2.18 ± 0.55, and 2.39 ± 0.56) respectively. Moreover, vasomotor symptoms were present in 282(77.7%), and sexual symptoms were reported in 253(69.7%) participants.

This study had few limitations. The sample size is relatively small and it was a single-center study, and cannot not be considered fully representative of all postmenopausal women. Consequently, this study highlights the importance of sexual health and as seen in studies performed in other countries, raising awareness about these common problems while remaining sensitive to the cultural norms can prevent years of psychological and personal distress. This can also help prevent frequent vaginal infections and lead to improved inter-personal relations. This also helps to provide the much-needed support from their spouses.

CONCLUSION

This study concluded that the menopause adversely effects the quality of life of women belonging to KPK, leading to high BMI, increased waist to hip ratios and symptoms of moderate to severe intensity related to vasomotor, physical, psychosocial and sexual domains of the MENQOL questionnaire. Age groups had a significant impact on vasomotor, and psychosocial symptoms.Moreover, these findings suggested that while parity may not significantly influence vasomotor, psychosocial, and physical symptoms, it may have a remarkable impact on sexual symptoms experienced by postmenopausal women.

REFERENCES

1. Grant MD, Marbella A, Wang AT, Pines E, Hoag J, Bonnell C, et al. Menopausal Symptoms: Comparative Effectiveness of Therapies [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2015 Mar. (Comparative Effectiveness Reviews, No. 147.) Introduction. Available from: https://www.ncbi.nlm.nih.gov/books/NBK285446/.
2. Shobeiri F, Jenabi E, Hazavehei SM, Roshanaei G. Quality of Life in Postmenopausal Women in Iran: A Population-based Study. J Menopausal Med. 2016 Apr;22(1):31-8. doi: 10.6118/jmm.2016.22.1.31.
3. Radtke JV, Terhorst L, Cohen SM. The Menopause-Specific Quality of Life Questionnaire: psychometric evaluation among breast cancer survivors. Menopause. 2011 Mar;18(3):289-95. doi: 10.1097/gme.0b013e3181ef975a.
4. Nosek M, Kennedy HP, Beyene Y, Taylor D, Gilliss C, Lee K. The effects of perceived stress and attitudes toward menopause and aging on symptoms of menopause. J Midwifery Womens Health. 2010 Jul-Aug;55(4):328-34. doi: 10.1016/j.jmwh.2009.09.005.
5. Fallahzadeh, H. Quality of life after the menopause in Iran: A population study. Qual. Life Res. 2010 Aug;19(6):813-9. doi: 10.1007/s11136-010-9644-2.
6. Trudeau KJ, Ainscough JL, Trant M, Starker J, Cousineau TM. Identifying the educational needs of menopausal women: a feasibility study. Womens Health Issues. 2011 Mar-Apr;21(2):145-52. doi: 10.1016/j.whi.2010.10.001.
7. Santoro N, Epperson CN, Mathews SB. Menopausal Symptoms and Their Management. EndocrinolMetabClin North Am. 2015 Sep;44(3):497-515. doi: 10.1016/j.ecl.2015.05.001.

8. Waheed K,Khanum A, Ejaz S, Butt A, Ahmad RF, Hawa. Quality of life after menopause in Pakistani women. Gynecol. Obstet. (Sunnyvale). 2015; 6: 1-3. DOI:10.4172/2161-0932.1000367
9. Reed SD, Guthrie KA, Newton KM, Anderson GL, Booth-LaForce C, Caan B, et al. Menopausal quality of life: RCT of yoga, exercise, and omega-3 supplements. Am J Obstet Gynecol. 2014 Mar;210(3):244.e1-11. doi: 10.1016/j.ajog.2013.11.016.
10. Nisar N, Sohoo NA. Severity of menopausal symptoms and the quality of life at different status of menopause: A community based survey from rural Sindh, Pakistan. Int. J. Collab. Res. Int. Med. Public Health. 2010; 2(5): 118–130. ISSN 1840-4529.
11. Hamoda H, Moger S. Developing the Women's health strategy: The British Menopause Society's recommendations to the department of health and social care's call for evidence. Post Reprod Health. 2022;28(1):13–18. doi: 10.1177/20533691211064037.
12. Parsa P, Tabesh RA, Soltani F, Karami M. Effect of Group Counseling on Quality of Life among Postmenopausal Women in Hamadan, Iran. J Menopausal Med. 2017 Apr;23(1):49-55. doi: 10.6118/jmm.2017.23.1.49.
13. Thomas A, Daley AJ. Women's views about physical activity as a treatment for vasomotor menopausal symptoms: a qualitative study. BMC Womens Health. 2020 Sep 14;20(1):203. doi: 10.1186/s12905-020-01063-w.
14. Schürer C, Wallaschofski H, Nauck M, Völzke H, Schober HC, Hannemann A. Fracture Risk and Risk Factors for Osteoporosis. DtschArztebl Int. 2015 May 25;112(21-22):365-71. doi: 10.3238/arztebl.2015.0365.
15. Darbà J, Kaskens L, Pérez-Álvarez N, Palacios S, Neyro JL, Rejas J. Disability-adjusted-life-years losses in postmenopausal women with osteoporosis: a burden of illness study. BMC Public Health. 2015 Apr 2;15:324. doi: 10.1186/s12889-015-1684-7.
16. Aslam H, Holloway-Kew KL, Mohebbi M, Jacka FN, Pasco JA. Association between dairy intake and fracture in an Australian-based cohort of women: a prospective study. BMJ Open. 2019 Nov 21;9(11):e031594. doi: 10.1136/bmjopen-2019-031594.

17. Som N, Roy P, Ray S. Menopause-specific quality of life of a group of urban women, West Bengal, India. Climacteric. 2014 Dec;17(6):713-9. doi: 10.3109/13697137.2014.913283.
18. Stojanovska L, Apostolopoulos V, Polman R, Borkoles E. To exercise, or, not to exercise, during menopause and beyond. Maturitas. 2014;77(4):318–23. doi: 10.1016/j.maturitas.2014.01.006 .
19. Nguyen TTP, Phan HT, Vu TMT, Tran PQ, Do HT, Vu LG, et al. Physical activity and social support are associated with quality of life in middle-aged women. PLoS One. 2022 May 6;17(5):e0268135. doi: 10.1371/journal.pone.0268135.
20. Stanton AM, Handy AB, Meston CM. The Effects of Exercise on Sexual Function in Women. Sex Med Rev. 2018;6(4):548–57. Epub 2018/04/03. doi: 10.1016/j.sxmr.2018.02.004 .
21. Ibrahim ZM, Ghoneim HM, Madny EH, Kishk EA, Lotfy M, Bahaa A, et al. The effect of menopausal symptoms on the quality of life among postmenopausal Egyptian women, Climacteric. 2020; 23(1): 9-16, DOI: 10.1080/13697137.2019.1656185.
22. Webster AD, Finstad DA, Kurzer MS, Torkelson CJ. Quality of life among postmenopausal women enrolled in the Minnesota Green Tea Trial. Maturitas. 2018 Feb;108:1-6. doi: 10.1016/j.maturitas.2017.10.013.
23. Smail L, Jassim G, Shakil A. Menopause-Specific Quality of Life among Emirati Women. International Journal of Environmental Research and Public Health. 2020; 17(1):40. https://doi.org/10.3390/ijerph17010040.